

Indian Country Issues

In This Issue

**July
2014
Volume 62
Number 4**

United States
Department of Justice
Executive Office for
United States Attorneys
Washington, DC
20530

Monty Wilkinson
Director

Contributors' opinions and statements
should not be considered an
endorsement by EOUSA for any
policy, program, or service

The United States Attorneys' Bulletin
is published pursuant to
28 CFR § 0 22(b)

The United States Attorneys' Bulletin
is published bimonthly by the
Executive Office for United States
Attorneys, Office of Legal Education,
1620 Pendleton Street,
Columbia, South Carolina 29201

Managing Editor
Jim Donovan

Associate Editor
Carmel Martin

Law Clerk
Jennifer Jokerst

Internet Address
[www.usdoj.gov/usao/
reading_room/foiamanuals
html](http://www.usdoj.gov/usao/reading_room/foiamanuals.html)

Send article submissions
and address changes to
Managing Editor,
United States Attorneys' Bulletin,
National Advocacy Center,
Office of Legal Education,
1620 Pendleton Street,
Columbia, SC 29201

**Jurisdictional Conflicts Between Tribes and States: Disputes Over
Land Set Aside Pursuant to the Indian Reorganization Act and
Reservation Boundary Disputes 1**
By Gina Allery and Daron T. Carreiro

**Protecting the Civil Rights of American Indians and Alaska Natives:
The Civil Rights Division's Indian Working Group 10**
By Verlin Deerinwater and Susana Lorenzo-Giguere

**Reentry Programming in Indian Country: Building the Third Leg
of the Stool 16**
By Timothy Q. Purdon

**Native Children Exposed to Violence: Defending Childhood in
Indian Country and Alaska Native Communities 22**
By Amanda Marshall

Investigating and Prosecuting the Non-Fatal Strangulation Case . . 28
By Leslie A. Hagen

**Native American Graves Protection and Repatriation Act
(NAGPRA): The Law Is Not an Authorization for Disinterment . . 41**
By Sherry Hutt and David Tarler

**The Investigation and Federal Prosecution of the Native Mob—
Responding to a Statewide Gang Threat Through the Use of the
Racketeering Statute 52**
By Andrew R. Winter



Recommendations: MEDICAL/RADIOGRAPHIC EVALUATION OF ACUTE ADOLESCENT/ADULT, NON-FATAL STRANGULATION

Prepared by Dr. Bill Smock, Police Surgeon, Louisville Metro Police Department and Sally Sturgeon, DNP, SANE-A with the support of the Medical Advisory Committee for the Training Institute on Strangulation Prevention

GOALS:

1. Evaluate carotid and vertebral arteries for injuries
2. Evaluate bony/cartilaginous and soft tissue neck structures
3. Evaluate brain for anoxic injury

Strangulation patient presents to the Emergency Department

History of and/or physical exam with ANY of the following:

- **LOC** (anoxic brain injury)
- **Visual changes:** “spots”, “flashing light”, “tunnel vision”
- **Facial intraoral or conjunctival petechial hemorrhage**
- **Ligature mark or contusions** on neck
- **Soft tissue neck injury/swelling of the neck**
- **Incontinence** (bladder and/or bowel from anoxic injury)
- **Neurological signs or symptoms** (i.e. LOC, seizures, mental status changes, amnesia, visual changes, cortical blindness, movement disorder, stroke-like symptoms.)
- **Dysphonia/Aphonia** (hematoma, laryngeal fracture, soft tissue swelling)
- **Dyspnea** (soft tissue swelling, hematoma, phrenic nerve injury)
- **Subcutaneous emphysema** (tracheal/laryngeal rupture)

History of and/or physical exam with:

- **No LOC** (anoxic brain injury)
- **No visual changes:** “spots”, “flashing light”, “tunnel vision”
- **No petechial hemorrhage**
- **No soft tissue trauma to the neck**
- **No dyspnea, dysphonia or odynophagia**
- **No neurological signs or symptoms** (i.e. LOC, seizures, mental status changes, amnesia, visual changes, cortical blindness, movement disorder, stroke-like symptoms)
- **And reliable home monitoring**

Discharge home with detailed instructions to return to ED if: neurological signs/symptoms, dyspnea, dysphonia or odynophagia develops or worsens

Radiographic Study Required to R/O Life-Threatening Injuries*

- **CT Angio of carotid/vertebral arteries** (gold standard for evaluation of vessels and bony/cartilaginous structures, less sensitive for soft tissue trauma)
- **CT neck with contrast** (less sensitive than CT Angio for vessels, good for bony/cartilaginous structures)
- **MRA of neck** (less sensitive than CT Angio for vessels, best for soft tissue trauma)
- **MRI of neck** (less sensitive than CT Angio for vessels and bony/cartilaginous structures, best study for soft tissue trauma)
- **MRI/MRA of brain** (most sensitive for anoxic brain injury, stroke symptoms and intercerebral petechial hemorrhage)

(-)

(+)

Continued ED/Hospital Observation (based on severity of symptoms and reliable home monitoring)

- Consult Neurology Neurosurgery/ Trauma Surgery for admission
- Consider ENT consult for laryngeal trauma with dysphonia,

*References on page 2

Version 1.3, 2/16
WSS



REFERENCES

1. Christe A, Thoeny H, Ross S, et al. Life-threatening versus non-life-threatening manual strangulation: are there appropriate criteria for MR imaging of the neck?. *Eur Radiol* 2009;19: 1882-1889
2. Christe A, Oesterhelweg L, Ross S, et al. Can MRI of the Neck Compete with Clinical Findings in Assessing Danger to Life for Survivors of Manual Strangulation? A Statistical Analysis, *Legal Med* 2010;12:228-232
3. Yen K, Thali MJ, Aghayev E, et al. Strangulation Signs: Initial Correlation of MRI, MSCT, and Forensic Neck Findings, *J Magn Reson Imaging* 2005;22:501-510
4. Stapczynski JS, *Strangulation Injuries, Emergency Medicine Reports* 2010;31(17):193-203
5. Yen K, Vock P, Christe A, et al. Clinical Forensic Radiology in Strangulation Victims: Forensic expertise based on magnetic resonance imaging (MRI) findings, *Int J Legal Med* 2007;121:115-123
6. Malek AM, Higashida RT, Halback VV, et al. Patient Presentation Angiographic Features and Treatment of Strangulation-Induced Bilateral Dissection of the Cervical Carotid Artery: Report of three cases, *J Neurosurg* 2000;92(3):481-487
7. Di Paolo M, Guidi B, Bruschini L, et al. Unexpected delayed death after manual strangulation: need for care examination in the emergency room, *Monaldi Arch Chest Dis* 2009;Sep;71(3):132-4
8. Dayapala A, Samarasekera A and Jayasena A, An Uncommon Delayed Sequela After Pressure on the Neck: An autopsy case report, *Am J Forensic Med Pathol* 2012;33:80-82
9. Hori A, Hirose G, Kataoka, et al. Delayed Postanoxic Encephalopathy After Strangulation, *Arch Neurol* 1991;48:871-874
10. Iacovou E, Nayar M, Fleming J, Lew-Gor S, A pain in the neck: a rare case of isolated hyoid bone trauma, *JSCR* 2011;7(3)
11. Oh JH, Min HS, Park TU, Sang JL, Kim SE, Isolated Cricoid Fracture Associated with Blunt Neck Trauma; *Emerg Med J* 2007;24:505-506
12. Gill JR, Cavalli DP, Ely SF, Stahl-Herz J, Homicidal Neck Compression of Females: Autopsy and Sexual Assault Findings, *Acad Forensic Path* 2013;3(4):454-457
13. Sethi PK, Sethi NK, Torgovnick J, Arsura E, Delayed Left Anterior and Middle Cerebral Artery Hemorrhagic Infarctions After Attempted Strangulation, A case report; *Am J Forensic Med Pathol* 2012;33:105-106
14. Clarot F, Vaz E, Papin F, Proust B, Fatal and Non-fatal Bilateral Delayed Carotid Artery Dissection after Manual Strangulation, *Forensic Sci Int* 2005;149:143-150
15. Molack J, Baxa J, Ferda J, Treska V, Bilateral Post-Traumatic Carotid Dissection as a Result of a Strangulation Injury, *Ann Vasc Surg* 2010;24:1133e9-1133e11
16. Plattner T, Bollinger S, Zollinger U, Forensic Assessment of Survived Strangulation, *Forensic Sci Int* 2005;153:202-207
17. Miao J, Su C, Wang W, et al. Delayed Parkinsonism with Selective Symmetric Basal Ganglia Lesion after Manual Strangulation, *J Clin Neurosci* 2009;16:573-575
18. Purvin V, Unilateral Headache and Ptosis in a 30-Year-Old Woman, *Surv Ophthalmol* 1997;42(2):163-168

Non-Fatal Strangulation Documentation Toolkit



International Association of Forensic Nurses
www.ForensicNurses.org
November 2016

TABLE OF CONTENTS

Preface	i
Strangulation Task Force Members	1
Purpose	3
Section I – Non-Fatal Strangulation	
Strangulation Assessment, Documentation, and Evidence Collection Guidelines	4
Section II – Non-Fatal Strangulation Policy and Procedure	
Example Policy and Procedure	7
Section III – Clinical Evaluation and Documentation	
Non-Fatal Strangulation Clinical Evaluation	9
Non-Fatal Strangulation Descriptors for Examiners	11
Non-Fatal Strangulation Documentation Form	14
Section IV – Discharge Instructions	
Example Strangulation Discharge Instructions	21
Additional Resources	22
References	
References	23
Bibliography	
Comprehensive Bibliography	25

PREFACE

In 1992, The International Association of Forensic Nurses (IAFN) was created by a group of nurses that recognized violence as a healthcare problem. Over the past two and a half decades much progress has been made as it relates to the care of our specialized patient population. Through this progress, knowledge has been gained and practice guidelines continue to evolve with the goal of continuous provision of safe and effective patient care.

In early 2015, the IAFN, the Board of Directors and a group of members recognized strangulation as a healthcare concern that needed practice guidance throughout the organization, and as a result, the Strangulation Task Force was created and was proven to be a group of hard working, dedicated individuals that are truly experts on strangulation. This group was tasked with establishing standards for the organization and developed what would be utilized as a toolkit for best practice provision.

The Strangulation Toolkit provides the forensic nurse with detailed guidance on assessment techniques, documentation, and evidence collection for this patient population. This toolkit also provides documents such as discharge instructions and sample policies that can be adjusted to best suit your institution and your forensic practice.

As a toolkit, it should be mentioned that the IAFN does not endorse any changes to these documents. Limitations of this toolkit include the lack of research available to guide our practice, making the need for additional research related to the management of the patient that has been strangled a high priority. Also, it should be mentioned that each clinician must refer to their own individual state practice acts when considering the implementation of any parts of this toolkit.

The Strangulation Toolkit is the first of its kind to be endorsed by the IAFN and will be a useful guide to improving and standardizing the care of patients that have been strangled. As a group, we will continue to strive to move our profession forward and improve practice internationally and this toolkit proves to keep us on this path.

STRANGULATION TASK FORCE MEMBERS

Barbra Bachmeier, MSN, JD, NP-C (Chair)
Nurse Practitioner/Forensic Nurse Examiner
IU Health – Methodist Emergency Medicine and Trauma Center
Indianapolis, IN

Khara Breeden, DNP, MS, RN, SANE-A, SANE-P, CA/CP-SANE
Missouri City, TX

Teresa J. Devitt-Lynch, MSN, RN-BC, SANE-A, CFN, CMI-I, DACFEI
United States Navy
Navy Medicine Education and Training Command
Joint Base-San Antonio, Fort Sam Houston, TX

Ruth Downing, MSN, RN, CNP, SANE-A
President and Founder
Forensic Healthcare Consulting
Delaware, OH

Diana Faugno, MSN, RN, CPN, SANE-A, SANE-P, FAAFS, DF-IAFN
Eisenhower Medical Center
Rancho Mirage, CA

Sarah Hines, BSN, RN, CFN, SANE-A
Eskenazi Health Center of Hope
Indianapolis, IN

Annie Lewis-O'Connor, PhD, MPH, NP-BC, FAAN
Senior Nurse Scientist Founder and Director
C.A.R.E. Clinic
Brigham and Women's Hospital
Boston, MA

Jenifer Markowitz, ND, RN, WHNP-BC, SANE-A, DF-IAFN
Alexandria, VA

Jennifer Pierce-Weeks, RN, SANE-A, SANE-P
Education Director
International Association of Forensic Nurses
Elkridge, MD

Linda Reimer, BScN, RN, SANE-A, TITC-CT
Domestic Abuse and Sexual Assault Care Centre of York Region
Mackenzie Richmond Hill Hospital
Richmond Hill, ON

Holly Renz, RN, SANE-A, SANE-P
Program Director
Madison County SATC of Community Hospital
Anderson, IN

Suzanne Rotolo, PhD, MSN, RN, SANE-A, SANE-P, CFN, FACFEI
Dr. Rotolo Consulting
Leesburg, VA

Bill Smock, MS, MD
Police Surgeon
Louisville Metro Police Department
Clinical Professor of Emergency Medicine
University of Louisville School of Medicine
Louisville, KY

Gael Strack, Esq.
CEO and Co-Founder
Training Institute on Strangulation Prevention, a program of Alliance for HOPE International
San Diego, CA

Sally Sturgeon DNP, RN, SANE-A, AFN-BC
Forensic Nurse Examiner
Institute of Clinical Forensic Medicine and Nursing
Louisville, Kentucky

Melissa Vesperman, BSN, RN, SANE-A
Forensic Nurse Coordinator
St. Croix Valley SART
River Falls, WI

Sarah Wells, BSN, RN, SANE-A, SANE-P
Bon Secours Richmond Health System
Bon Secours Richmond Forensic Nursing Services
Richmond, VA

PURPOSE

The Non-Fatal Strangulation Documentation Toolkit was developed by consensus to assist clinicians in multiple settings and various disciplines with the evaluation of non-fatal strangulation.

STRANGULATION ASSESSMENT, DOCUMENTATION, AND EVIDENCE COLLECTION GUIDELINES

Equipment Needed

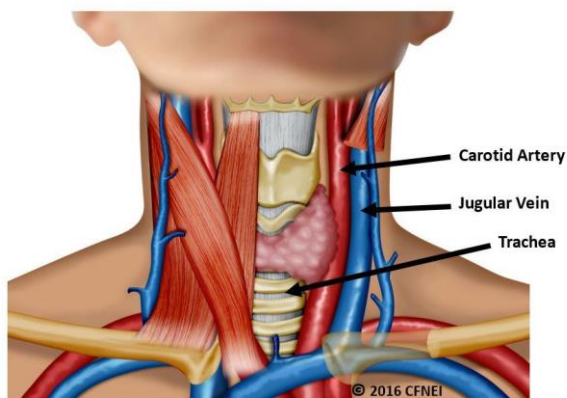
- Camera
- Measuring tape
- Evidence collection kit (swabs, sterile saline or water, envelopes, paper bags, evidence tape, etc.)
- ABFO No. 2 ruler
- Speculum
- Mannequin or Styrofoam head (optional)
- Gloves

Definition

Strangulation is a form of asphyxia produced by a constant application of pressure to the neck. The three forms of strangulation are: hanging, ligature, and manual. Hanging occurs when a person is suspended with a ligature around his or her neck, which constricts due to the gravitational pull of the person's own body weight. Ligature strangulation occurs when the pressure applied around the neck is with a ligature only. Manual strangulation occurs when pressure is applied to the neck with hands, arms, or legs. (Ernoehazy, 2016; Funk & Schuppel, 2003; Line, Stanley, & Choi, 1985; Taliaferro, Hawley, McClane, & Strack, 2009; Wilbur et al., 2001).

Anatomy/Pathophysiology

Pressure around the neck can result in the closure of blood vessels and/or air passages. Injury and death from strangulation occur from one or more mechanisms. The first mechanism is venous obstruction, whereby occlusion of the jugular veins results in congestion of the blood vessels and increased venous and intracranial pressure. The second mechanism is carotid artery obstruction, which stops blood flow and impedes oxygen delivery to the brain. The third mechanism is pressure on the carotid sinus that can cause acute bradycardia and/or cardiac arrest. Strangulation can result in injuries to the soft tissues of the neck, esophagus, larynx, trachea, cervical spine, and the laryngeal and facial nerves. (Hawley, McClane, & Strack, 2001; Shields, Corey, Weakley-Jones, & Stewart, 2010; Smith, Mills, & Taliaferro, 2001; Taliaferro, Hawley, McClane, & Strack, 2009).



© 2016 CFNEI. All rights reserved. May not be reproduced, published, distributed, displayed, performed, copied, or stored for public or private use without the written permission of CFNEI.

History/Patient Description of the Strangulation Event

Describe what happened, using the patient's own words. Place quotation marks around the patient's comments. Also, describe the patient's appearance, behavior, speech, eye contact, and affect/demeanor using terms such as "slumped," "weeping," "averting eye contact," "stammering," "somber," "agitated," etc. Include the assailant's name, date of birth, and his or her relationship to the patient. Attach additional pages, if needed. Below are specific questions to ask each patient who reports strangulation. (As needed, reword questions to the appropriate developmental level of the patient.)

- Describe and demonstrate on the head model how you were strangled. One hand? Two hands? Arm? Leg? Other object(s)?
- How many times were you strangled?/Over what period of time?
- Were you shaken while you were being strangled?
- Was your head pounded on the ground or wall while you were being strangled?
- Did your feet leave the ground while you were being strangled?
- How long did the strangulation(s) last?
- On a scale of 0–10, how much pressure was applied to your neck during the strangulation(s)?
- What did you think was going to happen?
- What did the assailant say to you before, during, and after you were strangled?
- What made the person stop strangling you?
- Were you suffocated (defined as smothered)? (Suffocation refers to obstruction of the airway at the nose or mouth.)
- Did you have any difficulty breathing or an inability to breathe?
- Did you or do you currently have a cough?
- Did you or do you currently have trouble swallowing?
- Did you have a hoarse, raspy, or complete loss of voice?
- Did you or do you currently have any changes in your vision? (seeing spots, tunnel vision, blurry vision, everything went black, etc.)
- Did you or do you currently have any changes in your hearing? (roaring, ringing, etc.)
- Did you become dizzy or lightheaded?
- Did you lose consciousness? (passed out, blacked out, etc.)
- Did you experience any mental status changes? (restlessness, combativeness, amnesia, psychosis, etc.)
- Did you vomit as a result of being strangled?
- Did you lose control of urine or stool while you were being strangled?
- Were you sexually assaulted?
- Were you slapped, punched, kicked, or bitten anywhere on your body?
- Have you been strangled prior to this event?/How many times?
- Did you or do you have a headache?
- Did you bite your tongue or the inside of your mouth?
- If pregnant, are you having any abdominal cramping, vaginal discharge, or bleeding?
- Were you sexually assaulted during the event?

(Funk & Schuppel, 2003; Gwinn & Strack, 2013; Strack & McClane, 1999).

Documentation of Physical Findings/Description of Injuries

Examine the head, face, neck, and chest completely, using 360 degrees. Closely examine the sclera, conjunctiva, lips, oral cavity, palate, ears, and scalp. Observe for areas of erythema, abrasion, contusion, swelling, laceration, incised wound(s), fracture, bite mark(s), burn(s), or tenderness. Record each injury, including patient statements about the injury (e.g. "he grabbed my neck; that wasn't there before he did that") by drawing a diagram. Label each injury drawn on the diagram by using the consecutive alphabetical or numerical systems (A, B, C or 1, 2, 3, etc.) to describe each injury separately. Attach additional pages if needed. Document the location, shape, color, and size of all injuries, using centimeters as the unit of measure. Note length, width, and depth for each injury (if possible). Also, measure the neck with a measuring tape to establish a baseline for follow-up measurements (to determine whether neck swelling is present). Include the following in the patient's assessment:

- Voice changes: Dysphonia (defined as hoarseness) or aphonia (defined as severe or complete loss of voice)

- Swallowing changes and tongue swelling: Dysphagia (defined as difficulty swallowing) or odynophagia (defined as painful swallowing)
- Breathing changes: Dyspnea (defined as difficulty breathing)
- Visible injuries on the neck and mastoid: Ligature marks/edema/abrasions (scratches and scrapes)/erythema/contusions
- Petechiae: Eyelids/peri-orbital region/face/scalp/neck/ears/soft palate/under tongue
- Subconjunctival/Scleral hemorrhage/Scleral edema (eyes)
- Neurological findings: Ptosis/facial droop/unilateral weakness/loss of sensation/paralysis/seizure
- Neck swelling: Measurement (in centimeters) for size (mark neck with a Sharpie pen for accurate follow-up measurement)
- Miscarriage/Pregnancy - FHT/LMP
- Lung injuries: Aspiration pneumonia/pulmonary edema
- Other symptoms: Acid reflux, etc.
- Pain, swelling, erythema, contusion, abrasion, petechiae, bite marks, knife wounds, or gunshot wounds on any other area of the body (i.e., chest, back, upper extremities, lower extremities)

(Christe et al., 2009; Faugno, Waszak, Strack, Brooks, & Gwinn, 2013; Funk & Schuppel, 2003; Gwinn & Strack, 2013; Hawley, McClane, & Strack, 2001; Strack & McClane, 1999; Taliaferro, Hawley, McClane, & Strack, 2009).

Photographs

Use your facility/community protocol. If no protocol is available, use the guidelines listed below.

- Take full-body distant and mid-distance photographs. Take multiple photographs of the front, sides, and back of the face, neck, upper chest, and shoulders.
- Carefully assess and photograph the eyes and mouth. Take multiple photographs of both eyes of the patient looking up, down, to the left, to the right, and straight ahead. To visualize and photograph the conjunctival sac, gently pull down on the lower lid with a gloved hand. If no ocular trauma is present and if the patient is able to tolerate, flip the upper eyelids up on each eye to visualize and photograph.
- With the patient's mouth open, depress the tongue with appropriate assistive devices to light the internal structures. Take photographs of the upper and lower lips, frenula, under the tongue, the soft palate, uvula, and oropharynx. To completely visualize and photograph the oral structures, rotate the camera so the flash is in various positions, including the upright position, left, right, and upside down.
- Perform a complete head-to-toe assessment of the patient, and photograph and document all injuries. Take close-up photographs of all injuries with and without a measurement ruler in place. Ensure that the plane of the object being photographed is at 90 degrees.
- (Optional) Photograph the patient's demonstration on the strangulation model of how he or she was strangled.
- Take follow-up photographs of all visible injuries within 72 hours post-assault (based upon patient needs, availability, etc.).

(Funk & Schuppel, 2003; Paluch, 2013; Strack & McClane, 1999).

Collection of Evidence

Use your facility/community protocol. Consult your local forensic laboratory for recommendations. If no protocol is available, use the guidelines listed below.

- Collect dried and moist secretions (i.e., blood stains, saliva, etc.) from the face, head, neck, and mouth. Use two or four (as indicated by protocol/recommendation) sterile cotton swabs for each specimen. Swab moist secretions with dry swabs. Swab dry secretions with swabs moistened with sterile saline or sterile water. Air dry the swabs before packaging in an envelope or a swab box.
- Make control swabs by moistening swabs with the sterile saline or sterile water used (as indicated by protocol/recommendation). If collecting control swabs, label, air dry, and package separately from the evidence samples.
- Collect fingernail swabs, if indicated per history. Place swabs from each hand into a separate, labeled envelope.
- Label each envelope or swab box with the contents, patient name, collector name, the date, and time of collection. Seal the envelope with tape, and then initial. Document location and the potential biological specimen identified.

(Gwinn & Strack, 2013; Hawley, McClane, & Strack, 2001).

EXAMPLE POLICY AND PROCEDURE

Policy Name: Standard of Practice in Non-Fatal Strangulation Cases

1. Purpose

To have a policy that identifies and communicates evidenced-based best practice/standard of practice based upon the assessment of the patient, the caregiver/guardian/patient's consent, and medical status in non-fatal strangulation cases.

2. Policy

Each patient will be assessed for the purpose of medical diagnoses and treatment. This will include the physical assessment, collection of potential biological and trace evidence to identify any forensic findings, and documentation of objective findings and subjective complaints (Faugno, Waszak, Strack, Brooks, & Gwinn, 2013).

Any procedure that is completed by another professional (i.e., social work, advocate) should be documented as such.

Follow institutional/local guidelines, policies, laws for the incapacitated patient or minor.

3. Procedure

- a) Thorough head-to-toe physical assessment (genital examination to be conducted as indicated)
- b) Completion of danger assessment/lethality assessment (Campbell, 2004; Campbell, Webster, & Glass, 2009)
- c) Completion of strangulation documentation to include:
 - a. Written documentation form
 - b. Body mapping of injuries
 - c. Photo-documentation
 - d. Mannequin demonstration (optional)
- d) Neck circumference measurement
- e) Use of alternate light source (ALS)/ultraviolet (UV) light (as indicated or available) for identification of potential biological fluids and/or for enhancement of visual bruises (not to be used to identify bruises that cannot be seen) (Eldredge, Huggins, & Pugh, 2012)
- f) Potential evidence collection (as applicable or if indicated)
- g) Assist patient with acquiring the necessary resources to file for victim of violent crime fund/compensation per local jurisdiction (if available)
- h) Assess for safety planning/resources disposition
Follow individual, local, mandated reporter for adult/pediatric population with referrals as needed to adult protection services (APS) and/or child protective services (CPS).
- i) If evaluation results indicate need, discuss possibility of observation or overnight admission.
- j) Discuss follow-up plan of care

4. Follow-Up Care

Follow up examinations within 72 hours post assault. In case of holidays/weekends: follow up with a phone call within 72 hours, with a scheduled appointment as soon as possible (Taliaferro, Hawley, McClane, & Strack, 2009).

Follow-up appointment to consist of:

- a) Head-to-toe physical assessment
- b) Strangulation documentation form
- c) Photography (of progression of bruising or identification of new bruises)
- d) Neck circumference
- e) Use of ALS/UV light (as indicated or available) as indicated above in #3e
- f) Ongoing safety assessment

- g) Referrals to ear, nose, and throat (ENT) specialist, neurology, other providers, counseling per scope of practice

5. Terms

1. Strangulation: A form of asphyxia (lack of oxygen) characterized by closure of the blood vessels and/or air passages of the neck as a result of external pressure on the neck (Iserson, 1984; Line, Stanley, & Choi, 1985).
2. Standards of Practice. Authoritative statements that “[describe a competent level of nursing care as demonstrated by the nursing process” (ANA, 2010, p. 67).
3. Danger assessment: An easy and effective method for forensic nurses and other community professionals to identify those who are at the highest potential for being seriously injured or killed (lethality) by their intimate partners so as to immediately connect these patients and clients to a domestic violence service provider in their area.
4. ALS (alternate light source): A high-intensity light using differing wavelengths that may fluoresce fluids/fibers and help enhance bruises that can be seen under white light.
5. UV (ultraviolet) light: An electromagnetic radiation with a wavelength from 100 nm to 400 nm. A portion of the light spectrum, which is not visible to the naked eye, that may help fluoresce fluids/fibers.
6. Mannequin head: An effective tool to aid the patient in demonstrating the act of strangulation.

NON-FATAL STRANGULATION CLINICAL EVALUATION

The following content is recommended as components of the clinical evaluation.

Medical History

- Primary care physician
- Allergies
- Medical/Surgical history
- Pregnancy - LMP, live births, miscarriages, abortions
- Prior hospitalizations
- Smoking/Alcohol/Drug use
- Medications, including supplements/herbs

Social History

- Employed
- Lives with
- Children (biological patient/suspect)
- Past history of sexual or physical abuse, domestic violence

Review of Systems

Physical Examination

- Appearance
- Eye contact
- Speech
- Responsiveness to clinician
- Nonverbal/Oral expression
- Facial expression
- Body posture and/or muscular tension
- Behaviors and actions
- Appearance of clothing
- Subjective complaints
- Any pain/Bleeding before, during, or after event
- Pre-existing complaints of pain, injury, or skin conditions

Forensic Medical Photography - Digital and/or colposcope (with and without ruler/scale)

- Full body
- Close-up
- Face
- Head/Scalp
- Neck
- Chest
- Mouth
- Eyes
- Mannequin demonstration
- Other injuries (i.e., defensive)

Danger Assessment

Medical Evaluation/Radiology Studies (as indicated by medical provider)

- Pulse oximetry
- Chest X-ray
- Soft tissue of the neck X-ray
- CT of the neck with and/or without contrast
- CT angiogram of carotid/vertebral arteries
- MRI of the neck

- MRA of the neck
- MRI/MRA of the brain

NON-FATAL STRANGULATION DESCRIPTORS FOR EXAMINERS

Donna A. Gaffney, DNSc, RN, FAAN

Behaviors, Mannerisms, Speech, and Eye Contact

Do not use language that could be construed as evaluative or can be interpreted as a value statement, or words that assign a subjective or emotional experience to the survivor. Instead, use words that accurately **describe outward appearance, visible behavior, speech, and eye contact**. These are words that convey the emotional state of the survivor without specifically labeling it as such.

Quantifying and Qualifying Behaviors (time, intensity, manner)

- When quantifying time, indicate the number of times a behavior was observed or the length of time it was observed (i.e., cried for 20 minutes)
- When qualifying time, name the event that coincided or preceded the behavior (i.e., sobbed as she took off her clothes)
- When qualifying intensity, describe what was sensed (i.e., soft, loud, piercing, shrill, high-pitched, sharp, etc.)
- When qualifying manner, describe what was observed (i.e., measured, haltingly, abruptly, tentatively, etc.)

Always use the patient’s statements and place in quotation marks. Do not paraphrase.

Eye Contact or Visual Contact	Suggestions	Suggestions	Suggestions	Avoid
	Gape	Stare	Looks at (floor, ceiling, etc.)	Good
	Watch	Fixed	Only when addressed	Poor
	Avoid (when)	Avert	Closes eyes (when, how long)	“Good” and “poor” mean different things to different people
	Glance	Glare		

Speech	Suggestions	Suggestions	Suggestions	Avoid
	Mumble	Stammer	Responds in one or two word answers	
	Murmur	Stutter	Responds only when asked questions	
	Shout	Slow	Whispers (differentiate from hoarseness)	
	Scream	Cries while speaking	Hoarse (clarify if this is normal or new)	
			Hesitates (duration in seconds, minutes)	

Responsive-ness to Clinician	Suggestions	Suggestions	Suggestions	Avoid
	Follow directions (how)	Pause (before stating...)	Answers questions when asked	Cooperative
		Unresponsive	Responds only when asked questions	

Nonverbal/ Oral Expression	Suggestions	Suggestions	Suggestions	Avoid
	Cry	Sniffle	Wail	
	Moan	Sob	Whimper	
	Weep	Sigh		

Facial Expressions	Suggestions	Suggestions	Suggestions	Avoid
	Frown	Flinch	Pursed lips	
	Glower	Wince	Pucker	
	Scowl	Clenched jaw	Grinding teeth	
	Grimace	Biting lips		

Body Posture and/or Muscular Tension	Suggestions	Suggestions	Suggestions	Avoid
	Slouch	Stoop	Shudders	
	Tremor	Slump	Clenches fists	
	Quiver	Restless	Crosses arms in front of body	
	Tremble	Shake	Wrings hands	
	Clutching (what)	Feet pulled up as sits in chair	Draws legs up, wraps arms around knees (how and where)	

Behaviors and Actions	Suggestions	Suggestions	Suggestions	Avoid
	Pacing	Pulling at sheets	Holds front of shirt together with both hands	Afraid Fearful Scared
	Blew nose	Clutching clothes	Wipes at eyes with tissue	
	Startled	Stunned	Cowers	
	Cringe	Flinch		

Demeanor	Suggestions	Suggestions	Suggestions	Avoid
	Serious	Silent	Solemn	Depressed Sad
	Somber	Listless	Sluggish	In shock Cool Composed
	Quiet	Agitated	Irritated	Controlled Flat affect Indifferent
				Disinterested Angry Raging

Describing Anxiety

State that the client is anxious and then support with observable behaviors: wringing hands, tapping feet, sweating profusely, dilated pupils, or the client's statement (e.g., "I feel nauseated," "I have a knot in my stomach," etc.).

2001, Donna Gaffney Associates

NON-FATAL STRANGULATION DOCUMENTATION FORM

Patient Name: _____

Date: _____

Medical Record Number: _____

Time: _____

Strangulation is a serious event that often occurs in the context of intimate partner violence (IPV). Many times strangulation presents **NO VISIBLE INJURIES**. It is important to ask about strangulation in all IPV cases, and document positive disclosure or any signs and symptoms.

Strangulation Event History

How long did the strangulation last? _____ seconds _____ minutes _____ cannot recall

How many times did strangulation occur? _____

Why/how did the strangulation stop? _____

What type of strangulation occurred? (Check all that apply)

Hanging Ligature Manual Other

What was used to strangle the patient?

Right hand Left hand Both hands Unknown Chokehold maneuver

Other (describe) _____

Was the patient smothered?

No Yes (describe) _____

Was the patient shaken during the incident?

No Yes (describe) _____

Was the patient's head pounded against any object during the incident?

No Yes (describe) _____

Was the patient slapped, kicked, or bitten anywhere?

No Yes (describe) _____

Was the assailant wearing any jewelry on hands or wrists?

Unknown No Yes (describe) _____

Describe the neck pressure during strangulation on a 0-10 scale (0=no pressure and 10=crushing pressure):

What is the measurement of the patient's neck circumference? _____

Was the patient sexually assaulted?

No Yes

What was the patient thinking during the strangulation?

What did the assailant say before, during, or after the strangulation?

Describe mannequin demonstration (where applicable)

Signs/Symptoms of Strangulation

The following signs/symptoms should be asked about, assessed for and documented in writing, with body mapping, and by photo-imaging (if applicable). **Check ALL that apply.**

Signs	Prior to Strangulation	During Strangulation	After Strangulation	At time of Assessment
Face	<input type="checkbox"/> Red, flushed <input type="checkbox"/> Petechiae <input type="checkbox"/> Abrasions <input type="checkbox"/> Cuts <input type="checkbox"/> Lacerations <input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Other _____	<input type="checkbox"/> Red, flushed <input type="checkbox"/> Petechiae <input type="checkbox"/> Abrasions <input type="checkbox"/> Cuts <input type="checkbox"/> Lacerations <input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Other _____	<input type="checkbox"/> Red, flushed <input type="checkbox"/> Petechiae <input type="checkbox"/> Abrasions <input type="checkbox"/> Cuts <input type="checkbox"/> Lacerations <input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Other _____	<input type="checkbox"/> Red, flushed <input type="checkbox"/> Petechiae <input type="checkbox"/> Abrasions <input type="checkbox"/> Cuts <input type="checkbox"/> Lacerations <input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Other _____
Eyes	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae: Conjunctiva <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> Eyelids <input type="checkbox"/> <i>Upper right</i> <input type="checkbox"/> <i>Lower right</i> <input type="checkbox"/> <i>Upper left</i> <input type="checkbox"/> <i>Lower left</i> <input type="checkbox"/> Subconjunctival hemorrhage <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Ptosis <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Vascular congestion <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Other _____	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae: Conjunctiva <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> Eyelids <input type="checkbox"/> <i>Upper right</i> <input type="checkbox"/> <i>Lower right</i> <input type="checkbox"/> <i>Upper left</i> <input type="checkbox"/> <i>Lower left</i> <input type="checkbox"/> Subconjunctival hemorrhage <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Ptosis <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Vascular congestion <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Other _____	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae: Conjunctiva <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> Eyelids <input type="checkbox"/> <i>Upper right</i> <input type="checkbox"/> <i>Lower right</i> <input type="checkbox"/> <i>Upper left</i> <input type="checkbox"/> <i>Lower left</i> <input type="checkbox"/> Subconjunctival hemorrhage <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Ptosis <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Vascular congestion <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Other _____	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swelling <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae: Conjunctiva <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> Eyelids <input type="checkbox"/> <i>Upper right</i> <input type="checkbox"/> <i>Lower right</i> <input type="checkbox"/> <i>Upper left</i> <input type="checkbox"/> <i>Lower left</i> <input type="checkbox"/> Subconjunctival hemorrhage <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Ptosis <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Vascular congestion <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Other _____
Nose	<input type="checkbox"/> Bleeding <input type="checkbox"/> Swelling <input type="checkbox"/> Petechiae <input type="checkbox"/> Discoloration <input type="checkbox"/> Other _____	<input type="checkbox"/> Bleeding <input type="checkbox"/> Swelling <input type="checkbox"/> Petechiae <input type="checkbox"/> Discoloration <input type="checkbox"/> Other _____	<input type="checkbox"/> Bleeding <input type="checkbox"/> Swelling <input type="checkbox"/> Petechiae <input type="checkbox"/> Discoloration <input type="checkbox"/> Other _____	<input type="checkbox"/> Bleeding <input type="checkbox"/> Swelling <input type="checkbox"/> Petechiae <input type="checkbox"/> Discoloration <input type="checkbox"/> Other _____

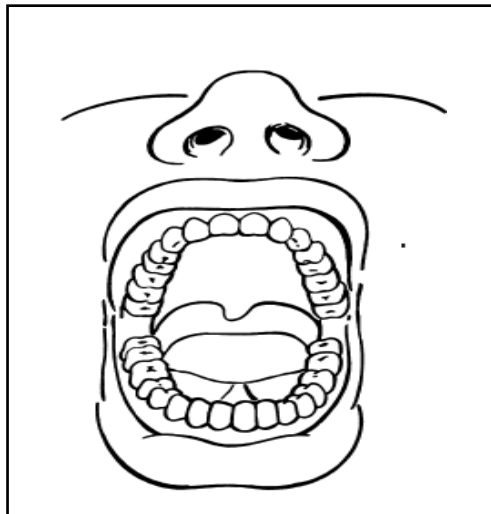
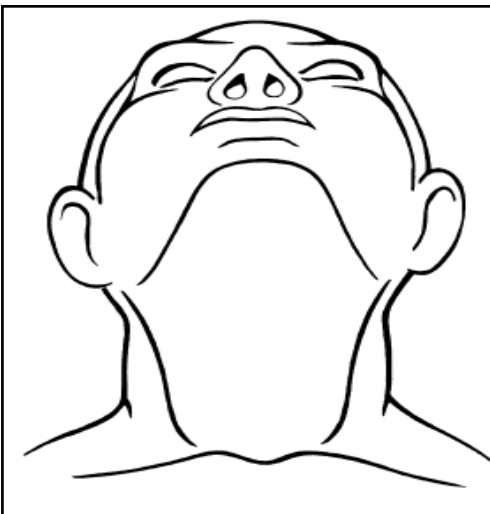
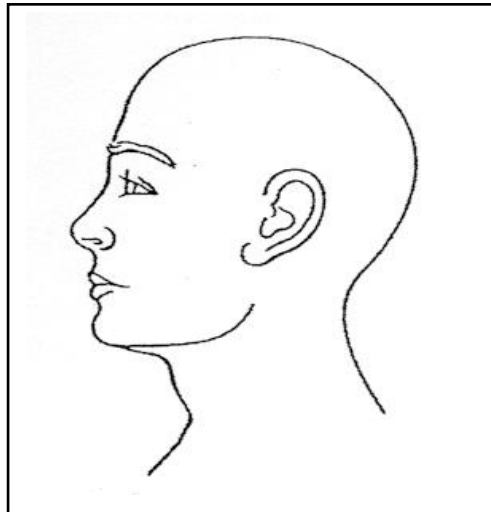
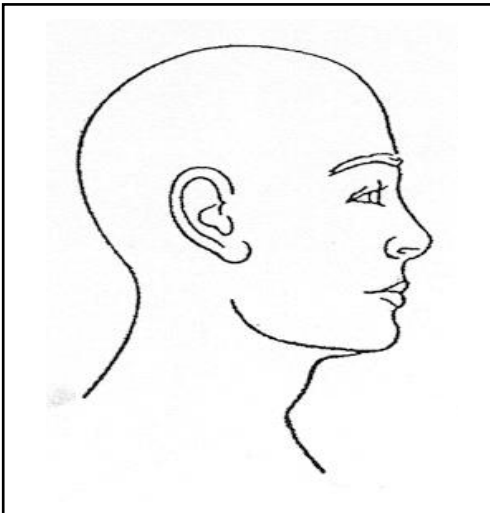
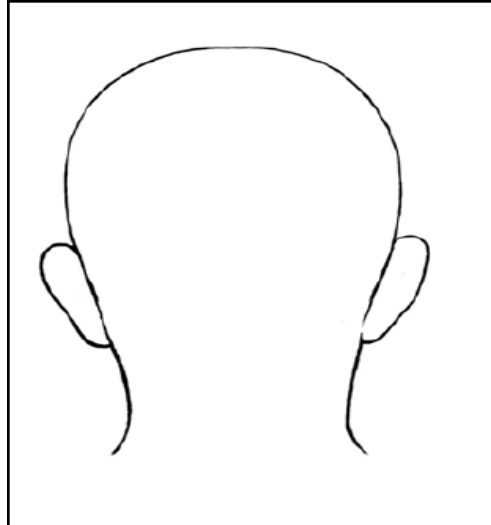
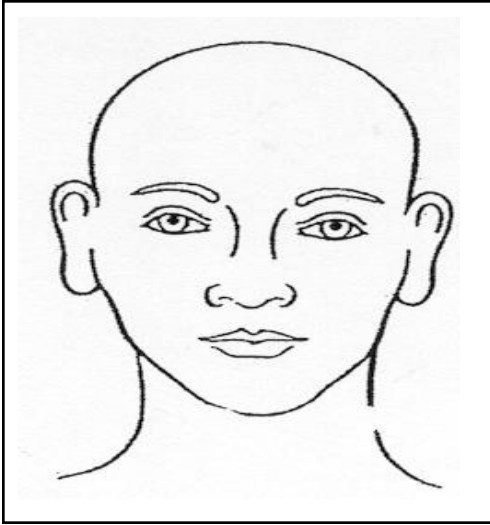
Signs	Prior to Strangulation	During Strangulation	After Strangulation	At time of Assessment
Mouth	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swollen tongue <input type="checkbox"/> Swollen lips <input type="checkbox"/> Cut <input type="checkbox"/> Lacerations <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae <input type="checkbox"/> Other	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swollen tongue <input type="checkbox"/> Swollen lips <input type="checkbox"/> Cut <input type="checkbox"/> Lacerations <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae <input type="checkbox"/> Other	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swollen tongue <input type="checkbox"/> Swollen lips <input type="checkbox"/> Cut <input type="checkbox"/> Lacerations <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae <input type="checkbox"/> Other	<input type="checkbox"/> Discoloration <input type="checkbox"/> Swollen tongue <input type="checkbox"/> Swollen lips <input type="checkbox"/> Cut <input type="checkbox"/> Lacerations <input type="checkbox"/> Abrasions <input type="checkbox"/> Petechiae <input type="checkbox"/> Other
Ears	<input type="checkbox"/> Petechiae <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Bleeding from ear canal <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Discoloration <input type="checkbox"/> Auditory changes <input type="checkbox"/> Other	<input type="checkbox"/> Petechiae <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Bleeding from ear canal <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Discoloration <input type="checkbox"/> Auditory changes <input type="checkbox"/> Other	<input type="checkbox"/> Petechiae <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Bleeding from ear canal <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Discoloration <input type="checkbox"/> Auditory changes <input type="checkbox"/> Other	<input type="checkbox"/> Petechiae <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Bleeding from ear canal <input type="checkbox"/> <i>Right</i> <input type="checkbox"/> <i>Left</i> <input type="checkbox"/> Discoloration <input type="checkbox"/> Auditory changes <input type="checkbox"/> Other
Head/scalp	<input type="checkbox"/> Petechiae on scalp <input type="checkbox"/> Pulled hair <input type="checkbox"/> Contusions <input type="checkbox"/> Other	<input type="checkbox"/> Petechiae on scalp <input type="checkbox"/> Pulled hair <input type="checkbox"/> Contusions <input type="checkbox"/> Other	<input type="checkbox"/> Petechiae on scalp <input type="checkbox"/> Pulled hair <input type="checkbox"/> Contusions <input type="checkbox"/> Other	<input type="checkbox"/> Petechiae on scalp <input type="checkbox"/> Pulled hair <input type="checkbox"/> Contusions <input type="checkbox"/> Other
Neck/under Chin	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Ligature marks <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Ligature marks <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Ligature marks <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Ligature marks <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other
Shoulders	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Other	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Other	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Other	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ (Pain scale 0-10) <input type="checkbox"/> Bruises <input type="checkbox"/> Other

Signs	Prior to Strangulation	During Strangulation	After Strangulation	At time of Assessment
Chest	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other _____	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other _____	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other _____	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks/abrasions <input type="checkbox"/> Bruises <input type="checkbox"/> Neck pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Bruises <input type="checkbox"/> Swelling <input type="checkbox"/> Subcutaneous emphysema <input type="checkbox"/> Other _____

Symptoms	Prior to Strangulation	During Strangulation	After Strangulation	At time of Assessment
Behavioral	<input type="checkbox"/> Agitation <input type="checkbox"/> Combative <input type="checkbox"/> Anxiety <input type="checkbox"/> Memory disruption <input type="checkbox"/> Confusion <input type="checkbox"/> Other _____	<input type="checkbox"/> Agitation <input type="checkbox"/> Combative <input type="checkbox"/> Anxiety <input type="checkbox"/> Memory disruption <input type="checkbox"/> Confusion <input type="checkbox"/> Other _____	<input type="checkbox"/> Agitation <input type="checkbox"/> Combative <input type="checkbox"/> Anxiety <input type="checkbox"/> Memory disruption <input type="checkbox"/> Confusion <input type="checkbox"/> Other _____	<input type="checkbox"/> Agitation <input type="checkbox"/> Combative <input type="checkbox"/> Anxiety <input type="checkbox"/> Memory disruption <input type="checkbox"/> Confusion <input type="checkbox"/> Other _____
Neurological	<input type="checkbox"/> LOC <input type="checkbox"/> Uncertain if LOC <input type="checkbox"/> Incontinence of urine <input type="checkbox"/> Incontinence of feces <input type="checkbox"/> Seizures <input type="checkbox"/> Headache _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Dizzy <input type="checkbox"/> Fainting <input type="checkbox"/> Tinnitus <input type="checkbox"/> Visual changes <input type="checkbox"/> Other _____	<input type="checkbox"/> LOC <input type="checkbox"/> Uncertain if LOC <input type="checkbox"/> Incontinence of urine <input type="checkbox"/> Incontinence of feces <input type="checkbox"/> Seizures <input type="checkbox"/> Headache _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Dizzy <input type="checkbox"/> Fainting <input type="checkbox"/> Tinnitus <input type="checkbox"/> Visual changes <input type="checkbox"/> Other _____	<input type="checkbox"/> LOC <input type="checkbox"/> Uncertain if LOC <input type="checkbox"/> Incontinence of urine <input type="checkbox"/> Incontinence of feces <input type="checkbox"/> Seizures <input type="checkbox"/> Headache _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Dizzy <input type="checkbox"/> Fainting <input type="checkbox"/> Tinnitus <input type="checkbox"/> Visual changes <input type="checkbox"/> Other _____	<input type="checkbox"/> LOC <input type="checkbox"/> Uncertain if LOC <input type="checkbox"/> Incontinence of urine <input type="checkbox"/> Incontinence of feces <input type="checkbox"/> Seizures <input type="checkbox"/> Headache _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Dizzy <input type="checkbox"/> Fainting <input type="checkbox"/> Tinnitus <input type="checkbox"/> Visual changes <input type="checkbox"/> Other _____
Throat/Voice	<input type="checkbox"/> Dysphagia <input type="checkbox"/> Odynophagia (pain) <input type="checkbox"/> Dysphasia <input type="checkbox"/> Aphasia <input type="checkbox"/> Drooling or Inability to swallow <input type="checkbox"/> Throat pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Hoarse/Raspy <input type="checkbox"/> Other _____	<input type="checkbox"/> Dysphagia <input type="checkbox"/> Odynophagia (pain) <input type="checkbox"/> Dysphasia <input type="checkbox"/> Aphasia <input type="checkbox"/> Drooling or Inability to swallow <input type="checkbox"/> Throat pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Hoarse/Raspy <input type="checkbox"/> Other _____	<input type="checkbox"/> Dysphagia <input type="checkbox"/> Odynophagia (pain) <input type="checkbox"/> Dysphasia <input type="checkbox"/> Aphasia <input type="checkbox"/> Drooling or Inability to swallow <input type="checkbox"/> Throat pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Hoarse/Raspy <input type="checkbox"/> Other _____	<input type="checkbox"/> Dysphagia <input type="checkbox"/> Odynophagia (pain) <input type="checkbox"/> Dysphasia <input type="checkbox"/> Aphasia <input type="checkbox"/> Drooling or Inability to swallow <input type="checkbox"/> Throat pain _____ <small>(Pain scale 0-10)</small> <input type="checkbox"/> Hoarse/Raspy <input type="checkbox"/> Other _____

Symptoms	Prior to Strangulation	During Strangulation	After Strangulation	At time of Assessment
Respiratory	<input type="checkbox"/> Stridor <input type="checkbox"/> Coughing <input type="checkbox"/> Hyper-ventilation <input type="checkbox"/> Respiratory distress <input type="checkbox"/> Hemoptysis <input type="checkbox"/> Inability to tolerate supine position <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Stridor <input type="checkbox"/> Hoarseness <input type="checkbox"/> Hyper-ventilation <input type="checkbox"/> Respiratory distress <input type="checkbox"/> Hemoptysis <input type="checkbox"/> Inability to tolerate supine position <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Stridor <input type="checkbox"/> Hoarseness <input type="checkbox"/> Hyper-ventilation <input type="checkbox"/> Respiratory distress <input type="checkbox"/> Hemoptysis <input type="checkbox"/> Inability to tolerate supine position <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Stridor <input type="checkbox"/> Hoarseness <input type="checkbox"/> Hyper-ventilation <input type="checkbox"/> Respiratory distress <input type="checkbox"/> Hemoptysis <input type="checkbox"/> Inability to tolerate supine position <input type="checkbox"/> Other _____ _____
Gynecological	<input type="checkbox"/> Vaginal bleeding <input type="checkbox"/> Pregnant <input type="checkbox"/> Contractions <input type="checkbox"/> FHR _____ <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Vaginal bleeding <input type="checkbox"/> Pregnant <input type="checkbox"/> Contractions <input type="checkbox"/> FHR _____ <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Vaginal bleeding <input type="checkbox"/> Pregnant <input type="checkbox"/> Contractions <input type="checkbox"/> FHR _____ <input type="checkbox"/> Other _____ _____	<input type="checkbox"/> Vaginal bleeding <input type="checkbox"/> Pregnant <input type="checkbox"/> Contractions <input type="checkbox"/> FHR _____ <input type="checkbox"/> Other _____ _____ <input type="checkbox"/> EDC _____
Genitourinary	<input type="checkbox"/> Dysuria <input type="checkbox"/> Other _____	<input type="checkbox"/> Dysuria <input type="checkbox"/> Other _____	<input type="checkbox"/> Dysuria <input type="checkbox"/> Other _____	<input type="checkbox"/> Dysuria <input type="checkbox"/> Other _____
Gastrointestinal	<input type="checkbox"/> Nausea <input type="checkbox"/> Vomiting <input type="checkbox"/> Anal/rectal bleeding <input type="checkbox"/> Abdominal pain _____ <small>(scale 0-10)</small>	<input type="checkbox"/> Nausea <input type="checkbox"/> Vomiting <input type="checkbox"/> Anal/rectal bleeding <input type="checkbox"/> Abdominal pain _____ <small>(scale 0-10)</small>	<input type="checkbox"/> Nausea <input type="checkbox"/> Vomiting <input type="checkbox"/> Anal/rectal bleeding <input type="checkbox"/> Abdominal pain _____ <small>(scale 0-10)</small>	<input type="checkbox"/> Nausea <input type="checkbox"/> Vomiting <input type="checkbox"/> Anal/rectal bleeding <input type="checkbox"/> Abdominal pain _____ <small>(scale 0-10)</small>

Please indicate all injuries checked above on the body maps below.



Please indicate all injuries checked above on the body maps below.

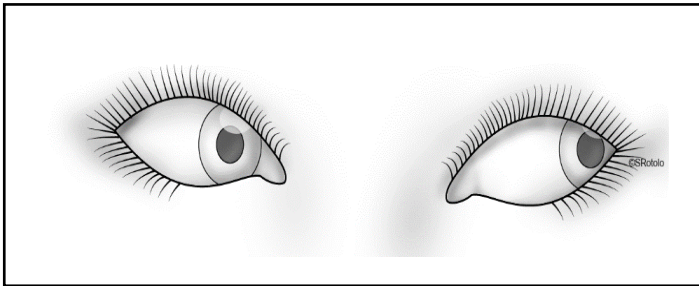
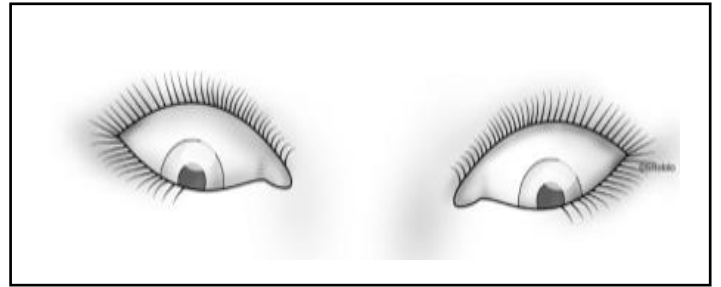
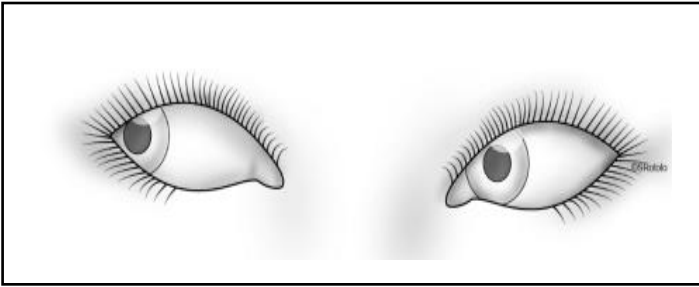
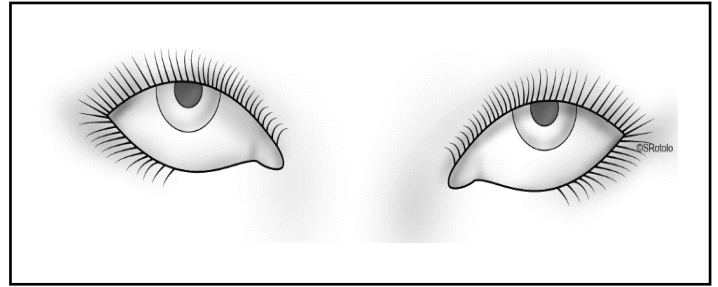
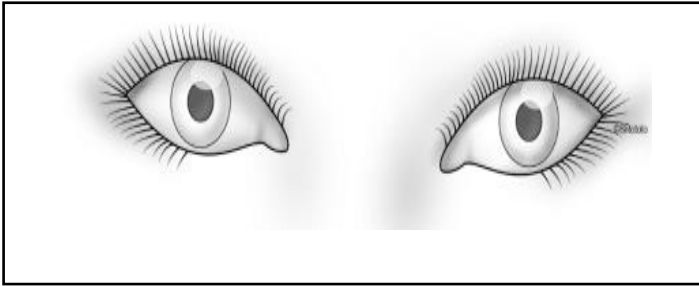


Photo-documentation of findings: Yes No

Notes _____

EXAMPLE STRANGULATION DISCHARGE INSTRUCTIONS

Because you have reported being “choked” or strangled, we are providing you with the following instructions:

Make sure someone stays with you for the next 24–72 hours after this event.

Health complications can appear immediately or may develop a few days after a strangulation event. Please call 911 or report immediately to the nearest emergency department if you notice any of the following:

- Problems breathing, difficulty breathing while lying down, shortness of breath, persistent cough, or coughing up blood
- Loss of consciousness or “passing out”
- Changes in your voice or difficulty speaking
- Difficulty swallowing, a lump in your throat, or muscle spasms in your throat or neck
- Swelling to your throat, neck, or tongue
- Increasing neck pain
- Left- or right-sided weakness, numbness, or tingling
- Drooping eyelid
- Difficulty speaking or understanding speech
- Difficulty walking
- Headache not relieved by pain medication
- Dizziness, lightheadedness or changes in your vision
- Pinpoint red or purple dots on your face or neck, or burst blood vessels in your eye
- Seizures
- Behavioral changes, memory loss, or confusion
- Thoughts of harming yourself or others

If you are pregnant, report the strangulation and any of the following symptoms to your doctor immediately:

- Decreased movement of the baby
- Vaginal spotting or bleeding
- Abdominal pain
- Contractions

You may notice some bruising or mild discomfort. Apply ice to the sore areas for 20 minutes at a time, 4 times per day, for the first 2 days. If you notice new bruising or injury, follow up for additional photo-documentation.

After your initial evaluation, keep a list of any changes in symptoms to share with your healthcare provider and your law enforcement contact.

- It is important to have a follow-up medical screening in 1–2 weeks with your healthcare provider.
- A follow-up forensic examination is needed within 72 hours.

Please follow up with the crisis/advocacy center at _____ to clarify your options and discuss safety planning. If you have questions or concerns regarding your legal case, please contact the police department, officer involved, prosecutor, or victim advocate by calling _____.

Forensic Nurse: _____ Phone: _____

ADDITIONAL RESOURCES

International Association of Forensic Nurses Position Statement [The Evaluation and Treatment of Non-Fatal Strangulation in the Health Care Setting](#) (October 2016)

Strangulation Training Institute [Recommendations for the Medical/Radiographic Evaluation of Acute Adult Non-Fatal Strangulation](#) (September 2016)

REFERENCES

- American Nurses Association (ANA). (2010). *Nursing's social policy statement* (3rd ed.). Silver Spring, MD: Nursesbooks.org.
- Campbell, J. C. (2004). *Danger assessment*. Retrieved May 5, 2016, from <http://www.dangerassessment.org>
- Campbell, J. C., Webster, D. W., & Glass N. (2009). The danger assessment: Validation of a lethality risk assessment instrument for intimate partner femicide. *Journal of Interpersonal Violence, 24*(4), 653–674.
- Christe, A., Thoeny, H., Ross, S., Spendlove, D., Tshering, D., Bollinger, S., Grabherr, S., Thali, M. J., Vock, P., & Oesterhelweg, L. (2009). Life-threatening versus non-life-threatening manual strangulation: Are there appropriate criteria for MR imaging of the neck? *European Radiology, 19*(8), 1882–1889.
- Eldredge, K., Huggins, E., & Pugh, L. C. (2012). Alternate light sources in sexual assault examinations: An evidence-based practice project. *Journal of Forensic Nursing, 8*(1), 39–44.
- Ernoehazy, W., Jr. (2016, January 19). Hanging injuries and strangulation. *Medscape*. Retrieved May 5, 2016, from <http://emedicine.medscape.com/article/826704>
- Faugno, D., Waszak, D., Strack, G. B., Brooks, M. A., & Gwinn, C. G. (2013). Strangulation forensic examination best practice for health care providers. *Advanced Emergency Nursing Journal, 35*(4), 314–327.
- Funk, M., & Schuppel, J. (2003). Strangulation injuries. *WMJ: Official Publication of the State Medical Society of Wisconsin, 102*(3), 41–45.
- Gwinn, C., & Strack, G. B. (2012). *Welcome to train the trainer: Part 1 of training*. San Diego, CA: Training Institute on Strangulation Prevention.
- Hawley, D., McClane, G. E., & Strack, G. B. (2001). A review of 300 attempted strangulation cases. Part III: Injuries in fatal cases. *The Journal of Emergency Medicine, 21*(3), 317–322.
- Iserson, K. V. (1984). Strangulation: A review of ligature, manual, and postural neck compression injuries. *Annals of Emergency Medicine, 13*(3), 179–185.
- Line, W. S., Jr., Stanley, R. B., Jr., & Choi, J. C. (1985). Strangulation. A full spectrum of blunt neck trauma. *Annals of Otolaryngology, Rhinology, and Laryngology, 94*(6), 542–546.
- Paluch, M. (2013). Strangulation in domestic violence cases: Overcoming evidentiary challenges to reduce lethality. *Developments of New York State Family Law*.
- Shields, L. B., Corey, T. B., Weakley-Jones, B., & Stewart, D. (2010). Living victims of strangulation. A 10-year review of cases in a metropolitan community. *The American Journal of Forensic Medicine and Pathology, 31*(4), 320–325.
- Smith, D. J., Mills, T., & Taliaferro, E. H. (2001). Frequency and relationship of reported symptomology in victims of intimate partner violence. The effects of multiple strangulation attacks. *The Journal of Emergency Medicine, 21*(3), 323–329.

- Strack, G. B., & McClane, G. (1999). *How to improve your investigation and prosecution of strangulation cases* (2nd ed.). D. C. James (Ed.). San Diego, CA. Retrieved May 5, 2016, from http://www.ncdsv.org/images/strangulation_article.pdf
- Taliaferro, E., Hawley, D., McClane, G., & Strack, G. (2009). Strangulation in intimate partner violence. In C. Mitchell & D. Anglin (Eds.), *Intimate partner violence: A health-based perspective* (pp. 217–236). New York, NY: Oxford University Press.
- Wilber, L., Higley, M., Hatfield, J., Surprenant, Z., Taliaferro, E., Smith, D. J., & Paolo, A. (2001). Survey results of women who have been strangled while in an abusive relationship. *The Journal of Emergency Medicine*, 21(3), 297–302.

COMPREHENSIVE BIBLIOGRAPHY

- Abrahams, N., Jewkes, R., Martin, L. J., Mathews, S., Vetten, L., & Lombard, C. (2009). Mortality of women from intimate partner violence in South Africa: A national epidemiological study. *Violence and Victims, 24*(4), 546–556.
- Ahmed, S., Ackerman, V., Faught, P., & Langston, C. (2008). Profound hypoxemia and pulmonary hypertension in a 7-month-old infant: Late presentation of alveolar capillary dysplasia. *Pediatric Critical Care Medicine: A Journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies, 9*(6), e43–e46.
- Aihara, M. (2011). Continuous facial pain after hitting the face: Diagnostic pitfall. *The Journal of Trauma, 71*(4), E100.
- American Nurses Association (ANA). (2010). *Nursing's social policy statement* (3rd ed.). Silver Spring, MD: Nursesbooks.org.
- Andrew, T. A., & Fallon, K. K. (2007). Asphyxial games in children and adolescents. *The American Journal of Forensic Medicine and Pathology, 28*(4), 303–307.
- Anscombe, A., & Knight, B. (1996). Case report. Delayed death after pressure on the neck: Possible causal mechanisms and implications for mode of death in manual strangulation discussed. *Forensic Science International, 78*(3), 193–197.
- Asamura, H., Ito, M., & Fukushima, H. (2009). An unusual suicide case of the combination of asphyxia. *The American Journal of Forensic Medicine and Pathology, 30*(2), 215–216.
- Asamura, H., Oki, T., Masao, O., & Fukushima, H. (2010). Unusual body posture after death leading to signs of strangulation. *The American Journal of Forensic Medicine and Pathology, 31*(2), 195–197.
- Atilgan, M. (2010). A case of suicidal ligature strangulation by using a tourniquet method. *The American Journal of Forensic Medicine and Pathology, 31*(1), 85–86.
- Atkins, B. Z., Abbate, S., Fisher, S. R., & Vaslef, S. N. (2004). Current management of laryngotracheal trauma: Case report and literature review. *Journal of Trauma and Acute Care Surgery, 56*(1), 185–190.
- Azmak, D. (2006). Asphyxial deaths: A retrospective study and review of the literature. *The American Journal of Forensic Medicine and Pathology, 27*(2), 134–144.
- Behrendt, N., & Modvig, J. (1995). The lethal paraphiliac syndrome: Accidental autoerotic deaths in Denmark 1933–1990. *The American Journal of Forensic Medicine and Pathology, 16*(3), 232–237.
- Bergin, A., & Berkowitz, R. (2012). Domestic violence in military families: Non-fatal strangulation. *Maryland Medicine: MM: A Publication of MEDCHI, the Maryland State Medical Society, 13*(3), 19, 29.
- Berrios, D. C., & Grady, D. (1991). Domestic violence. Risk factors and outcomes. *The Western Journal of Medicine, 155*(2), 133–135.
- Berzlanovich, A. M., Schopfer, J., & Keil, W. (2012). Deaths due to physical restraint. *Deutsches Arzteblatt International, 109*(3), 27–32.
- Betz, P., Hausmann, R., & Eisenmenger, W. (1998). A contribution to a possible differentiation between SIDS

and asphyxiation. *Forensic Science International*, 91(2), 147–152.

- Blanco Pampin, J., Morte Tamayo, N., Hinojal Fonseca, R., Payne-James, J. J., & Jerreat, P. (2002). Delayed presentation of carotid dissection, cerebral ischemia, and infarction following blunt trauma: Two cases. *Journal of Clinical Forensic Medicine*, 9(3), 136–140.
- Block, C. R., Devitt, C., Fonda, D., Engel, B., Fugate, M., & Martin, C. (2000). The Chicago women's health risk study: Risk of serious injury or death in intimate violence, a collaborative research project. *Illinois Criminal Justice Information Authority*,
- Bockholdt, B., Maxeiner, H., & Hegenbarth, W. (2005). Factors and circumstances influencing the development of hemorrhages in livor mortis. *Forensic Science International*, 149(2), 133–137.
- Bockholdt, B., Hempelmann, M., & Maxeiner, H. (2003). Experimental investigations of fractures of the upper thyroid horns. *Legal Medicine (Tokyo, Japan)*, 5, S252–S255.
- Bockholdt, B., & Maxeiner, H. (2002). Hemorrhages of the tongue in the postmortem diagnostics of strangulation. *Forensic Science International*, 126(3), 214–220.
- Bohnert, M., Faller-Marquardt, M., Lutz, S., Amberg, R., Weisser, H., & Pollak, S. (2001). Transfer of biological traces in cases of hanging and ligature strangulation. *Forensic Science International*, 116(2), 107–115.
- Bouwer, C., & Stein, D. (1999). Panic disorder following torture by suffocation is associated with predominantly respiratory symptoms. *Psychological Medicine*, 29(1), 233–236.
- Breitmeier, D., Mansouri, F., Albrecht, K., Böhm, U., Tröger, H., & Kleemann, W. (2003). Accidental autoerotic deaths between 1978 and 1997: Institute of legal medicine, medical school Hannover. *Forensic Science International*, 137(1), 41–44.
- Brenner, D. J. (2002). Estimating cancer risks from pediatric CT: Going from the qualitative to the quantitative. *Pediatric Radiology*, 32(4), 228–231.
- Bridgell, J., Mallon, A., & DeFatta, R. A., Chowdhury, F., & Nagorsky, M. (2012). Dysphagia after strangulation. *Ear, Nose & Throat Journal*, 91(9), E30–E31.
- Brodsky, J. B., & Lemmens, H. J. (2003). Left double-lumen tubes: Clinical experience with 1,170 patients. *Journal of Cardiothoracic and Vascular Anesthesia*, 17(3), 289–298.
- Browning, S., & Whittet, H. (2000). A new and clinically symptomatic variant of thyroid cartilage anatomy. *Clinical Anatomy*, 13(4), 294–297.
- Busse, W. W., Wanner, A., Adams, K., Reynolds, H. Y., Castro, M., Chowdhury, B., & Sullivan, E. J. (2005). Investigative bronchoprovocation and bronchoscopy in airway diseases. *American Journal of Respiratory and Critical Care Medicine*, 172(7), 807–816.
- Butz, R. O. (1968). Length and cross-section growth patterns in the human trachea. *Pediatrics*, 42(2), 336–341.
- Byard, R. W., Hucker, S. J., & Hazelwood, R. R. (1993). Fatal and near-fatal autoerotic asphyxia episodes in women: Characteristic features based on a review of nine cases. *The American Journal of Forensic Medicine and Pathology*, 14(1), 70.

- Byard, R. W., & Winskog, C. (2012). Autoerotic death: Incidence and age of victims—A population-based study. *Journal of Forensic Sciences*, 57(1), 129–131.
- Campbell, J. C. (2002). Health consequences of intimate partner violence. *The Lancet*, 359(9314), 1331–1336.
- Campbell, J. C., Glass, N., Sharps, P. W., Laughon, K., & Bloom, T. (2007). Intimate partner homicide: Review and implications of research and policy. *Trauma, Violence & Abuse*, 8(3), 246–269.
- Campbell, J. C., Webster, D. W., & Glass N. (2009). The danger assessment: Validation of a lethality risk assessment instrument for intimate partner femicide. *Journal of Interpersonal Violence*, 24(4), 653–674.
- Campobasso, C. P., Colonna, M. F., Carabellese, F., Grattagliano, I., Candelli, C., Morton, R. J., & Catanesi, R. (2009). A serial killer of elderly women: Analysis of a multi-victim homicide investigation. *Forensic Science International*, 185(1), e7–e11.
- Car, M. (2000). Increasing awareness about possible neurological alterations in brain status secondary to intimate violence. *Brain Injury Source*, 4(2), 30–37. Retrieved May 5, 2016, from http://www.doj.state.or.us/victims/pdf/increasing_awareness_about_possible_neurological_alterations.pdf
- Carson, D., & Pounder, D. (1996). Transport strangulation. *Forensic Science International*, 82(2), 191–192.
- Cartwright, N. E. K., Hussin, H. M., Biswas, S., Majid, M. A., Potts, M. J., Kabala, J., & Mayer, E. J. (2007). Subperiosteal orbital hemorrhage following self-strangulation. *Annals of Ophthalmology*, 39(4), 345–347.
- Chan, T. C., Vilke, G. M., & Neuman, T. (1998). Re-examination of custody restraint position and positional asphyxia. *The American Journal of Forensic Medicine and Pathology*, 19(3), 201–205.
- Chang, A. B., Moloney, G. E., Harms, P. J., & Masters, I. B. (2004). Endoscopic intratracheal carbon dioxide measurements during pediatric flexible bronchoscopy. *Paediatric Anaesthesia*, 14(8), 650–655.
- Cheddie, S., Pillay, B., & Goga, R. (2013). Bilateral blunt carotid artery injury: A case report and review of the literature. *South African Journal of Surgery*, 51(2), 77–83.
- Chou, F., & Conway, M. D. (1998). History of ocular anesthesia. *Ophthalmology Clinics*, 11(1), 1–9.
- Christe, A., Oesterhelweg, L., Ross, S., Spendlove, D., Bolliger, S., Vock, P., & Thali, M. J. (2010). Can MRI of the neck compete with clinical findings in assessing danger to life for survivors of manual strangulation? A statistical analysis. *Legal Medicine (Tokyo, Japan)*, 12(5), 228–232.
- Christe, A., Thoeny, H., Ross, S., Spendlove, D., Tshering, D., Bolliger, S., & Oesterhelweg, L. (2009). Life-threatening versus non-life-threatening manual strangulation: Are there appropriate criteria for MR imaging of the neck? *European Radiology*, 19(8), 1882–1889.
- Clarot, F., Vaz, E., Papin, F., & Proust, B. (2005). Fatal and non-fatal bilateral delayed carotid artery dissection after manual strangulation. *Forensic Science International*, 149(2), 143–150.
- Cole, F. (1957). Pediatric formulas for the anesthesiologist. *AMA Journal of Diseases of Children*, 94(6), 672–673.

- Collins, K. A., & Presnell, S. E. (2006). Elder homicide: A 20-year study. *The American Journal of Forensic Medicine and Pathology*, 27(2), 183–187.
- Comer, B. T., & Gal, T. J. (2012). Recognition and management of the spectrum of acute laryngeal trauma. *The Journal of Emergency Medicine*, 43(5), e289–e293.
- Cotton, R. T. (1984). Pediatric laryngotracheal stenosis. *Journal of Pediatric Surgery*, 19(6), 699–704.
- Crosby, S. S., Mohan, S., Di Loreto, C., & Spiegel, J. H. (2010). Head and neck sequelae of torture. *The Laryngoscope*, 120(2), 414–419.
- Davies, S. J. (2010). "C3, 4, 5 keeps the diaphragm alive." Is phrenic nerve palsy part of the pathophysiological mechanism in strangulation and hanging? Should diaphragm paralysis be excluded in survived cases? A review of the literature. *The American Journal of Forensic Medicine and Pathology*, 31(1), 100–102.
- Davison, A. M., & Williams, E. J. (2012). Microscopic evidence of previous trauma to the hyoid bone in a homicide involving pressure to the neck. *Forensic Science, Medicine, and Pathology*, 8(3), 307–311.
- Dayapala, A., Samarasekera, A., & Jayasena, A. (2012). An uncommon delayed sequela after pressure on the neck: An autopsy case report. *The American Journal of Forensic Medicine and Pathology*, 33(1), 80–82.
- Dean, R., & Mulligan, J. (2009). Providing first aid and assisting forensic investigations. *Nursing Standard*, 24(8), 35.
- Delmonte, C., & Capelozzi, V. L. (2001). Morphologic determinants of asphyxia in lungs: A semi-quantitative study in forensic autopsies. *The American Journal of Forensic Medicine and Pathology*, 22(2), 139–149.
- Demierre, N., Wyler, D., Zollinger, U., Bolliger, S., & Plattner, T. (2009). Elevated body core temperature in medico-legal investigation of violent death. *The American Journal of Forensic Medicine and Pathology*, 30(2), 155–158.
- Demirci, S., Dogan, K. H., Erkol, Z., & Deniz, I. (2009). A series of complex suicide. *The American Journal of Forensic Medicine and Pathology*, 30(2), 152–154.
- Demirci, S., Dogan, K. H., Erkol, Z., & Gunaydin, G. (2009). Suicide by ligature strangulation: Three case reports. *The American Journal of Forensic Medicine and Pathology*, 30(4), 369–372.
- Di Nunno, N., Costantinides, F., Conticchio, G., Mangiatordi, S., Vimercati, L., & Di Nunno, C. (2002). Self-strangulation: An uncommon but not unprecedented suicide method. *The American Journal of Forensic Medicine and Pathology*, 23(3), 260–263.
- DiMaio, V. J. (2000). Homicidal asphyxia. *The American Journal of Forensic Medicine and Pathology*, 21(1), 1–4.
- Di Paolo, M., Guidi, B., Bruschini, L., Vessio, G., Domenici, R., & Ambrosino, N. (2009). Unexpected delayed death after manual strangulation: Need for care examination in the emergency room. *Monaldi Archives for Chest Disease*, 71(3), 132–134.
- Douglas, H., & Fitzgerald, R. B. (2014). Strangulation, domestic violence and the legal response. *Sydney Law Review*, 36(2), 231–254.
- Downing, R. (2006). Manual and ligature strangulation. *On the Edge*, 12(2), 1.

- Duband, S., Timoshenko, A. P., Morrison, A. L., Prades, J. M., Debout, M., & Peoc'h, M. (2009). Ear bleeding: A sign not to be underestimated in cases of strangulation. *The American Journal of Forensic Medicine and Pathology*, *30*(2), 175–176.
- Dutton, D. G. (2002). Personality dynamics of intimate abusiveness. *Journal of Psychiatric Practice*, *8*(4), 216–228.
- Eckel, H. E., Sprinzl, G. M., Koebke, J., Pototschnig, C., Sittel, C., & Stennert, E. (1999). Morphology of the human larynx during the first five years of life studied on whole organ serial sections. *Annals of Otolaryngology & Rhinology*, *108*(3), 232–238.
- Egge, M. K., Berkowitz, C. D., Toms, C., & Sathyavagiswaran, L. (2010). The choking game: A cause of unintentional strangulation. *Pediatric Emergency Care*, *26*(3), 206–208.
- Eldredge, K., Huggins, E., & Pugh, L. C. (2012). Alternate light sources in sexual assault examinations: An evidence-based practice project. *Journal of Forensic Nursing*, *8*(1), 39–44.
- Ely, S. F., & Hirsch, C. S. (2000). Asphyxial deaths and petechiae: A review. *Journal of Forensic Sciences*, *45*(6), 1274–1277.
- Ernoehazy, W., Jr. (2016, January 19). Hanging injuries and strangulation. *Medscape*. Retrieved May 5, 2016, from <http://www.Emedicine.com/emerg/topic227>
- Fais, P., Giraudo, C., Viero, A., Miotto, D., Bortolotti, F., Tagliaro, F., Montisci, M., & Cecchetto, G. (2016). Micro computed tomography features of laryngeal fractures in a case of fatal manual strangulation. *Legal Medicine (Tokyo, Japan)*, *18*, 85–89. doi: 10.1016/j.legalmed.2016.01.001.
- Faugno, D., Waszak, D., Strack, G. B., Brooks, M. A., & Gwinn, C. G. (2013). Strangulation forensic examination: Best practice for health care providers. *Advanced Emergency Nursing Journal*, *35*(4), 314–327.
- Fernando, T., & Byard, R. W. (2013). Positional asphyxia without active restraint following an assault. *Journal of Forensic Sciences*, *58*(6), 1633–1635.
- Fieguth, A., Albrecht, U., Bertolini, J., & Kleemann, W. (2003). Intracartilaginous haemorrhagic lesions in strangulation? *International Journal of Legal Medicine*, *117*(1), 10–13.
- Fieguth, A., Franz, D., Lessig, R., & Kleemann, W. J. (2003). Fatal trauma to the neck: Immuno-histo-chemical study of local injuries. *Forensic Science International*, *135*(3), 218–225.
- Fineron, P. W., Turnbull, J. A., & Busuttill, A. (1995). Fracture of the hyoid bone in survivors of attempted manual strangulation. *Journal of Clinical Forensic Medicine*, *2*(4), 195–197.
- Firdose, R., & Elamin, E. M. (2004). Pulmonary edema secondary to dynamic tracheal collapse. *Journal of Bronchology & Interventional Pulmonology*, *11*(2), 118–121.
- Fisher, J. W., & Shelton, A. J. (2006). Survivors of domestic violence: Demographics and disparities in visitors to an interdisciplinary specialty clinic. *Family & Community Health*, *29*(2), 118–130.
- Fitzsimons, M. G., Peralta, R., & Hurford, W. (2005). Cricoid fracture after physical assault. *Journal of Trauma and Acute Care Surgery*, *59*(5), 1237–1238.
- Fortune, S. A., & Hawton, K. (2005). Deliberate self-harm in children and adolescents: A research update. *Current Opinion in Psychiatry*, *18*(4), 401–406.

- Fracasso, T., & Pfeiffer, H. (2008). Simon's bleedings in case of incomplete hanging: A case report. *The American Journal of Forensic Medicine and Pathology*, 29(4), 352–353.
- Funk, M., & Schuppel, J. (2003). Strangulation injuries. *WMJ: Official Publication of the State Medical Society of Wisconsin*, 102(3), 41–45.
- Geddes, J., & Whitwell, H. (2004). Inflicted head injury in infants. *Forensic Science International*, 146(2), 83–88.
- Geevasinga, N., Archer, J. S., & Ng, K. (2014). Choking, asphyxiation and the insular seizure. *Journal of Clinical Neuroscience: Official Journal of the Neurosurgical Society of Australasia*, 21(4), 688–689.
- Giger, R., Friedrich, J. P., Dulguerov, P., & Landis, B. N. (2004). Pneumo-pericardium after manual strangulation. *The American Journal of Medicine*, 116(11), 788–790.
- Gill, J. R., Cavalli, D. P., Ely, S. F., & Stahl-Herz, J. (2013). Homicidal neck compression of females: Autopsy and sexual assault findings. *Academic Forensic Pathology*, 3(4), 454–457.
- Gilkeson, R., Ciancibello, L. M., Hejal, R. B., Montenegro, H. D., & Lange, P. (2001). Tracheobronchomalacia: Dynamic airway evaluation with multidetector CT. *American Journal of Roentgenology*, 176(1), 205–210.
- Glass, N., Laughon, K., Campbell, J., Block, C. R., Hanson, G., Sharps, P. W., & Taliaferro, E. (2008). Non-fatal strangulation is an important risk factor for homicide of women. *The Journal of Emergency Medicine*, 35(3), 329–335.
- Godin, A., Kremer, C., & Sauvageau, A. (2012). Fracture of the cricoid as a potential pointer to homicide: A 6-year retrospective study of neck structures fractures in hanging victims. *The American Journal of Forensic Medicine and Pathology*, 33(1), 4–7.
- Goodman, R. A., Mercy, J. A., & Rosenberg, M. L. (1986). Drug use and interpersonal violence. Barbiturates detected in homicide victims. *American Journal of Epidemiology*, 124(5), 851–855.
- Gosink, P. D., & Jumbelic, M. I. (2000). Autoerotic asphyxiation in a female. *The American Journal of Forensic Medicine and Pathology*, 21(2), 114–118.
- Goudy, S. L., Miller, F. B., & Bumpous, J. M. (2002). Neck crepitation: Evaluation and management of suspected upper aerodigestive tract injury. *The Laryngoscope*, 112(5), 791–795.
- Gowens, P. A., Davenport, R. J., Kerr, J., Sanderson, R. J., & Marsden, A. K. (2003). Survival from accidental strangulation from a scarf resulting in laryngeal rupture and carotid artery stenosis: The "Isadora Duncan syndrome." A case report and review of literature. *Emergency Medicine Journal: EMJ*, 20(4), 391–393.
- Graham, E. A. M., & Rutty, G. N. (2008). Investigation into “normal” background DNA on adult necks: Implications for DNA profiling of manual strangulation victims. *Journal of Forensic Sciences*, 53(5), 1074–1082.
- Grattagliano, I., Troccoli, G., Zelano, C., & Catanesi, R. (2013). Incaprettamento: An unusual homicide by ligature strangulation. *International Journal of Criminology and Sociology*, 2, 10–12.
- Gupta, B., Sinha, C., Kumar, A., Dey, C., Ramchandani, S., Kumar, S., & Misra, M. (2012). Perioperative

- management of laryngotracheobronchial injury: Our experience in a level 1 trauma centre. *European Journal of Trauma and Emergency Surgery*, 38(5), 553–561.
- Gwinn, C., & Strack, G. B. (2012). *Welcome to train the trainer: Part 1 of training*. San Diego, CA: Training Institute on Strangulation Prevention.
- Hackett, A. M., & Kitsko, D. J. (2013). Evaluation and management of pediatric near-hanging injury. *International Journal of Pediatric Otorhinolaryngology*, 77(11), 1899–1901.
- Häkkänen, H. (2005). Homicide by ligature strangulation in Finland: Offence and offender characteristics. *Forensic Science International*, 152(1), 61–64.
- Hanna, S. (2004). A study of 13 cases of near-hanging presenting to an accident and emergency department. *Injury*, 35(3), 253–256.
- Hansen, S. H. (2001). Laryngeal crepitus: An aid to diagnosis in non-fatal strangulation. *Medicine, Science, and the Law*, 41(4), 284–286.
- Härm, T., & Rajs, J. (1981). Types of injuries and interrelated conditions of victims and assailants in attempted and homicidal strangulation. *Forensic Science International*, 18(2), 101–123.
- Hawley, D. A. (2002, June). *Death by strangulation*. Paper presented at the conference: How to Improve Your Investigation and Prosecution of Domestic Violence and Strangulation Cases. Delaware, OH.
- Hawley, D. A. (n.d.). *Forensic medical findings in fatal and non-fatal intimate partner strangulation assaults*. Retrieved on May 6, 2016, from <http://dhss.alaska.gov/ocs/Documents/childrensjustice/strangulation/16.%20Forensic%20Medical%20Findings%20in%20Fatal%20and%20Non-Fatal%20Intimate%20Partner%20Strangulation%20Assaults%20-%20Hawley%20-%202012.pdf>
- Hawley, D. A., McClane, G. E., & Strack, G. B. (2001). A review of 300 attempted strangulation cases. Part III: Injuries in fatal cases. *The Journal of Emergency Medicine*, 21(3), 317–322.
- Hibbert, M., Lannigan, A., Raven, J., Landau, L., & Phelan, P. (1995). Gender differences in lung growth. *Pediatric Pulmonology*, 19(2), 129–134.
- Hinderliter, D., Doughty, A. S., Delaney, K., Pitula, C. R., & Campbell, J. (2003). The effect of intimate partner violence education on nurse practitioners' feelings of competence and ability to screen patients. *Journal of Nursing Education*, 42(10), 449–454.
- Ho, L. Y., & Abdelghani, W. M. (2007). Valsalva retinopathy associated with the choking game. *Seminars in Ophthalmology*, 22(2), 63–65.
- Holbrook, D. S., & Jackson, M. C. (2013). Use of an alternative light source to assess strangulation victims. *Journal of Forensic Nursing*, 9(3), 140–145.
- Hoo, A., Dezateux, C., Hanrahan, J. P., Cole, T. J., Tepper, R. S., & Stocks, J. (2002). Sex-specific prediction equations for V maxFRC in infancy: A multicenter collaborative study. *American Journal of Respiratory and Critical Care Medicine*, 165(8), 1084–1092.
- Hori, A., Hirose, G., Kataoka, S., Tsukada, K., Furui, K., & Tonami, H. (1991). Delayed post anoxic encephalopathy after strangulation serial neuroradiological and neurochemical studies. *Archives of Neurology*, 48(8), 871–874.

- Horn, B. K., & Schunck, B. G. (1981). Determining optical flow. In *1981 Technical Symposium East* (pp. 319–331). Bellingham, WA: International Society for Optics and Photonics.
- Hoyt, C. A. (2006). Integrating forensic science into nursing processes in the ICU. *Critical Care Nursing Quarterly*, *29*(3), 259–270.
- Huxley, A. K., Froede, R. C., & Birkby, W. H. (2001). Strangulation of pregnant woman leads to one first-degree murder indictment for the death of the mother: A medicolegal reconsideration of maternal/fetal homicide. *The American Journal of Forensic Medicine and Pathology*, *22*(1), 51–54.
- Iacovou, E., Nayar, M., Fleming, J., & Lew-Gor, S. (2011). A pain in the neck: A rare case of isolated hyoid bone trauma. *Journal of Surgical Case Reports*, *7*, 3.
- Ibsen, L. M., & Koch, T. (2002). Submersion and asphyxial injury. *Critical Care Medicine*, *30*(11), S402–S408.
- Iserson, K. V. (1984). Strangulation: A review of ligature, manual, and postural neck compression injuries. *Annals of Emergency Medicine*, *13*(3), 179–185.
- Ishida, K., Zhu, B., Quan, L., Fujita, M., & Maeda, H. (2000). Pulmonary surfactant-associated protein A levels in cadaveric sera with reference to the cause of death. *Forensic Science International*, *109*(2), 125–133.
- Janssen, W., Koops, E., Anders, S., Kuhn, S., & Püschel, K. (2005). Forensic aspects of 40 accidental autoerotic deaths in northern Germany. *Forensic Science International*, *147*, S61–S64.
- Jesseph, J. E., & Merendino, K. A. (1957). The dimensional interrelationships of the major components of the human tracheobronchial tree. *Surgery, Gynecology & Obstetrics*, *105*(2), 210–214.
- Joshi, M., Thomas, K. A., & Sorenson, S. B. (2012). "I didn't know I could turn colors": Health problems and health care experiences of women strangled by an intimate partner. *Social Work in Health Care*, *51*(9), 798–814.
- Kanchan, T., Raghavendra Babu, Y. P., Atreya, A., & Acharya, J. (2016). Ligature mark on the face – Forensic implications. *The Medico Legal Journal*, *84*(3), 138–141. doi: 10.1177/0025817216630658.
- Karch, D. L., Logan, J. E., McDaniel, D., Parks, S., Patel, N., & Centers for Disease Control and Prevention (CDC). (2012). Surveillance for violent deaths—National Violent Death Reporting System, 16 states, 2009. *Morbidity and Mortality Weekly Report. Surveillance Summaries*, *61*(6), 1–43.
- Kaufman, H. J., Ciraulo, D. L., & Burns, R. P. (1999). Traumatic fracture of the hyoid bone: Three case presentations of cardiorespiratory compromise secondary to missed diagnosis. *The American Surgeon*, *65*(9), 877–880.
- Kempter, M., Ross, S., Spendlove, D., Flach, P., Preiss, U., Thali, M., & Bolliger, S. (2009). Post-mortem imaging of laryngo-hyoid fractures in strangulation incidents: First results. *Legal Medicine (Tokyo, Japan)*, *11*(6), 267–271.
- Kerby, J. D., May, A. K., Gomez, C. R., & Rue, L. W., III. (2000). Treatment of bilateral blunt carotid injury using percutaneous angioplasty and stenting: Case report and review of the literature. *Journal of Trauma and Acute Care Surgery*, *49*(4), 784–787.
- Khimenko, L. P., Esham, H. R., & Ahmed, W. (2000). Spontaneous internal carotid artery dissection. *Southern Medical Journal*, *93*(10), 1011–1016.

- Khokhlov, V. D. (2001). Calculation of tension exerted on a ligature in incomplete hanging. *Forensic Science International*, 123(2), 172–177.
- Khokhlov, V. D. (1996). The mechanisms of the formation of injuries to the hyoid bone and laryngeal and tracheal cartilages in compression of the neck. [Mekhanizmy obrazovaniia povrezhdenii pod"iazychnoi kosti, khriashchei gortani i trakhei pri sdavlenii shei] *Sudebno-Meditsinskaia Ekspertiza*, 39(3), 13–16.
- Kiani, S. H., & Simes, D. C. (2000). Delayed bilateral internal carotid artery thrombosis following accidental strangulation. *British Journal of Anaesthesia*, 84(4), 521–524.
- King, G. G., Brown, N. J., Diba, C., Thorpe, C. W., Munoz, P., Marks, G. B., & Salome, C. M. (2005). The effects of body weight on airway calibre. *The European Respiratory Journal*, 25(5), 896–901.
- Kleemann, W.J., Wiechern, V., Schuck, M., & Tröger, H. (1995). Intrathoracic and subconjunctival petechiae in sudden infant death syndrome (SIDS). *Forensic Science International*, 72(1), 49–54.
- Kleinsasser, N. H., Priemer, F. G., Schulze, W., & Kleinsasser, O. F. (2000). External trauma to the larynx: Classification, diagnosis, therapy. *European Archives of Oto-Rhino-Laryngology*, 257(8), 439–444.
- Klopfstein, U., Kamber, J., & Zimmermann, H. (2010). "On the way to light the dark": A retrospective inquiry into the registered cases of domestic violence towards women over a six year period with a semi-quantitative analysis of the corresponding forensic documentation. *Swiss Medical Weekly*, 140, w13047.
- Knight, J. A., & Taft, C. T. (2004). Assessing neuropsychological concomitants of trauma and PTSD. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (2nd ed.) (pp. 344–388). New York, NY: Guilford Press.
- Knox Cartwright, N. E., Hussin, H. M., Biswas, S., Majid, M. A., Potts, M. J., Kabala, J., & Mayer, E. J. (2007). Subperiosteal orbital hemorrhage following self-strangulation. *Annals of Ophthalmology (Skokie, Illinois)*, 39(4), 345–347.
- Koh, M. S., Hsu, A. A. L., & Eng, P. (2003). Negative pressure pulmonary edema in the medical intensive care unit. *Intensive Care Medicine*, 29(9), 1601–1604.
- Kohli, A., Verma, S., & Agarwal, B. (1996). Accidental strangulation in a rickshaw. *Forensic Science International*, 78(1), 7–11.
- Kristensen, M. E., Lynnerup, N., & Sejrsen, B. (2006). Comparison of hand marks in manual strangulation: An experimental study. *Journal of Forensic Sciences*, 51(2), 381–385.
- Kwako, L. E., Glass, N., Campbell, J., Melvin, K. C., Barr, T., & Gill, J. M. (2011). Traumatic brain injury in intimate partner violence: A critical review of outcomes and mechanisms. *Trauma, Violence & Abuse*, 12(3), 115–126.
- Lambe, A., Püschel, K., & Anders, S. (2009). Extensive petechiae in attempted self-strangulation. *Journal of Forensic Sciences*, 54(1), 212–215.
- Langevin, R., Ben-Aron, M., Wright, P., Marchese, V., & Handy, L. (1988). The sex killer. *Annals of Sex Research*, 1(2), 263–301.

- Laughon, K., Glass, N., & Worrell, C. (2009). Review and analysis of laws related to strangulation in 50 states. *Evaluation Review*, 33(4), 358–369.
- Laughon, K., Renker, P., Glass, N., & Parker, B. (2008). Revision of the abuse assessment screen to address nonlethal strangulation. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 37(4), 502–507.
- Le Blanc-Louvry, I., Papin, F., Vaz, E., & Proust, B. (2013). Cervical arterial injury after strangulation—Different types of arterial lesions. *Journal of Forensic Sciences*, 58(6), 1640–1643.
- Lees, S., Phimister, D., Broughan, C., Dignon, A., & Brown, M. (2013). Domestic violence: The base of the iceberg. *British Journal of Midwifery*, 21(7), 493–498.
- Li, D., Ishikawa, T., Quan, L., Zhao, D., Michiue, T., Zhu, B., & Maeda, H. (2010). Morphological analysis of astrocytes in the hippocampus in mechanical asphyxiation. *Legal Medicine (Tokyo, Japan)*, 12(2), 63–67.
- Li, D., Zhu, B., Ishikawa, T., Zhao, D., Michiue, T., & Maeda, H. (2006). Immunohistochemical distribution of S-100 protein in the cerebral cortex with regard to the cause of death in forensic autopsy. *Legal Medicine (Tokyo, Japan)*, 8(2), 78–85.
- Li, W., Liu, D., Gallina, K., & Zhou, Y. (2016, February 24). Delayed death caused by haematoma after manual strangulation: A rare case. *The British Journal of Oral and Maxillofacial Surgery*. doi:10.1016/j.bjoms.2016.02.004.
- Lin, P., & Gill, J. R. (2011). Homicides of pregnant women. *The American Journal of Forensic Medicine and Pathology*, 32(2), 161–163.
- Linden, J. A., Lewis-O'Connor, A., & Jackson, M. C. (2007). Forensic examination of adult victims and perpetrators of sexual assault. (2008). In J. S. Olshaker, M. C. Jackson & W. S. Smock (Eds.), *Forensic emergency medicine* (2nd ed.) (pp. 85–125). Philadelphia, PA: Lippincott, Wilkins & Williams.
- Line, W. S., Jr., Stanley, R. B., Jr., & Choi, J. H. (1985). Strangulation: A full spectrum of blunt neck trauma. *The Annals of Otolaryngology, Rhinology, and Laryngology*, 94(6), 542–546.
- Linkletter, M., Gordon, K., & Dooley, J. (2010). The choking game and YouTube: A dangerous combination. *Clinical Pediatrics*, 49(3), 274–279.
- Lombardi, M., Canter, J., Patrick, P. A., & Altman, R. (2015). Is fluorescence under an alternate light source sufficient to accurately diagnose subclinical bruising? *Journal of Forensic Sciences*, 60(2), 444–449.
- Losek, J. D., Tecklenburg, F. W., & White, D. R. (2008). Blunt laryngeal trauma in children: Case report and review of initial airway management. *Pediatric Emergency Care*, 24(6), 370–373.
- Lupascu, C., Lupascu, C., & Beldiman, D. (2003). Mechanical asphyxia by three different mechanisms. *Legal Medicine (Tokyo, Japan)*, 5(2), 110–111.
- Madea, B., Schmidt, P., Kernbach-Wighton, G., & Doberentz, E. (2015). Strangulation--Suicide at the wheel. *Legal Medicine (Tokyo, Japan)*, 17(6), 512–516. doi: 10.1016/j.legalmed.2015.11.001.
- Maguire, S. A., Watts, P. O., Shaw, A. D., Holden, S., Taylor, R. H., Watkins, W. J., & Kemp, A. M. (2013). Retinal haemorrhages and related findings in abusive and non-abusive head trauma: A systematic review. *Eye (London, England)*, 27(1), 28–36.

- Maher, J. L., Mahabir, R. C., & Read, L. A. (2011). Acute macroglossia in the pediatric patient: Worth a look. *Pediatric Emergency Care*, 27(10), 948–949.
- Makwana, N., Evans, H. M., Moore, D., & Berry, K. (2001). Two cases of near asphyxiation in children, using non-releasing plastic garden ties. *Emergency Medicine Journal: EMJ*, 18(3), 229–230.
- Malek, A. M., Higashida, R. T., Halbach, V. V., Dowd, C. F., Phatouros, C. C., Lempert, T. E., & Stoney, R. (2000). Patient presentation, angiographic features, and treatment of strangulation-induced dissection of the internal carotid artery: Report of three cases. *Journal of Neurosurgery*, 92(3), 481–487.
- Malek, A. M., Higashida, R. T., Phatouros, C. C., & Halbach, V. V. (1999). A strangled wife. *The Lancet*, 353(9161), 1324.
- Mansell, A. L., Bryan, A. C., & Levison, H. (1977). Relationship of lung recoil to lung volume and maximum expiratory flow in normal children. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, 42(6), 817–823.
- Mansfield, M., & McGinty, J. S. (2008). Responding to hanging injuries. *Nursing2008*, 38(5), 56cc1, 56cc3.
- Martz, D. (2003). Behavioral treatment for a female engaging in autoerotic asphyxiation. *Clinical Case Studies*, 2(3), 236–242.
- Marx, J., Walls, R., & Hockberger, R. (2014). *Rosen's emergency medicine—Concepts and clinical practice*. Philadelphia, PA: Elsevier.
- Masters, I., Chang, A., Patterson, L., Wainwright, C., Buntain, H., Dean, B., & Francis, P. (2002). Series of laryngomalacia, tracheomalacia, and bronchomalacia disorders and their associations with other conditions in children. *Pediatric Pulmonology*, 34(3), 189–195.
- Masters, I. B., & Cooper, P. (2002). Paediatric flexible bronchoscopy. *Journal of Paediatrics and Child Health*, 38(6), 555–559.
- Masters, I. B., Eastburn, M. M., Francis, P. W., Wootton, R., Zimmerman, P. V., Ware, R. S., & Chang, A. B. (2005). Quantification of the magnification and distortion effects of a pediatric flexible video-bronchoscope. *Respiratory Research*, 6, 16.
- Masters, I. B., Eastburn, M. M., Wootton, R., Ware, R. S., Francis, P. W., Zimmerman, P. V., & Chang, A. B. (2005). A new method for objective identification and measurement of airway lumen in paediatric flexible videobronchoscopy. *Thorax*, 60(8), 652–658.
- Maxeiner, H. (1998). “Hidden” laryngeal injuries in homicidal strangulation: How to detect and interpret these findings. *Journal of Forensic Sciences*, 43(4), 784–791.
- Maxeiner, H., & Bockholdt, B. (2003). Homicidal and suicidal ligature strangulation—A comparison of the post-mortem findings. *Forensic Science International*, 137(1), 60–66.
- Maxeiner, H., & Jekat, R. (2010). Resuscitation and conjunctival petechial hemorrhages. *Journal of Forensic and Legal Medicine*, 17(2), 87–91.
- McClane, G. E., Strack, G. B., & Hawley, D. (2001). A review of 300 attempted strangulation cases. Part II: Clinical evaluation of the surviving victim. *The Journal of Emergency Medicine*, 21(3), 311–315.

- McClave, J. L., Russell, P. J., Lyren, A., O'Riordan, M. A., & Bass, N. E. (2010). The choking game: Physician perspectives. *Pediatrics*, *125*(1), 82–87.
- McLean, M. (2012). Have you missed signs in a victim of strangulation? *Alberta RN/Alberta Association of Registered Nurses*, *68*(3), 18–19.
- McNeil, M. L., Amodi, H., & Brown, T. F. (2010). 30-year delayed presentation of hyoid strangulation fracture. *Journal of Otolaryngology - Head & Neck Surgery = Le Journal d'Oto-Rhino-Laryngologie et de Chirurgie Cervico-Faciale*, *39*(5), E26–E27.
- Mcquown, C., Frey, J., Steer, S., Fletcher, G. E., Kinkopf, B., Fakler, M., & Prulhiere, V. (2016). Prevalence of strangulation in survivors of sexual assault and domestic violence. *The American Journal of Emergency Medicine*, *34*(7), 1281–1285. doi: 10.1016/j.ajem.2016.04.029.
- Melkane, A. E., Matar, N. E., Haddad, A. C., & Zoghbi, A. C. (2010). Suicidal hanging attempt: Poor symptoms for a potentially lethal injury. *The Journal of Trauma*, *69*(4), E36.
- Miao, J., Su, C., Wang, W., Lin, H., Li, H., Lei, G., Li, Z. (2009). Delayed parkinsonism with a selective symmetric basal ganglia lesion after manual strangulation. *Journal of Clinical Neuroscience*, *16*(4), 573–575.
- Milligan, N., & Anderson, M. (1980). Conjugal disharmony: A hitherto unrecognised cause of strokes. *British Medical Journal*, *281*(6237), 421–422.
- Miziara, I. D., & Bertaccini, F. (2011). Three different mechanisms of death: An unusual form of a child murder by asphyxia. *The American Journal of Forensic Medicine and Pathology*, *32*(2), 164–165.
- Molacek, J., Baxa, J., Houdek, K., Ferda, J., & Treska, V. (2010). Bilateral post-traumatic carotid dissection as a result of a strangulation injury. *Annals of Vascular Surgery*, *24*(8), 1133. e9–e11.
- Mortelmans, L. J., Jutten, G. C., & Coene, L. (2003). Acute post-traumatic tension gastro thorax, a tension pneumothorax-like injury. *European Journal of Emergency Medicine*, *10*(4), 344–346.
- Moshirfar, M., Betts, B. S., Hsu, M., Holz, H. A., & McEntire, W. (2011). Bilateral total descemet's membrane detachments after strangulation. *Clinical Ophthalmology (Auckland, New Zealand)*, *5*, 1221–1222.
- Müller, E., Franke, W. G., & Koch, R. (1997). Thyreoglobulin and violent asphyxia. *Forensic Science International*, *90*(3), 165–170.
- Neto, H. S., Neville, I. S., Beer-Furlan, A., Tavares, W. M., Teixeira, M. J., & Paiva, W. S. (2014). Hemodynamic stroke caused by strangulation. *International Journal of Clinical and Experimental Medicine*, *7*(9), 2932.
- Nichols, S. D., McCarthy, M. C., Ekeh, A. P., Woods, R. J., Walusimbi, M. S., & Saxe, J. M. (2009). Outcome of cervical near-hanging injuries. *The Journal of Trauma*, *66*(1), 174–178.
- Nicoucar, K., Popova, N., Becker, M., & Dulguerov, P. (2008). Pseudo aneurysm of the external carotid artery after a blunt facial trauma. *The Journal of Trauma*, *65*(3), E24–E27. doi:10.1097/01.ta.0000209400.14212.a7
- Nikolic, S., Micic, J., Atanasijevic, T., Djokic, V., & Djonic, D. (2003). Analysis of neck injuries in hanging. *The American Journal of Forensic Medicine and Pathology*, *24*(2), 179–182.

- Niort, F., Godio-Raboutet, Y., Torrents, R., Adalian, P., Leonetti, G., Piercecchi-Marti, M. D., & Thollon, L. (2015). Transmission of force to the hyoid bone during manual strangulation: Simulation using finite element numerical models. *Forensic Science International*, 257, 420–424. doi: 10.1016/j.forsciint.2015.10.013.
- O'Connor, P. J., Russell, J. D., & Moriarty, D. C. (1998). Anesthetic implications of laryngeal trauma. *Anesthesia & Analgesia*, 87(6), 1283–1284.
- Oh, J. H., Min, H. S., Park, T. U., Sang, J. L., & Kim, S. E. (2007). Isolated cricoid fracture associated with blunt neck trauma. *Emergency Medicine Journal*, 24(7), 505–506.
- Okazaki, J., Isono, S., Hasegawa, H., Sakai, M., Nagase, Y., & Nishino, T. (2004). Quantitative assessment of tracheal collapsibility in infants with tracheomalacia. *American Journal of Respiratory and Critical Care Medicine*, 170(7), 780–785.
- Oxford, C. M., & Ludmir, J. (2009). Trauma in pregnancy. *Clinical Obstetrics and Gynecology*, 52(4), 611–629.
- Paluch, M. (2013). Strangulation in domestic violence cases: Overcoming evidentiary challenges to reduce lethality. *Developments of New York State Family Law*.
- Pampin, J. B., Tamayo, N. M., Fonseca, R. H., Payne-James, J., & Jerreat, P. (2002). Delayed presentation of carotid dissection, cerebral ischemia, and infarction following blunt trauma: Two cases. *Journal of Clinical Forensic Medicine*, 9(3), 136–140.
- Parks, S. E., Johnson, L. L., McDaniel, D. D., Gladden, M., & Centers for Disease Control and Prevention (CDC). (2014). Surveillance for violent deaths—National Violent Death Reporting System, 16 states, 2010. *Morbidity and Mortality Weekly Report. Surveillance Summaries*, 63(1), 1–33.
- Patil, R. D., Bhambure, N. M., More, N., Athawale, A., & Shah, A. C. (1994). Survival after attempted strangulation. *The Journal of the Association of Physicians of India*, 42(8), 644–645.
- Pego-Reigosa, R., Lopez-Lopez, S., Vazquez-Lopez, M. E., Armesto-Perez, V., Branäs-Fernández, F., Martínez-Vázquez, F., & Cortés-Laino, J. A. (2005). Sea wave-induced internal carotid artery dissection. *Neurology*, 64(11), 1980.
- Pereira, F. L., Filho, L. I., Pavan, A. J., Farah, G. J., Gonçalves, E. A., Veltrini, V. C., & Camarini, E. T. (2007). Styloid-stylohyoid syndrome: Literature review and case report. *Journal of Oral and Maxillofacial Surgery: Official Journal of the American Association of Oral and Maxillofacial Surgeons*, 65(7), 1346–1353.
- Plattner, T., Bolliger, S., & Zollinger, U. (2005). Forensic assessment of survived strangulation. *Forensic Science International*, 153(2), 202–207.
- Pollanen, M. S., & McAuliffe, D. N. (1998). Intra-cartilaginous laryngeal haemorrhages and strangulation. *Forensic Science International*, 93(1), 13–20.
- Pollanen, M. S. (2000). A triad of laryngeal hemorrhages in strangulation: A report of eight cases. *Journal of Forensic Sciences*, 45(3), 614–618.
- Pollanen, M. S., Bulger, B., & Chiasson, D. A. (1995). The location of hyoid fractures in strangulation revealed by xeroradiography. *Journal of Forensic Sciences*, 40(2), 303–305.
- Pollanen, M. S., & Chiasson, D. A. (1996). Fracture of the hyoid bone in strangulation: Comparison of fractured

- and un-fractured hyoids from victims of strangulation. *Journal of Forensic Sciences*, 41(1), 110–113.
- Pollanen, M. S., & Ubelaker, D. H. (1997). Forensic significance of the polymorphism of hyoid bone shape. *Journal of Forensic Sciences*, 42(5), 890–892.
- Poquet, E., Dibiane, A., Jourdain, C., el-Amine, M., Jacob, A., & Escure, M. N. (1995). Blunt injury of the larynx by hanging. X-ray computed tomographic aspect. [Traumatisme ferme du larynx par pendaison. Aspect scanographique a propos d'un cas] *Journal De Radiologie*, 76(2–3), 107–109.
- Porr, J., Laframboise, M., & Kazemi, M. (2012). Traumatic hyoid bone fracture—a case report and review of the literature. *The Journal of the Canadian Chiropractic Association*, 56(4), 269.
- Porzionato, A., Macchi, V., Rodriguez, D., & De Caro, R. (2007). Airway obstruction by laryngeal masses in sudden and homicidal deaths. *Forensic Science International*, 171(1), e15–e20.
- Pritchard, A. J., Reckdenwald, A., & Nordham, C. (2015, December 30). Nonfatal strangulation as part of domestic violence: A review of research. *Trauma, Violence & Abuse*. doi: 10.1177/1524838015622439.
- Purvin, V. (1997). Unilateral Headache and Ptosis in a 30-Year-Old Woman. *Survey of Ophthalmology*, 42(2), 163–168.
- Putaala, J., Kurkinen, M., Tarvos, V., Salonen, O., Kaste, M., & Tatlisumak, T. (2009). Silent brain infarcts and leukoaraiosis in young adults with first-ever ischemic stroke. *Neurology*, 72(21), 1823–1829.
- Putaala, J., Metso, A. J., Metso, T. M., Konkola, N., Kraemer, Y., Haapaniemi, E., & Tatlisumak, T. (2009). Analysis of 1008 consecutive patients aged 15 to 49 with first-ever ischemic stroke: The Helsinki young stroke registry. *Stroke; a Journal of Cerebral Circulation*, 40(4), 1195–1203.
- Ramirez, J. I., Petrone, P., Kuncir, E. J., & Asensio, J. A. (2004). Thyroid storm induced by strangulation. *Southern Medical Journal*, 97(6), 608–610.
- Rasmussen, E. R., Larsen, P. L., Andersen, K., Larsen, M., Qvortrup, K., & Hougen, H. P. (2013). Petechial hemorrhages of the tympanic membrane in attempted suicide by hanging: A case report. *Journal of Forensic and Legal Medicine*, 20(2), 119–121.
- Re, L., Birkhoff, J. M., Sozzi, M., Andrello, L., & Osculati, A. M. (2015). The choking game: A deadly game. Analysis of two cases of “self-strangulation” in young boys and review of the literature. *Journal of Forensic and Legal Medicine*, 30, 29–33.
- Reid, L. A., Dunn, M., Mckeown, D. W., & Oglesby, A. J. (2011). Surgical airway in emergency department intubation. *European Journal of Emergency Medicine: Official Journal of the European Society for Emergency Medicine*, 18(3), 168–171.
- Richards, C. E., & Wallis, D. N. (2005). Asphyxiation: A review. *Trauma*, 7(1), 37–45.
- Robison, D., & Hunt, S. (2005). Sudden In-custody death syndrome. *Advanced Emergency Nursing Journal*, 27(1), 36–43.
- Rozycki, H. J., Van Houten, M. L., & Elliott, G. R. (1996). Quantitative assessment of intrathoracic airway collapse in infants and children with tracheobronchomalacia. *Pediatric Pulmonology*, 21(4), 241–245.

- Saha, A., Bansal, A., & Kaur, S. (2010). Post obstructive pulmonary edema following accidental strangulation. *Indian Journal of Pediatrics*, 77(5), 584–584.
- Sauvageau, A., & Boghossian, E. (2010). Classification of asphyxia: The need for standardization. *Journal of Forensic Sciences*, 55(5), 1259–1267.
- Sauvageau, A., & Racette, S. (2006). Autoerotic deaths in the literature from 1954 to 2004: A review. *Journal of Forensic Sciences*, 51(1), 140–146.
- Sauvageau, A., Ambrosi, C., & Kelly, S. (2012). Autoerotic nonlethal filmed hangings: A case series and comments on the estimation of the time to irreversibility in hanging. *The American Journal of Forensic Medicine and Pathology*, 33(2), 159–162.
- Sauvageau, A., & Yesovitch, R. (2006). Choking on toilet paper: An unusual case of suicide and a review of the literature on suicide by smothering, strangulation, and choking. *The American Journal of Forensic Medicine and Pathology*, 27(2), 173–174.
- Schmidt, P., & Madea, B. (1995). Homicide in the bathtub. *Forensic Science International*, 72(2), 135–146.
- Schroeder, U., Motzko, M., Wittekindt, C., & Eckel, H. (2003). Hoarseness after laryngeal blunt trauma: A differential diagnosis between an injury to the external branch of the superior laryngeal nerve and an arytenoid subluxation. A case report and literature review. *European Archives of Oto-Rhino-Laryngology*, 260(6), 304–307.
- Sep, D., & Thies, K. (2007). Strangulation injuries in children. *Resuscitation*, 74(2), 386–391.
- Sethi, P. K., Sethi, N. K., Torgovnick, J., & Arsur, E. (2012). Delayed left anterior and middle cerebral artery hemorrhagic infarctions after attempted strangulation: A case report. *The American Journal of Forensic Medicine and Pathology*, 33(1), 105–106.
- Sharma, B., Harish, D., Sharma, A., Sharma, S., & Singh, H. (2008). Injuries to neck structures in deaths due to constriction of neck, with a special reference to hanging. *Journal of Forensic and Legal Medicine*, 15(5), 298–305.
- Sheridan, D. J., & Nash, K. R. (2007). Acute injury patterns of intimate partner violence victims. *Trauma, Violence & Abuse*, 8(3), 281–289.
- Shetty, U., Deepak, M., Hussain, S. A., Usmani, H., Osama, M., Pereira, K. G., & Menezes, R. G. (2016). Survival following accidental scarf strangulation. *The Medico-Legal Journal*, 84(3), 150–152. doi: 10.1177/0025817216643443.
- Shields, L. B., Hunsaker, D. M., & Hunsaker, J. C., III. (2005). Autoerotic asphyxia: Part I. *The American Journal of Forensic Medicine and Pathology*, 26(1), 45–52.
- Shields, L. B., Hunsaker, D. M., Hunsaker, J. C., III., Wetli, C. V., Hutchins, K. D., & Holmes, R. M. (2005). Atypical autoerotic death: Part II. *The American Journal of Forensic Medicine and Pathology*, 26(1), 53–62.
- Shields, L. B., Corey, T. S., Weakley-Jones, B., & Stewart, D. (2010). Living victims of strangulation: A 10-year review of cases in a metropolitan community. *The American Journal of Forensic Medicine and Pathology*, 31(4), 320–325.
- Shumaker, D., Kottamasu, S., Preston, G., & Treloar, D. (1988). Acute pulmonary edema after near strangulation. *Pediatric Radiology*, 19(1), 59–60.

- Singh, B., Kumar, S., & Kumar, V. (2003). Blunt laryngotracheal injury following accidental strangulation. *Injury, 34*(12), 937–939.
- Smith, D. J., Jr., Mills, T., & Taliaferro, E. H. (2001). Frequency and relationship of reported symptomology in victims of intimate partner violence: The effect of multiple strangulation attacks. *The Journal of Emergency Medicine, 21*(3), 323–329.
- Snider, C., Webster, D., O'Sullivan, C. S., & Campbell, J. (2009). Intimate partner violence: Development of a brief risk assessment for the emergency department. *Academic Emergency Medicine, 16*(11), 1208–1216.
- Sorenson, S. B., Joshi, M., & Sivitz, E. (2014). A systematic review of the epidemiology of nonfatal strangulation. A human rights and health concern. *American Journal of Public Health, 104*(11), e54–e61.
- Stanley, R. B., & Hanson, D. G. (1983). Manual strangulation injuries of the larynx. *Archives of Otolaryngology, 109*(5), 344–347.
- Stapczynski, J. S. (2010). Strangulation injuries. *Emergency Medicine Reports, 31*(17), 193–203.
- Stark, P., & Stark, H. E. (2010). Pulmonary manifestations of trauma. *Contemporary Diagnostic Radiology, 33*(16), 1–6.
- Stewart, D. E., Gagnon, A. J., Merry, L. A., & Dennis, C. (2012). Risk factors and health profiles of recent migrant women who experienced violence associated with pregnancy. *Journal of Women's Health, 21*(10), 1100–1106.
- Strack, G. B., & Gwinn, C. (2011). On the edge of homicide: Strangulation as a prelude. *Criminal Justice, 26*, 32.
- Strack, G. B., & McClane, G. (1999). *How to improve your investigation and prosecution of strangulation cases* (2nd ed.). D. C. James. (Ed.). San Diego, CA. Retrieved May 5, 2016, from http://www.ncdsv.org/images/strangulation_article.pdf
- Strack, G. B., McClane, G. E., & Hawley, D. (2001). A review of 300 attempted strangulation cases. Part I: Criminal legal issues. *The Journal of Emergency Medicine, 21*(3), 303–309.
- Sugar, N., Fine, D., & Eckert, L. (2004). Physical injury after sexual assault: Findings of a large case series. *American Journal of Obstetrics and Gynecology, 190*(1), 71–76.
- Tabata, N. (1998). Morphological changes in traumatized skeletal muscle: The appearance of opaque fibers of cervical muscles as evidence of compression to the neck. *Forensic Science International, 96*(2), 197–214.
- Taliaferro, E., Hawley, D., McClane, G., & Strack, G. (2009). Strangulation in intimate partner violence. In C. Mitchell & D. Anglin (Eds.), *Intimate partner violence: A health-based perspective* (pp. 217-236). New York, NY: Oxford University Press.
- Taliaferro, E., Mills, T., & Walker, S. (2001). Walking and talking victims of strangulation. Is there a new epidemic? A commentary. *The Journal of Emergency Medicine, 21*(3), 293–295.
- Taniguchi, T., Saito, S., Mizukoshi, Y., Goto, Y., & Inaba, H. (2002). Multiple organ failure after strangulation

- injury. *Intensive Care Medicine*, 28(8), 1193.
- Taslimi, R., Daneshbod, Y., & Mirfazaelian, H. (2013). Facial petechia as a sign of strangulation in trauma victims. *Emergency Medicine Journal: EMJ*, 30(4), 311.
- Taussig, L. M., Cota, K., & Kaltenborn, W. (1981). Different mechanical properties of the lung in boys and girls 1–4. *American Review of Respiratory Disease*, 123(6), 640–643.
- Thomas, J. A., Ware, T. M., & Counselman, F. L. (2002). Internal carotid artery pseudo aneurysm masquerading as a peritonsillar abscess. *The Journal of Emergency Medicine*, 22(3), 257–261.
- Thomas, K. A., Joshi, M., & Sorenson, S. B. (2014). “Do you know what it feels like to drown?” Strangulation as coercive control in intimate relationships. *Psychology of Women Quarterly*, 38, 124–137.
- Toblin, R. L., Paulozzi, L. J., Gilchrist, J., & Russell, P. J. (2008). Unintentional strangulation deaths from the “choking game” among youths aged 6–19 years—United States, 1995–2007. *Journal of Safety Research*, 39(4), 445–448.
- Tough, S. C., Butt, J. C., & Sanders, G. L. (1994). Autoerotic asphyxial deaths: Analysis of nineteen fatalities in Alberta, 1978 to 1989. *The Canadian Journal of Psychiatry/La Revue Canadienne De Psychiatrie*, 39(3), 157–160.
- Tournel, G., Hubert, N., Rougé, C., Hédouin, V., & Gosset, D. (2001). Complete autoerotic asphyxiation: Suicide or accident? *The American Journal of Forensic Medicine and Pathology*, 22(2), 180–183.
- Trevillion, K., Agnew-Davies, R., & Howard, L. M. (2013). Healthcare professionals’ response to domestic violence. *Primary Health Care*, 23(9), 34–42.
- Turillazzi, E., D’Errico, S., Neri, M., & Fineschi, V. (2006). An unusual mechanical asphyxia in a homicide-suicide case by smothering and strangulation. *The American Journal of Forensic Medicine and Pathology*, 27(2), 166–168.
- Turkel, A. (2007). “And then he choked me.” *Understanding and Investigation Strangulation. Update: American Prosecutor’s Research Institute*, 20, 1–2.
- Ullrich, N. J., & Goodkin, H. P. (2015, June 30). The “choking game” and other strangulation activities in children and adolescents. *UptoDate*. Retrieved May 11, 2016, from <http://www.uptodate.com/contents/inherited-susceptibility-to-breast-and-ovarian-cancer-next-generation-sequencing-panels/abstract/103>
- Vanezis, P., Claydon, S., M. Chapman, R. C., & al-Alousi, L. M. (1993). Internal carotid artery thrombosis following manual strangulation. *Medicine, Science, and the Law*, 33(1), 69–71.
- Verma, S. (2007). Pediatric and adolescent strangulation deaths. *Journal of Forensic and Legal Medicine*, 14(2), 61–64.
- Vilke, G. M., & Chan, T. C. (2011). Evaluation and management for carotid dissection in patients presenting after choking or strangulation. *The Journal of Emergency Medicine*, 40(3), 355–358.
- Wahlen, B. M., & Thierbach, A. R. (2002). Near-hanging. *European Journal of Emergency Medicine*, 9(4), 348–350.

- Wailoo, M. P., & Emery, J. L. (1982). Normal growth and development of the trachea. *Thorax*, 37(8), 584–587.
- Walsh, F. M., Stahl, C. J., III, Unger, H. T., Lilienstern, O. C., & Stephens, R. G., III. (1977). Autoerotic asphyxial deaths: A medicolegal analysis of forty-three cases. *Legal Medicine Annual*, 155–182.
- Wang, Q., Ishikawa, T., Michiue, T., Zhu, B., Guan, D., & Maeda, H. (2012). Intrapulmonary aquaporin-5 expression as a possible biomarker for discriminating smothering and choking from sudden cardiac death: A pilot study. *Forensic Science International*, 220(1), 154–157.
- Wang, W., Kong, L., Dong, R., & Zhao, H. (2007). Fracture of the hyoid bone associated with atlantoaxial subluxation: A case report and review of the literature. *The American Journal of Forensic Medicine and Pathology*, 28(4), 345–347.
- Wehner, F., Martin, D. D., & Wehner, H. (2004). Asphyxia due to pacifiers—Case report and review of the literature. *Forensic Science International*, 141(2), 73–75.
- Wheeler, A., New York State Division of Criminal Justice Services, Office of Justice Research & Performance. (2012). *Arrests and arraignments involving strangulation offenses Nov. 11, 2010–June 30, 2012*. Albany, NY: NY State Division of Criminal Justice Services. Retrieved May 6, 2016, from <http://www.criminaljustice.ny.gov/pio/research-update-strangulation-apr2012.pdf>
- White, J. K., & Carver, J. (2012). Self-induced vomiting as a probable mechanism of an isolated hyoid bone fracture. *The American Journal of Forensic Medicine and Pathology*, 33(2), 170–172.
- Wiegand, P., & Kleiber, M. (1997). DNA typing of epithelial cells after strangulation. *International Journal of Legal Medicine*, 110(4), 181–183.
- Wilbur, L., Higley, M., Hatfield, J., Surprenant, Z., Taliaferro, E., Smith, D. J., & Paolo, A. (2001). Survey results of women who have been strangled while in an abusive relationship. *The Journal of Emergency Medicine*, 21(3), 297–302.
- Wilson, J. S., West, J. F., Messing, J. T., Brown, S., Patchell, B., & Campbell, J. C. (2011). Factors related to posttraumatic stress symptoms in women experiencing police-involved intimate partner violence. *Advances in Nursing Science*, 34(3), E14–E28.
- Wu, M., Tsai, Y., Lin, M., Hsu, I., & Fong, Y. (2004). Complete laryngotracheal disruption caused by blunt injury. *The Annals of Thoracic Surgery*, 77(4), 1211–1215.
- Yacobi, Y., Tsivian, A., & Sidi, A. A. (2007). Emergent and surgical interventions for injuries associated with eroticism: A review. *The Journal of Trauma*, 62(6), 1522–1530.
- Yen, K., Thali, M. J., Aghayev, E., Jackowski, C., Schweitzer, W., Boesch, C., & Sonnenschein, M. (2005). Strangulation signs: Initial correlation of MRI, MSCT, and forensic neck findings. *Journal of Magnetic Resonance Imaging*, 22(4), 501–510.
- Yen, K., Vock, P., Christe, A., Scheurer, E., Plattner, T., Schön, C., & Thali, M. J. (2007). Clinical forensic radiology in strangulation victims: Forensic expertise based on magnetic resonance imaging (MRI) findings. *International Journal of Legal Medicine*, 121(2), 115–123.

The Evaluation and Treatment of Non-Fatal Strangulation in the Health Care Setting

International Association of Forensic Nurses

Problem Statement

Strangulation as a result of external pressure or blunt force trauma to the neck is a type of asphyxia characterized by closure of the blood vessels or air passages (Anscombe, A.M., Knight, B.H. 1996). Studies indicate that 23-68% of female domestic violence victims will experience at least one strangulation related incident at the hands of their abusive male partner during their lifetime (Wilbur, 2001). In addition, women who experience intimate partner sexual violence often experience strangulation as a co-occurring issue (Shields, 2010). Strangulation is one indicator of violence escalation that poses an increased risk of serious morbidity and mortality in cases of intimate partner violence (Turkel, 2007; Strack, 2011).

While patients may present with potentially lethal conditions such as fractured trachea, carotid aneurysm or cerebral artery infarct (Knight, 1996), similar to patients who've experienced blunt force trauma to the neck from accidental means (McKevitt, 2002), frequently there are no external evidence of injury from strangulation (Clarot, 2005; Taliaferro, 2009), even in fatal cases. Patients may experience anoxic brain, or they may have serious internal injuries resulting in permanent impairment or death days or weeks after the strangulation event (Clarot, F., Vaz, E., Papin, F., & Proust, B., 2005). Anyone presenting with a potential strangulation injury should have a thorough medical evaluation (Faugno et al. 2013).

Until the early 2000's, strangulation research focused on homicide victims and autopsy findings. Nonfatal strangulation, particularly in relation to domestic and sexual violence, is a relatively new area of inquiry (McClane, Strack, & Hawley, 2001). Even with emerging research in this area, not all patient populations have been addressed. Elderly patients, and populations of color, including Native American/Alaska Native patients, are significantly under-represented in the existing literature. Additionally, there is little empirical data on nonfatal strangulation in the pregnant patient population and corresponding fetal impact(s). Likewise, there has been no direct correlation proven between nonfatal strangulation and miscarriage, although some literature has noted that some women have experienced a miscarriage or fetal demise after a nonfatal strangulation event (Douglas & Fitzgerald, 2014; Smith, Mills, & Taliaferro, 2001; Funk & Schuppel, 2003).

Similarly, research with children is limited, even though children can be presumed at greater risk of life-threatening injuries if strangled due to the variation in anatomy and physiology compared to adults. A child's airway is smaller and therefore easier to occlude than an adult. Relatively minor changes such as neck flexion or swelling can completely occlude a child's airway (Adewale, L., 2009). The muscle and ligament development in the neck is significantly less than that of adults with a larger head proportion (Jain et al., 2009). The cervical spine of a child is more prone to injury and flexes at a higher level than the

adult and there is an increased risk of spinal cord injury (Adewale, L., 2009). Cognitive and developmental differences may make it difficult for a child to effectively describe the strangulation event. (Baldwin-Johnson, C., Wiese, T., 2015).

Because the clinical presentation can vary to include a patient without visible injury, and because the patient may not mention the strangulation component of their assault, asking about strangulation directly is an important aspect of clinical care (Pierce-Weeks, 2015). Many first responders, from EMS personnel to Emergency Department providers, lack specialized training to identify the signs and symptoms of strangulation. This lack of education has led to the minimization of strangulation as a serious, life-threatening risk to the short and long term health of the patient who has experienced it.

Position

We believe that globally, systems should be in place to support universal screening with detailed medical-forensic assessments performed on patients of all ages who have experienced strangulation. First responders, including EMS and Emergency Department providers, must be trained in screening, assessment, documentation, intervention and follow-up services. Additionally, we recognize the importance of a collaborative, trauma-informed approach to patients who have experienced strangulation that includes skilled healthcare providers, sexual assault and intimate partner violence advocates, child and adult protection, law enforcement and prosecution. Evidence-informed training, funding, and support should be provided to ensure that universal access to comprehensive medical-forensic evaluation and treatment is available for every patient who has experienced strangulation. Recognizing these issues, we recommend that:

- 1. Where possible, forensic nurses are utilized in collaboration with other providers to address the health care needs of the strangled patient population.*
- 2. Health care providers delivering emergency services receive training specific to the screening, medical and radiologic assessment, documentation, medical intervention, and follow-up care.*
- 3. Health care providers caring for victims of known or suspected sexual assault, intimate partner violence, elder abuse as well as child maltreatment should routinely screen for strangulation and understand the laws for reporting.*
- 4. Health care agencies delivering emergency services should adopt evidence-based, multi-disciplinary policies and procedures that are current and well understood by staff in order to facilitate the screening, assessment and intervention process;*
- 5. Health care agencies should ensure consistent access to trained providers within the agency, and should develop and maintain collaborative relationships with outside agencies (i.e. Law enforcement, advocacy and prosecution).*
- 6. Health care providers that assess and treat strangulation patients include a detailed, strangulation-specific assessment as a standard component of the medical-forensic examination including protocols for medical/radiological evaluation danger assessment and safety planning (to be completed by medical or advocacy professionals).*

7. *Patients receiving health care associated with a strangulation event have access to advocacy and supportive services.*

Rationale

There are early descriptive publications highlighting the lethality in case studies associated with strangulation in adults and children (Jain et al.2001, Glass, N., et al., 2008). The documentation of the interrelationship between strangulation, intimate partner violence and sexual assault demonstrates 47-68% of women who reported domestic violence also reported one or more strangulation events (Stapczynski, 2010; Smith, Mills, & Taliaferro, 2001). Nonfatal strangulation is a strong predictor of future violence and a significant risk factor for homicide or attempted homicide (Glass, Laughon, Campbell, Wolf, Block, Hanson, Sharps, & Taliaferro, 2008). Implementation of evidence based best practices is necessary for all protocols used by medical, forensic and radiological professionals during evaluation of the patient identified as a victim of strangulation, particularly in the follow up care (Stapczynski, 2010; Smith, Mills, & Taliaferro, 2001). The published literature is consistently absent of evidence-based protocols or approaches to the identification and medical management of strangulation in organizational documents and juried journals (Pritchard A., Reckdenwald A., Nordham,C., 2015), making it impossible for standardized care. Morbidity and mortality associated with strangulation demands a standardized multi-disciplinary approach to the medical-forensic evaluation of a patient identified as a victim of strangulation.

References

Adewele, L. (2009), Anatomy and assessment of the pediatric airway. *Pediatric Anesthesia*, 19(s1), 1–8.

Harless, J., Ramaiah, R., & Bhananker, S. M. (2014). Pediatric airway management. *International Journal of Critical Illness and Injury Science*, 4(1) 65–70.

Anscombe, A.M., & Knight, B.H. (1996). Case Report. Delayed death after pressure on the neck: possible causal mechanisms and implications for mode of death in manual strangulation discussed. *Forensic Science International*, 78(3), 193-197.

Baldwin-Johnson, C. & Wiese, T. (2015).“Strangulation in Children.” *Responding to Strangulation in Alaska: Guidelines for Law Enforcement, Healthcare Providers, Advocates and Prosecutors*. San Diego: Training Institute on Strangulation Prevention, 48-57.

Clarot, F., Vaz, E., Papin, F., & Proust, B., (2005).Fatal and non-fatal bilateral delayed carotid artery dissection after manual strangulation. *Forensic Science International*, 149, 143-150.

Douglas, H. & Fitzgerald, R., Strangulation, (2014). Strangulation, domestic violence and the legal response. *The Sydney Law Review*., 36, 231.

Faugno, D., Wasnak, D., Strack, G. B., Brooks, M.A., Gwinn, C. (2013). Strangulation forensic examination - best practice for health care providers. *Advanced emergency nursing journal*, 35(4):314-327

Funk, M. & Schuppel, J. (2003). Strangulation injuries. *Wisconsin Medical Journal*, 102(3): 41-45

Glass, N., Laughon, K., Campbell, J., Block, C. R., Hanson, G., Sharps, P.W., & Taliaferro, E. (2008). Non-fatal strangulation is an important risk factor for homicide of women. *The Journal of Emergency Medicine*, 35(3), 329–335.
<http://doi.org/10.1016/j.jemermed.2007.02.065>

Jain, V., Ray, M., Singhi, S.,(2001). Strangulation injury, a fatal form of child abuse. *The Indian Journal of Pediatrics*, 68 (6), 571-572.

McClane, G. E., Strack, G. B., & Hawley, D. (2001). A review of 300 attempted strangulation cases, part II: clinical evaluation of the surviving victim. *Journal of Emergency Medicine*, 21(3), 311-315.

McKevitt, E.C., Kirkpatrick, A.W., Vertesi, L., Granger, R., Simons, R.K., (2002). Blunt vascular neck injuries: diagnosis and outcomes of extracranial vessel injury. *Journal of Trauma and Acute Care Surgery*, 53(3), 472-476.

Pierce-Weeks, J., & Lechner, M. (2015). Strangulation in the living intimate partner violence patient. In *Violence against women: contemporary examination of intimate partner violence* (pp. 277-291).

Pritchard, A. J., Reckdenwald, A., Nordham, C., (2015). Nonfatal Strangulation as Part of Domestic Violence: A Review of Research. *Trauma, Violence & Abuse*, 1524838015622439.

Sabo, R.A., Hanigan, W.C., Flessner, K., Rose, J., Aaland, M., (1996). Strangulation injuries in children. Part 1. A clinical analysis. *Journal of Trauma and Acute Care Surgery*, 40(1), 68-72.

Sabo, R.A., Hanigan, W.C., Flessner, K., Rose, J., Aaland, M. (1996). Strangulation injuries in children. Part 2. Cerebrovascular hemodynamics. *Journal of Trauma and Acute Care Surgery*, 40(1), 73-77.

Shields, L.B., Corey, T.S., Weakley-Jones, B., & Stewart, D. (2010). Living victims of strangulation: a 10 year review of cases in a metropolitan community. *The American Journal of Forensic Medicine and Pathology*, 31(4), 320-325.

Smith, D. J., Mills, T., & Taliaferro, E. H. (2001). Violence: recognition, management, and prevention frequency and relationship of reported symptomology in victims of intimate partner violence: the effect of multiple strangulation attacks. *The Journal of Emergency Medicine*, 21(3), 323–329

Stapczynski, J. S. (2010). Strangulation injuries. *Emergency Medicine Reports*, 31(17), 193-203

Strack, G., & Gwinn, C. (2011). On the edge of homicide: Strangulation as a prelude. *Criminal Justice*, 26(3), 32-36.

Taliaferro, E., Hawley, D., McClane, G., & Strack, G. (2009). Strangulation in intimate partner violence. *Intimate partner violence: A health-based perspective*, 217-235.

Turkel, A. (2007). "And Then He Choked Me". *Understanding and investigating strangulation. Update: American Prosecutors Research Institute*, 20, 1-2.

Wilbur, L., Higley, M., Hatfield, J., Suprenant, Z., Taliaferro, E., Smith, D.J., & Paolo, A., (2001), Survey results of women who have been strangled while in an abusive relationship. *The Journal of Emergency Medicine*, 21(3), 297-302.

Developed: 2016

©International Association of Forensic Nurses, 2016

THE HEALTH IMPACT OF STRANGULATION: WHAT ALL RESPONDERS NEED TO KNOW

KIM DAY, RN, SANE-A, SANE-P
JENNIFER PIERCE WEEKS, RN, SANE-A, SANE-P

2016 International Conference of Forensic Nursing Science and Practice

ACKNOWLEDGEMENTS

This presentation was supported by Grant No. 2011-TA-AX-K021 awarded by the Office on Violence Against Women, U.S. Department of Justice. The opinions, findings, conclusions, and recommendations expressed in this presentation are those of the authors and do not necessarily reflect the views of the Department of Justice, Office on Violence Against Women or the International Association of Forensic Nurses.

Some of the materials included in this presentation are from:

- Gael Strack & Dr. George McClain (San Diego, Training Institute on Strangulation Prevention)
- Dr. Dean Hawley (Indianapolis)

LEARNING OBJECTIVES

- **Define strangulation**
- **Summarize the potential lethal consequences of strangulation**
- **Discuss strangulation evaluation tools for all responders**
- **Discuss the potential impact of strangulation on prosecution**

DEFINITION

- 3 types of strangulation
 - Manual
 - Ligature
 - Hanging

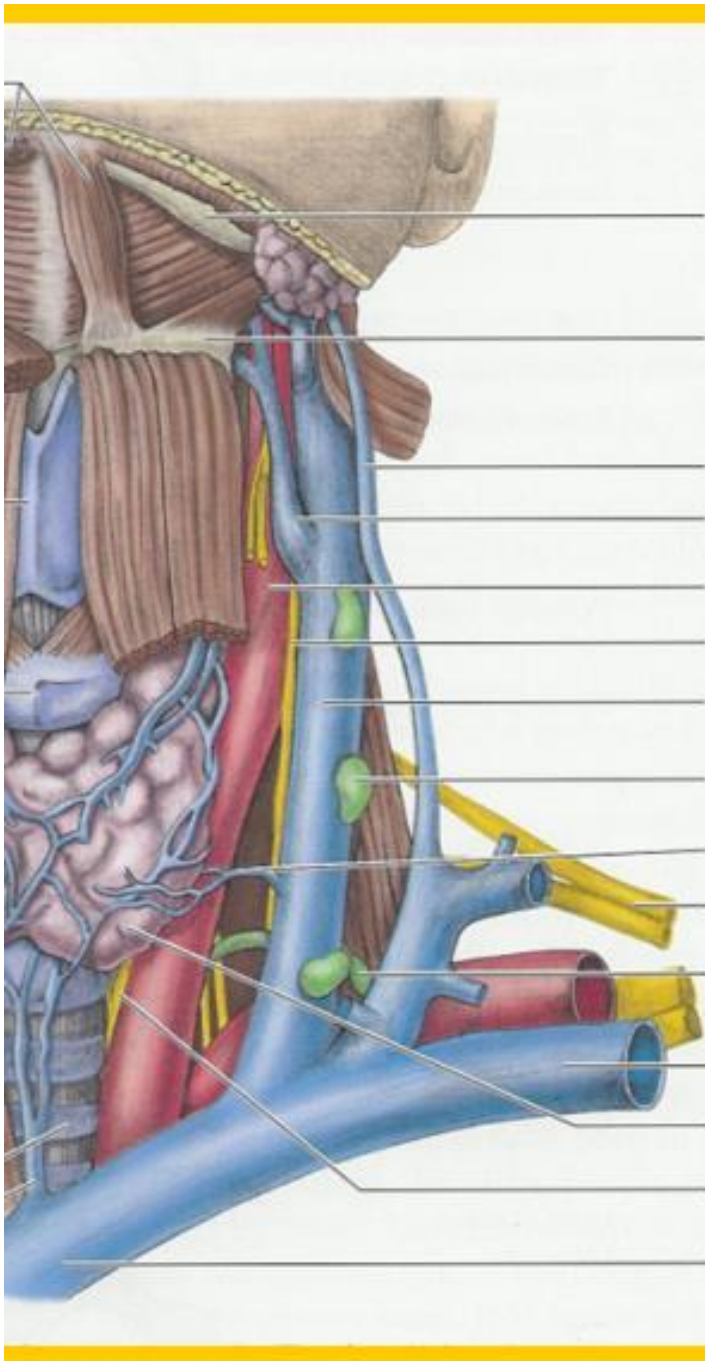


Universal sign
for choking

LETHALITY OF STRANGULATION

“The use of an object in strangulation increases the likelihood of lethality. Similarly, if the victim blacks out, she/he is in great danger of not regaining consciousness or sustaining brain damage from lack of oxygen.”

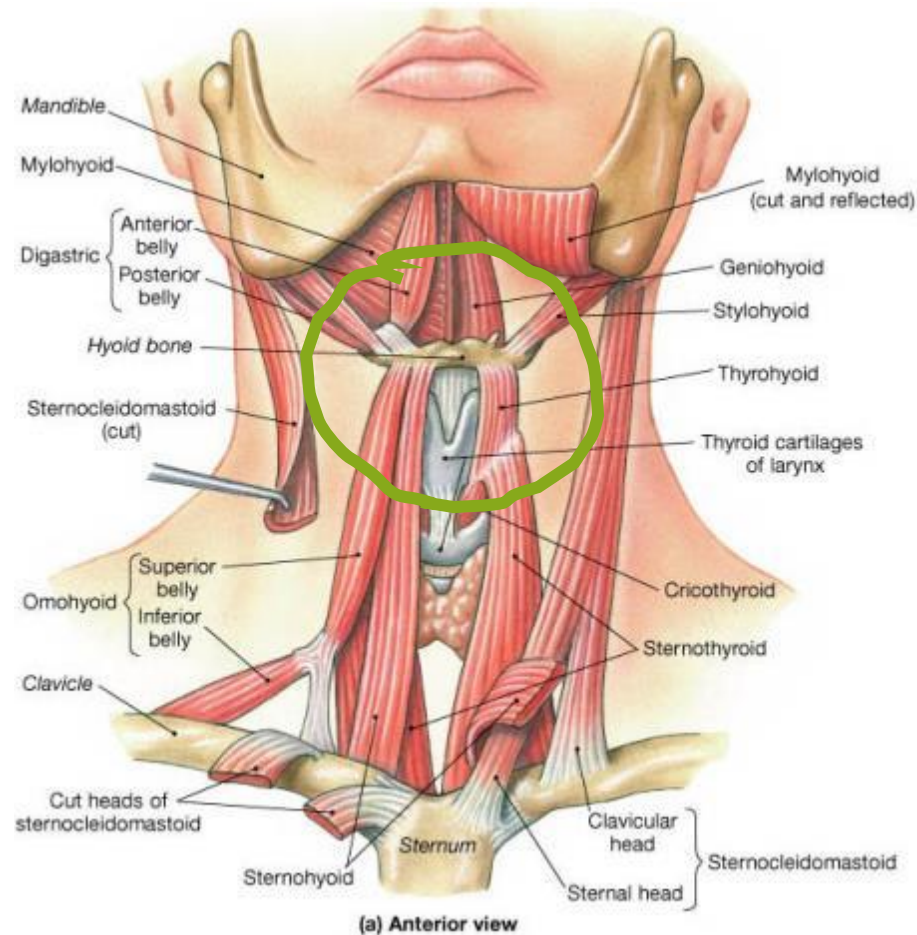
— George McClain, MD, Training Institute on Strangulation Prevention



ANATOMICALLY

- Carotid arteries
 - Supply the head neck and brain
 - Branches to the internal and external arteries which supply the brain and eyes; the throat, neck glands, tongue, face, mouth, ear, scalp and meninges
- Jugular veins
 - Two external; two internal
- Trachea
 - 20 rings of cartilage and connective tissue
- Thyroid
 - Butterfly gland; large blood supply; nerves important to voice quality

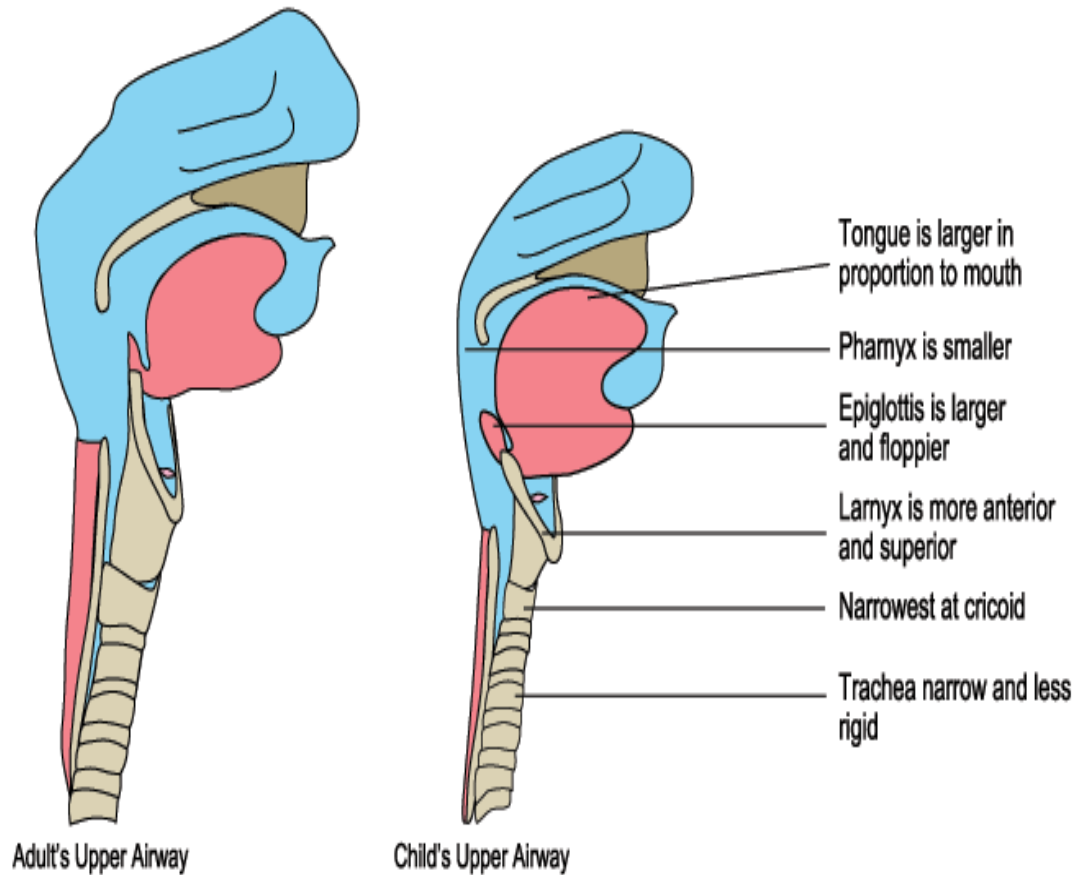
ANATOMICALLY



- Horseshoe shaped bone in between the chin and thyroid ligament
- The only bone in the body not connected to any other bone
- Allows movement of the tongue, pharynx, larynx by connecting muscles
- Supports the weight of the tongue allowing speech, articulation, vocalization

CHILD'S AIRWAY

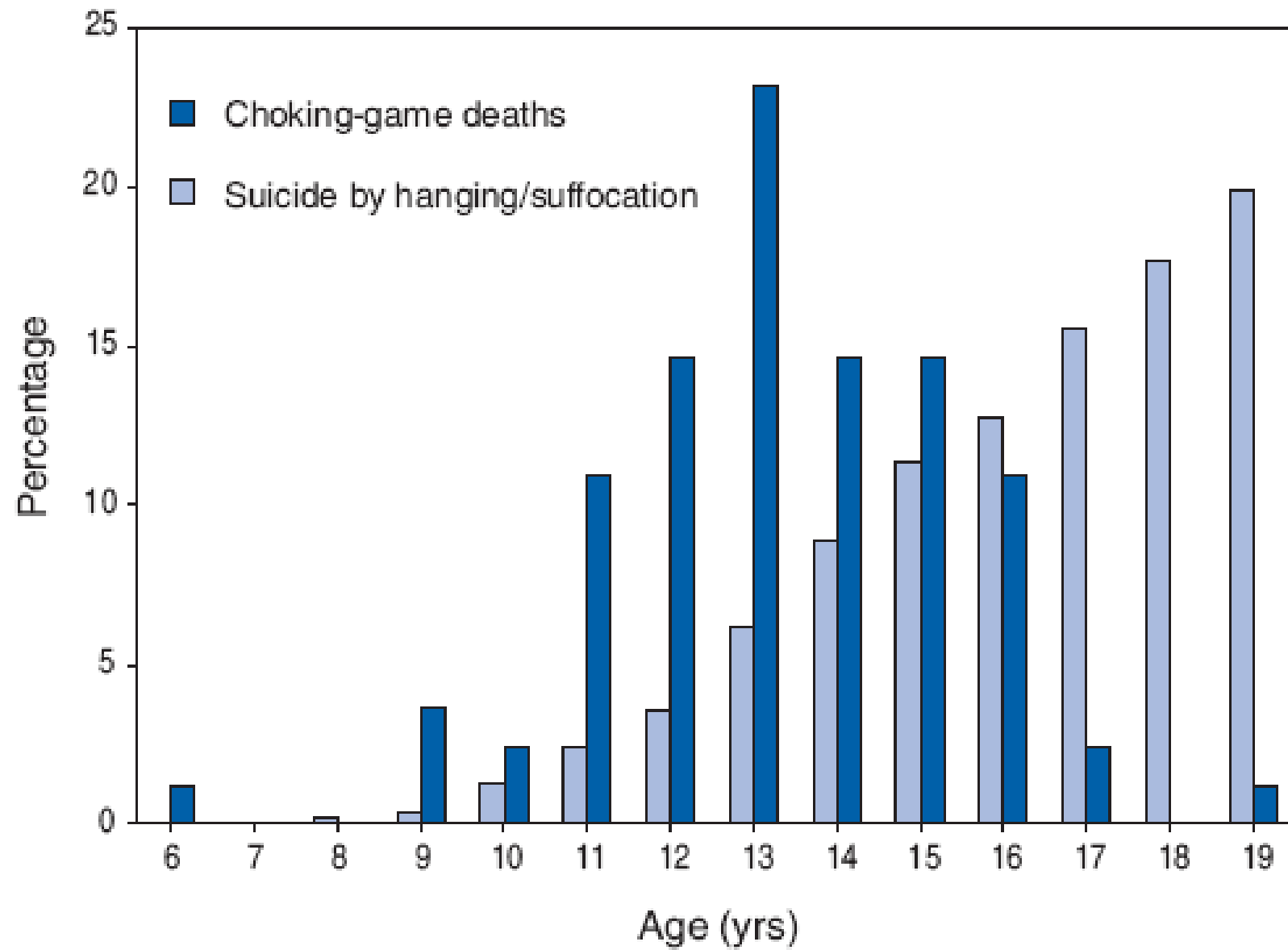
- Easier to obstruct the airway with manual strangulation in a child



- the American dream,
- air planeing,
- black hole,
- black-out game,
- breath play,
- California choke,
- choke out,
- cloud nine,
- fainting game,
- five minutes of heaven,
- flat lining,
- funky chicken,
- gasp game,
- ghost,
- knock-out game,
- natural high,

THE CHOKING GAME

- pass-out game,
- purple dragon,
- purple hazing,
- dream game,
- rising sun,
- rush,
- the scarf game,
- something dreaming game,
- space cowboy,
- space monkey,
- speed dreaming,
- suffocation roulette, and
- the tingling game



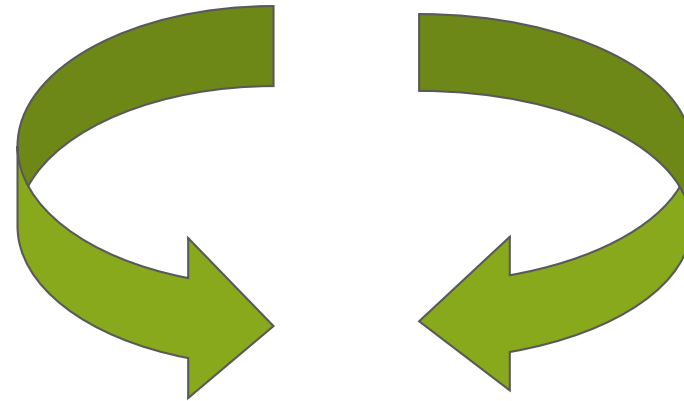
VESSEL OCCLUSION

- Carotid artery occlusion

- Anterior neck
- 11lbs of pressure for 10 seconds

- Jugular vein occlusion

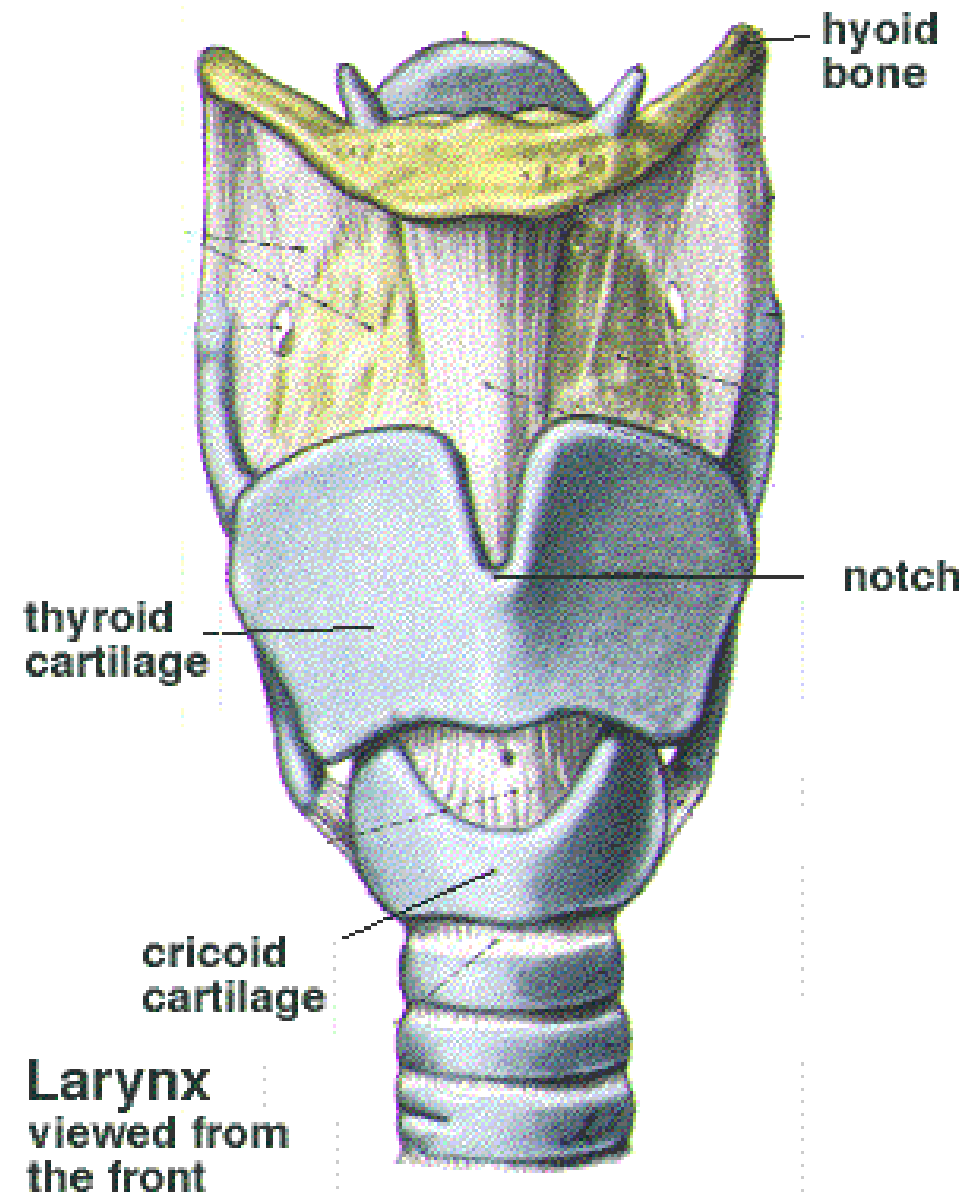
- Lateral neck
- 4.4 lbs of pressure for 10 seconds



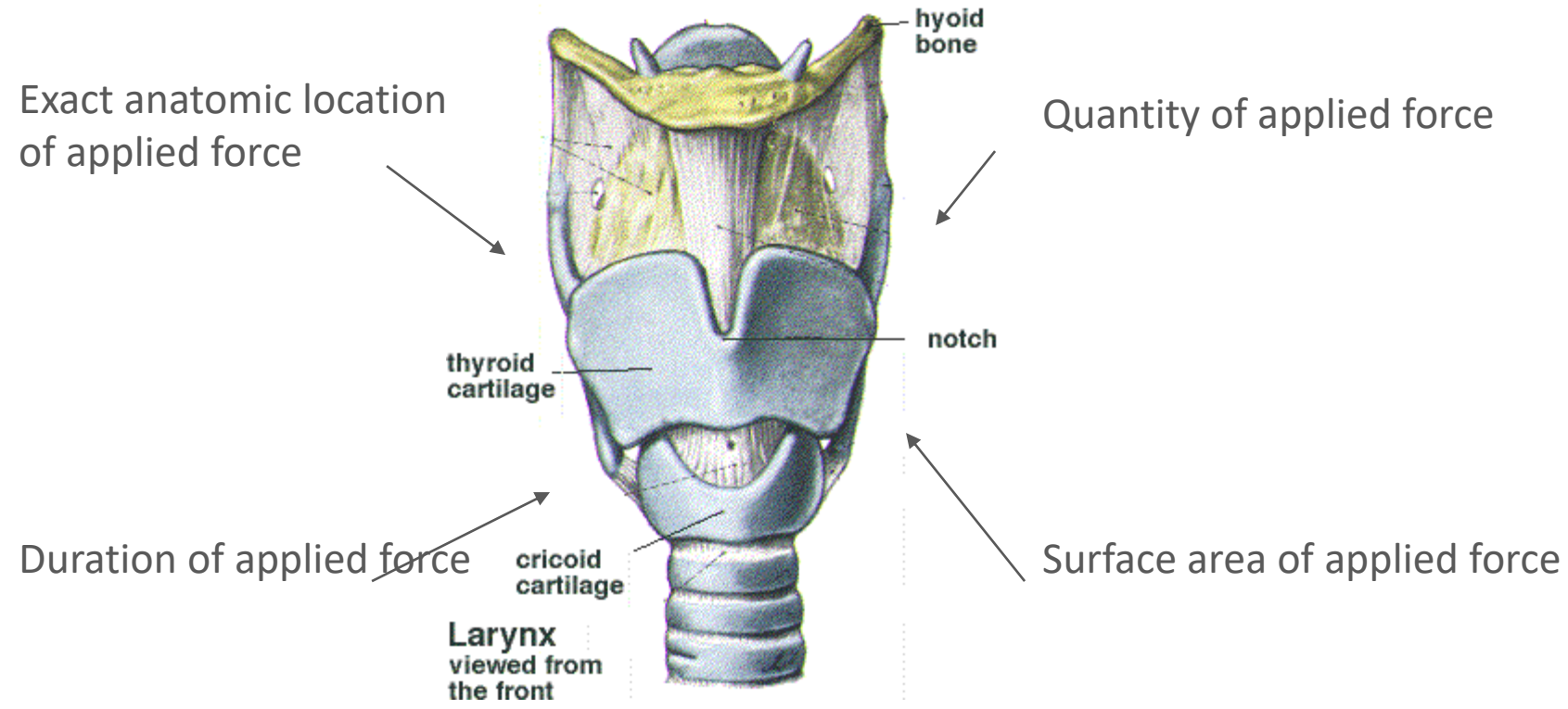
UNCONSCIOUSNESS

TRACHEAL OCCLUSION

- Usually minor (if any) role in causing death (as opposed to fracture of the trachea)
- 33 pounds of pressure to completely occlude
- At least 33 pounds of pressure or more to fracture tracheal cartilage



VARIABLES REQUIRED FOR EFFECTIVE STRANGULATION



Adapted from D. Hawley MD: Death by Strangulation

FATALITY

**Death will occur in
4-5 minutes if
strangulation
persists**



FATALITY

- Immediate death from strangulation can occur from one of four mechanisms:
 - Cardiac arrhythmia provoked by pressure on the carotid artery nerve ganglion causing cardiac arrest
 - Pressure obstruction of the carotid arteries prevents blood flow to the brain
 - Pressure on the jugular veins prevents venous blood flow from the brain, backing up blood in the brain and leading to unconsciousness, depressed respirations and asphyxia
 - Pressure obstruction of larynx cuts off air flow, producing asphyxia

FATALITY

- It is the potential for delayed fatality that is most concerning. Potential causes include:
 - Carotid artery dissection (delayed)
 - Respiratory complications: aspiration pneumonia and ARDS

VICTIM EXPERIENCE

McClane et al. identified 4 stages that patients describe during the strangulation event prior to LOC:

- Denial: “I couldn’t believe this was happening to me”
- Realization: “this really is happening to me”
- Primal: struggle to preserve life
- Resignation: “I’m going to die; I hope my kids will be okay”

SIGNS AND SYMPTOMS

- Voice changes
- Swallowing changes
- Breathing Changes
- Neck Swelling
- Lung Injury
- Bowel and/or bladder incontinence
- Mental Status Changes
- Miscarriage

VISIBLE INJURY

- “It is no coincidence that the best medical evidence of strangulation is derived from post mortem examination (autopsy) of the body, but even in living survivors of strangulation assaults it may be possible to recognize a pattern of injury distinctive for strangulation”.
- -Dean Hawley, MD

INJURIES THAT MAY BE VISIBLE

- Scratches or claw marks (nail marks rarely from assailant)
- Abrasions
- Bruises
- Pressure erythema
- Contusions
- Hematomas
- **Only about half of strangulation victims have visible injury**
- Contusions (bruising) behind ears, jaw line, submandibular area
- Tongue injury, including swelling and bite wounds (from victim)
- Chin abrasions: protective mechanism causes injury as victim tries to protect neck by bringing chin to chest



VISIBLE INJURY

LIGATURE MARKS

- Presence should increase suspicion of hyoid bone fracture
- May resemble natural folds of neck
- Presence of jewelry can cause ligature-type marks, even when manual strangulation was sole mechanism of injury

PETECHIAE

- Burst capillaries occurring above the point of pressure
- May be found under and on eyelids, periorbital areas, face, scalp, and neck; also look at lower lip and hairline
 - Petechiae is a hallmark of jugular vein occlusion--
 - How can we differentiate strangulation-related petechiae from other causes?

SUBCONJUNCTIVAL HEMORRHAGE

- Particularly common with repeated pattern of pressure and release
- What are some other causes of subconjunctival hemorrhage??
- May be all of the conjunctiva, or isolated spot

NEUROLOGICAL FINDINGS

- Ptosis- drooping eyelid(s)
- Facial droop
- One sided weakness
- Paralysis
- Loss of sensation

Studies indicate that victims of *repeated strangulation* have a significant increase in these symptoms (Smith, et al. 2001)

WHY DOES IT MATTER?

- The odds for homicide increases 750% for victims who have been previously strangled (Glass 2008)
- Strangulation can be fatal and cause long term health impacts
- Strangulation has been made a felony offense in most states and federally 18 U.S.C.A. § 113
- Assault of a spouse, intimate partner, or dating partner by strangling, suffocating, or attempting to strangle or suffocate, by a fine under this title, imprisonment for not more than 10 years, or both.

Glass et al. (2008). Non-fatal strangulation is an important risk factor for homicide of women. *The Journal of Emergency Medicine*, 35(3), 329-335.

STRANGULATION BY FEDERAL STATUTE DEFINED AS:

- The term “strangling” means intentionally, knowingly, or recklessly impeding the normal breathing or circulation of the blood of a person by applying pressure to the throat or neck, regardless of whether that conduct results in any visible injury or whether there is any intent to kill or protractedly injure the victim; and
- The term “suffocating” means intentionally, knowingly, or recklessly impeding the normal breathing of a person by covering the mouth of the person, the nose of the person, or both, regardless of whether that conduct results in any visible injury or whether there is any intent to kill or protractedly injure the victim.

QUESTIONS TO ASK FOR RESPONDERS

- What was the method of strangulation: object, arm, hand, leg?
- How many times was the victim strangled?
- Was there banging or hitting of the head?
- What was the victim thinking or feeling during the strangulation?
- Is there a history of strangulation?
- Did the victim have any pre-existing injuries?
- Is the victim pregnant * MUST get the victim to medical care for evaluation ASAP
- Did the victim seek medical care or assistance?

Adapted from *How to Improve your investigation and prosecution of strangulation cases* by Dr. George McClane and Gael Strack of the Training Institute on Strangulation Prevention.

QUESTIONS FOR RESPONDERS TO ASK:

- ASK IF THE VICTIM HAS/HAD ANY SYMPTOMS BELOW
 - IF THERE WERE SYMPTOMS ASK ABOUT DURATION, SEVERITY AND SEQUENCE OF SYMPTOMS
-
- Redness/red marks
 - Bruising (anywhere from jaw line to collarbone)
 - Scrapes/Abrasions
 - Fingernail marks/scratches
 - Finger marks/handprints
 - Ligature/binding marks
 - Red dots on skin and/or eyes
 - “Blood red eyes”
 - Swelling/lumps/bumps
 - Skin crackling
 - Voice changes/loss of voice
 - Shortness of breath/difficulty breathing
 - Difficult/painful swallowing
 - Complaints of pain
 - Ringing in ears
 - Change in memory/confusion
 - Loss of consciousness
 - Loss of bowel or bladder control
 - Vomiting

RESOURCE: STRANGULATION ASSESSMENT CARD

STRANGULATION ASSESSMENT CARD			
SIGNS	SYMPTOMS	CHECKLIST	TRANSPORT
<ul style="list-style-type: none"> ● Red eyes or spots (Petechiaiae) ● Neck swelling ● Nausea or vomiting ● Unsteady ● Loss or lapse of memory ● Urinated ● Defecated ● Possible loss of consciousness ● Ptosis – droopy eyelid ● Droopy face ● Seizure ● Tongue injury ● Lip injury ● Mental status changes ● Voice changes 	<ul style="list-style-type: none"> ● Neck pain ● Jaw pain ● Scalp pain (from hair pulling) ● Sore throat ● Difficulty breathing ● Difficulty swallowing ● Vision changes (spots, tunnel vision, flashing lights) ● Hearing changes ● Light headedness ● Headache ● Weakness or numbness to arms or legs ● Voice changes 	<p>S Scene & Safety. Take in the scene. Make sure you and the victim are safe.</p> <p>T Trauma. The victim is traumatized. Be kind. Ask: what do you remember? See? Feel? Hear? Think?</p> <p>R Reassure & Resources. Reassure the victim that help is available and provide resources.</p> <p>A Assess. Assess the victim for signs and symptoms of strangulation and TBI.</p> <p>N Notes. Document your observations. Put victim statements in quotes.</p> <p>G Give. Give the victim an advisal about delayed consequences.</p> <p>L Loss of Consciousness. Victims may not remember. Lapse of memory? Change in location? Urination? Defecation?</p> <p>E Encourage. Encourage medical attention or transport if life-threatening injuries exist.</p>	<p>If the victim is Pregnant or has life-threatening injuries which include:</p> <ul style="list-style-type: none"> ● Difficulty breathing ● Difficulty swallowing ● Petechial hemorrhage ● Vision changes ● Loss of consciousness ● Urinated ● Defecated <p>DELAYED CONSEQUENCES</p> <p>Victims may look fine and say they are fine, but just underneath the skin there would be internal injury and/or delayed complications. Internal injury may take a few hours to be appreciated. The victim may develop delayed swelling, hematomas, vocal cord immobility, displaced laryngeal fractures, fractured hyoid bone, airway obstruction, stroke or even delayed death from a carotid dissection, bloodclot, respiratory complications, or anoxic brain damage.</p> <p>Taliaferro, E., Hawley, D., McClane, G.E. & Strack, G. (2009), Strangulation in Intimate Partner Violence. <i>Intimate Partner Violence: A Health-Based Perspective</i>. Oxford University Press, Inc.</p> <p>This project is supported all or in part by Grant No. 2014-TA-AX-K008 awarded by the Office on Violence Against Women, U.S. Dept. of Justice. The opinions, findings, conclusions, and recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the Department of Justice, Office on Violence Against Women.</p>

RESOURCE: WHAT DO YOU TELL THE PATIENT?

ADVISAL TO PATIENT

- After a strangulation assault, you can experience internal injuries with a delayed onset of symptoms, usually within 72 hours. These internal injuries can be serious or fatal.
- Stay with someone you trust for the first 24 hours and have them monitor your signs and symptoms.
- Seek medical attention or call 911 if you have any of the following symptoms: difficulty breathing, trouble swallowing, swelling to your neck, pain to your throat, hoarseness or voice changes, blurred vision, continuous or severe headaches, seizures, vomiting or persistent cough.
- The cost of your medical care may be covered by your state's victim compensation fund. An advocate can give you more information about this resource.
- The National Domestic Violence Hotline number is **1-888-799-SAFE**.

NOTICE TO MEDICAL PROVIDER

- In patients with a history of a loss of consciousness, loss of bladder or bowel control, vision changes or petechial hemorrhage, medical providers should evaluate the carotid and vertebral arteries, bony/cartilaginous and soft tissue neck structures and the brain for injuries. A list of medical references is available at www.strangulationtraininginstitute.com
- Life-threatening injuries include evidence of petechial hemorrhage, loss of consciousness, urination, defecation and/or visual changes. If your patient exhibits any of the above symptoms, medical/radiographic evaluation is strongly recommended. Radiographic testing should include: a CT angiography of carotid/vertebral arteries (most sensitive and preferred study for vessel evaluation) or CT neck with contrast, or MRA/MRI of neck and brain.
- ED/Hospital observation should be based on severity of symptoms and reliable home monitoring.
- Consult Neurology, Neurosurgery and/or Trauma Surgery for admission.
- Consider an ENT consult for laryngeal trauma with dysphonia, odynophagia, dyspnea.
- Discharge home with detailed instructions to return to ED if neurological signs/symptoms, dyspnea, dysphonia or odynophagia develops or worsens.



StrangulationTrainingInstitute.com

FOR LAW ENFORCEMENT

- Consider training all officers who respond to domestic and sexual violence about strangulation
- Consider creating a checklist for patrol officers for questions to ask victims of DV or sexual assault
- Sample law enforcement forms at www.strangulationtraininginstitute.com

OFFICER CHECKLIST

- If strangled/suffocated with object(s), photograph object(s) and collect for evidence.
- Document where the object(s) was/were found in the Offense Report.
- Determine if jewelry was worn by either party (ring(s), necklace(s), watch(es), etc.). Photograph / look for patterns and photograph.
- If defecation or urination in clothes, collect clothes as evidence.
- If Victim vomited, take a photo of vomit.
- Call On-Call Family Violence Detective if you need assistance.
- Call On-Call Family Violence Detective if Victim is transported to the hospital from injuries due to strangulation/suffocation.
- If Victim is transported to the hospital from injuries due to strangulation/suffocation then an officer NEEDS to standby at hospital until relieved by the On-Call Family Violence Detective.

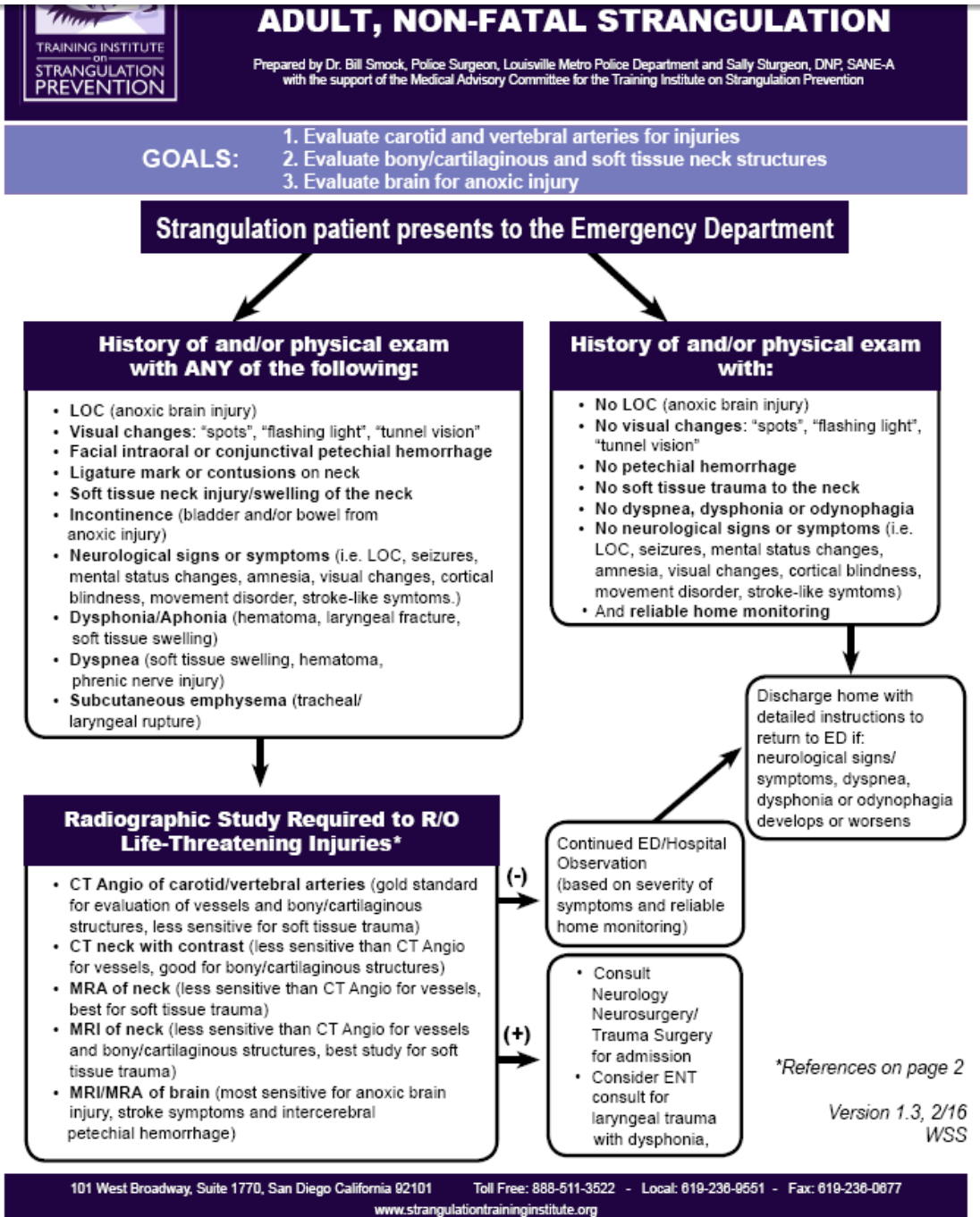
FOR ADVOCATES

- Educate the victim about seriousness of strangulation
- Consider creating or using brochures on the danger of strangulation
- Assist the victim to access medical care for evaluation
- Educate the community
- Educate other professionals
- Consider creating a strangulation protocol with community partners
- Support the victim through:
 - Risk assessment
 - Safety planning
 - Follow up
 - Support or counseling group

FOR MEDICAL PROVIDERS

- New guidelines for medical and radiographic evaluation of patients who have been strangled.
- Consider having specially trained providers (SANE or other trained nurses or MDs) evaluate strangulation victims
- Assure that emergency providers have the latest recommendations

Prepared by Dr. Bill Smock, Police Surgeon, Louisville Metro Police Department and Sally Sturgeon, DNP, SANE-A
with the support of the Medical Advisory Committee for the Training Institute on Strangulation Prevention, Alliance for HOPE



IAFN POSITION STATEMENT

1. *Where possible, forensic nurses are utilized in collaboration with other providers to address the health care needs of the strangled patient population.*
2. *Health care providers delivering emergency services receive training specific to the screening, medical and radiologic assessment, documentation, medical intervention, and follow-up care.*
3. *Health care providers caring for victims of known or suspected sexual assault, intimate partner violence, elder abuse as well as child maltreatment should routinely screen for strangulation and understand the laws for reporting.*
4. *Health care agencies delivering emergency services should adopt evidence-based, multi-disciplinary policies and procedures that are current and well understood by staff in order to facilitate the screening, assessment and intervention process;*
5. *Health care agencies should ensure consistent access to trained providers within the agency, and should develop and maintain collaborative relationships with outside agencies (i.e. Law enforcement, advocacy and prosecution).*
6. *Health care providers that assess and treat strangulation patients include a detailed, strangulation-specific assessment as a standard component of the medical-forensic examination including protocols for medical/radiological evaluation danger*
7. *Patients receiving health care associated with a strangulation event have access to advocacy and supportive services.*

Non-Fatal Strangulation Documentation Toolkit



RESOURCES

Draft policy and
procedure

Documentation
tools

Extensive
bibliography

EXAMPLE POLICY AND PROCEDURE

Policy Name: Standard of Practice in Non-Fatal Strangulation Cases

1. Purpose

To have a policy that identifies and communicates evidenced-based best practice/standard of practice based upon the assessment of the patient, the caregiver/guardian/patient's consent, and medical status in non-fatal strangulation cases.

2. Policy

Each patient will be assessed for the purpose of medical diagnoses and treatment. This will include the physical assessment, collection of potential biological and trace evidence to identify any forensic findings, and documentation of objective findings and subjective complaints (Faugno, Waszak, Strack, Brooks, & Gwinn, 2013).

Any procedure that is completed by another professional (i.e., social work, advocate) should be documented as such.

Follow institutional/local guidelines, policies, laws for the incapacitated patient or minor.

3. Procedure

- a) Thorough head-to-toe physical assessment (genital examination to be conducted as indicated)
 - b) Completion of danger assessment/lethality assessment (Campbell, 2004; Campbell, Webster, & Glass, 2009)
 - c) Completion of strangulation documentation to include:
 - a. Written documentation form
 - b. Body mapping of injuries
 - c. Photo-documentation
 - d. Mannequin demonstration (optional)
 - d) Neck circumference measurement
 - e) Use of alternate light source (ALS)/ultraviolet (UV) light (as indicated or available) for identification of potential biological fluids and/or for enhancement of visual bruises (not to be used to identify bruises that cannot be seen) (Eldredge, Huggins, & Pugh, 2012)
 - f) Potential evidence collection (as applicable or if indicated)
 - g) Assist patient with acquiring the necessary resources to file for victim of violent crime fund/compensation per local jurisdiction (if available)
 - h) Assess for safety planning/resources disposition

Follow individual, local, mandated reporter for adult/pediatric population with referrals as needed to adult protection services (APS) and/or child protective services (CPS).
 - i) If evaluation results indicate need, discuss possibility of observation or overnight admission.
 - j) Discuss follow-up plan of care
- #### 4. Follow-Up Care
- Follow up examinations within 72 hours post assault. In case of holidays/weekends: follow up with a phone call within 72 hours, with a scheduled appointment as soon as possible (Taliaferro, Hawley, McClane, & Strack, 2009).
- Follow-up appointment to consist of:
- a) Head-to-toe physical assessment
 - b) Strangulation documentation form
 - c) Photography (of progression of bruising or identification of new bruises)
 - d) Neck circumference
 - e) Use of ALS/UV light (as indicated or available) as indicated above in #3e
 - f) Ongoing safety assessment

- g) Referrals to ear, nose, and throat (ENT) specialist, neurology, other providers, counseling per scope of practice

5. Terms

1. Strangulation: A form of asphyxia (lack of oxygen) characterized by closure of the blood vessels and/or air passages of the neck as a result of external pressure on the neck (Iserson, 1984; Line, Stanley, & Choi, 1985).
2. Standards of Practice. Authoritative statements that "[describe a competent level of nursing care as demonstrated by the nursing process" (ANA, 2010, p. 67).
3. Danger assessment: An easy and effective method for forensic nurses and other community professionals to identify those who are at the highest potential for being seriously injured or killed (lethality) by their intimate partners so as to immediately connect these patients and clients to a domestic violence service provider in their area.
4. ALS (alternate light source): A high-intensity light using differing wavelengths that may fluoresce fluids/fibers and help enhance bruises that can be seen under white light.
5. UV (ultraviolet) light: An electromagnetic radiation with a wavelength from 100 nm to 400 nm. A portion of the light spectrum, which is not visible to the naked eye, that may help fluoresce fluids/fibers.
6. Mannequin head: An effective tool to aid the patient in demonstrating the act of strangulation.

CASE EXAMPLES

- Always assess IPV and sexual assault victims for strangulation
- Promote the medical/forensic exam if the victim has experienced strangulation within 72 hours, longer if pregnant

28 YO SA STR

8 YEAR OLD GIRL

- Mom and boyfriend bring her in with an “allergic reaction”
- When separated mom says she thinks she got the marks from sleeping on her brothers corduroy pants
- Mom’s boyfriend says it’s from sleeping on the carpet
- Mom then says she thinks the girls shorts and shirt were too tight and “choked” her
- Patient agrees with mom and boyfriend even when separated “it must be an allergy”



CARE

- Admitted overnight for observation
- Child protection called to come in the following day
- Boyfriend spent the night in the hospital with the child
- Inpatient staff called FNEs because boyfriend was insisting the child take a shower before anyone else evaluated her
- Supervisor identified boyfriend as a previous volunteer who was fired for inappropriate behavior with pediatric patients

CARE

- Serial oxygen saturation
- CT of the neck and carotids

8 YEAR OLD GIRL

- School nurse noted injuries on child called patient's mom
- “He choked me out and told me to tell people I hit my face on the dresser” (mom's live in boyfriend of three years)
- Strangulation episode happened 10 days prior to the exam



WHERE CAN I GO FOR MORE INFORMATION?

- Webinars for Healthcare, Law Enforcement/Investigators, advocates and Paramedics
- Toolkit for nurses and other health providers
- Sample documentation forms for healthcare providers
- Sample policies and procedures for healthcare providers
- Brochures for victims
- Latest medical/radiologic evaluation recommendations for healthcare

www.ForensicNurses.org

www.safeta.org

<https://www.strangulationtraininginstitute.com/resources/>

Investigating and Prosecuting the Non-Fatal Strangulation Case

Leslie A. Hagen
National Indian Country Training Coordinator

I. Introduction

In the early morning hours of August 19, 2013, Zackeria Crawford strangled his girlfriend until she lost consciousness and became incontinent. The assault occurred within the exterior boundaries of the Blackfeet Indian Reservation in Montana. The defendant is an enrolled member of the tribe.

The victim told FBI Special Agent Mark Zahaczewsky that she was asleep in the home that she shared with defendant Crawford, her boyfriend of three years. Crawford woke her up, began to threaten her, and accused her of cheating. The defendant then forced the victim into the crawlspace located in a closet leading under the residence. While in the crawlspace, Crawford beat the victim with his hands and feet. He then placed his hands on the victim's throat and began strangling her. The victim told law enforcement that he said words to the effect of, "I really hate to do this to you, but I'm going to kill you."

The victim told investigators that she twice lost consciousness and lost control of her bladder. The victim said the assault lasted for approximately twenty minutes. When the defendant went to another room in the house, the victim escaped the crawl space and ran out of the house to her car and attempted to drive away. The defendant jumped on to the hood of the vehicle and hung on for several blocks. Crawford eventually rolled off of the vehicle, and the victim drove directly to the Browning Correctional Center and reported the assault.

Law enforcement obtained photographs of the injuries, and the victim obtained medical treatment. The treating physician documented that there was a substantial risk of death. The defendant confessed to the FBI and, ultimately, pled guilty to one count of assault by strangulation under 18 U.S.C. § 113(a)(8). The case was prosecuted by Assistant U.S. Attorney (AUSA) Ryan Weldon, and it represents one of the first in the country prosecuted under the new federal strangulation and suffocation statute. The defendant was sentenced to 30 months' imprisonment and 3 years of supervised release at his March 2014

sentencing hearing. (A copy of the sentencing press release can be found online at <http://www.justice.gov/usao/mt/pressreleases/20140605140846.html>.)

II. The scope and severity of the problem

Police and prosecutors are only recently learning what survivors of non-fatal strangulation have known for years: “Many domestic violence offenders and rapists do not strangle their partners to kill them; they strangle them to let them know they can kill them—any time they wish.” Casey Gwinn, *Strangulation and the Law*, THE INVESTIGATION AND PROSECUTION OF STRANGULATION CASES 5 (The Training Inst. on Strangulation Prevention & the Cal. Dist. Attorneys Ass’n eds., 2013) (Gwinn). There are clear reasons why strangulation assaults—particularly in an intimate partner relationship—should be a separate felony offense and taken seriously at sentencing.

- “Strangulation is more common than professionals have realized. Recent studies have now shown that 34 percent of abused pregnant women reported being ‘choked;’ 47 percent of female domestic violence victims reported being ‘choked.’ ” Press Release, Office of Public Affairs, Department of Justice, Justice Department Holds First National Indian Country Training on Investigation and Prosecution of Non-Fatal Suffocation Offenses (Feb. 4, 2013), available at <http://www.justice.gov/opa/pr/2013/February/13-opa-148.html>.
- “Victims of multiple [non-fatal strangulation] ‘who had experienced more than one strangulation attack, on separate occasions, by the same abuser, reported neck and throat injuries, neurologic disorders and psychological disorders with increased frequency.’ ” *Id.* (citing Donald J. Smith, Jr. et al., *Frequency and Relationship of Reported Symptomology in Victims of Intimate Partner Violence: The Effect of Multiple Strangulation Attacks*, 21 J. EMERGENCY MED. 3, 323, 325–26 (2001)).
- “Almost half of all domestic violence homicide victims had experienced at least one episode of non-fatal strangulation prior to a lethal [or near-lethal] violent incident. [Victims of one episode of strangulation are 700 percent more likely to be a victim of attempted homicide by the same partner.] Victims of prior non-fatal strangulation are 800 percent more likely of later becoming a homicide victim [at the hands of the same partner].” *Id.* (internal citations omitted) (citing Nancy Glass et al., *Non-Fatal Strangulation Is an Important Risk Factor for Homicide of Women*, 35 J. EMERGENCY MED. 329, 329 (2008)).
- Even given the lethal and predictive nature of these assaults, the largest non-fatal strangulation case study ever conducted to date (the San Diego Study) found that most cases lacked physical evidence or visible injury of strangulation. Gael B. Strack, George E. McClane & Dean Hawley, *A Review of 300 Attempted Strangulation Cases Part I: Criminal Legal Issues*, 21 J. EMERGENCY MED. 3, 303, 305–06 (2001). Only 15 percent of the victims had a photograph of sufficient quality to be used in court as physical evidence of strangulation, and no symptoms were documented or reported in 67 percent of the cases. *Id.* The San Diego Study found major signs and symptoms of strangulation that corroborated the assaults, but little visible injury. *Id.*
- “Strangulation is more serious than professionals have realized. Loss of consciousness can occur within 5 to 10 seconds . . . and death within 4 to 5 minutes. The seriousness of the internal injuries [even with no external injuries] may take a few hours to be appreciated and delayed death can occur days later.” Press Release, Office of Public Affairs, Department of Justice, Justice Department Holds First National Indian Country Training on Investigation and Prosecution of Non-Fatal Suffocation Offenses (Feb. 4,

2013), available at <http://www.justice.gov/opa/pr/2013/February/13-opa-148.html> (internal citations omitted) (citing Gwinn and DEAN A. HAWLEY, FORENSIC MEDICAL FINDINGS IN FATAL AND NON-FATAL INTIMATE PARTNER STRANGULATION ASSAULTS 6 (2012) (Hawley), available at <http://www.strangulationtraininginstitute.com/index.php/library/viewcategory/843-scholarly-works-and-reports.html>2013).

- “Because most strangulation victims do not have visible [external] injuries, strangulation cases may be minimized or trivialized by law enforcement, medical and mental health professionals [and even courts].” *Id.*
- Even in fatal strangulation cases, there is often no evident external injury (confirming the findings regarding the seriousness of non-fatal, no-visible-injury strangulation assaults). *Id.*
- Non-fatal strangulation assaults may not fit the elements of other serious assaults due to the lack of visible injury. Studies are confirming that an offender can strangle someone nearly to death with no visible injury, resulting in professionals viewing such an offense as a minor misdemeanor or no provable crime at all. *Id.*
- Experts across the medical profession now agree that manual or ligature strangulation is “lethal force” and is one of the best predictors of a future homicide in domestic violence cases. *Id.* (citing Nancy Glass et al., *Non-Fatal Strangulation Is an Important Risk Factor for Homicide of Women*, 35 J. EMERGENCY MED. 329, 329 (2008)).

Ten percent of violent deaths in the United States are from strangulation, with six female victims to every male victim. Allison Turkel, “*And Then He Choked Me*”: *Understanding, Investigating, and Prosecuting Strangulation Cases*, 2 THE VOICE 1, 1 (2008), available at http://www.ndaa.org/pdf/the_voice_vol_2_no_1_08.pdf. However, the percentage of women that survive strangulation is far greater. Numerous studies show that 23 to 68 percent of women who are victims of intimate partner violence have experienced strangulation assault by a male partner in their lifetime. Another study conducted at a battered women’s shelter found that on average each woman with a history of strangulation had been strangled 5.3 times in her intimate relationships. Lee Wilbur et al., *Survey results of women who have been strangled while in an abusive relationship*, 21 J. EMERGENCY MED. 297, 297–302 (2001). Furthermore, a strong correlation exists between strangulation and other types of domestic abuse. In a study of 300 strangulation cases, a history of domestic violence existed in 89 percent of the cases, and children were present during at least 50 percent of the incidents. GAEL B. STRACK & GEORGE MCCLANE, HOW TO IMPROVE YOUR INVESTIGATION AND PROSECUTION OF STRANGULATION CASES 2 (David C. James ed., 1998) (updated January 2003, September 2007).

This correlation is disturbing, especially in the context of Indian Country, where violent crime rates can far exceed those of other American communities. Some tribes have experienced rates of violent crime over 10 times the national average. RONE BACHMAN, HEATHER ZAYKOWSKI, RACHEL KALLMYER, MARGARITA POTEYEVA & CHRISTINA LANIER, VIOLENCE AGAINST AMERICAN INDIAN AND ALASKA NATIVE WOMEN AND THE CRIMINAL JUSTICE RESPONSE: WHAT IS KNOWN 5 (2008). Reservation-based and clinical research show very high rates of intimate partner violence against American Indians and Alaska Native women.

Police, prosecutors, and medical providers across the country have begun to appreciate the inherent lethality risks for strangulation and suffocation crimes. Approximately 30 states have enacted strangulation-specific laws that range from misdemeanor offenses to felonies. Because domestic violence and sexual assault remains primarily a matter of state, local, and tribal jurisdiction, the Federal Government historically lacked jurisdiction over some intimate partner violence crimes. The Violence Against Women Reauthorization Act of 2013 (VAWA 2013) changed that by providing the Federal Government with additional statutory tools to prosecute intimate partner violence. With the passage of

VAWA 2013, Congress recognized the gravity of strangulation and suffocation crimes and, accordingly, amended the federal assault statute, 18 U.S.C. § 113, to include a specific charge of assault or attempted assault by strangulation or suffocation. This change in the law was effective March 7, 2013.

This article addresses how to improve the investigation and prosecution of perpetrators in strangulation cases under 18 U.S.C. § 113. It concisely summarizes what strangulation is and why it is so difficult to investigate and prosecute. It also offers guidance on how to approach these types of cases.

III. The Violence Against Women Reauthorization Act of 2013: 18 U.S.C. § 113

Under § 113, it is now possible to prosecute perpetrators in Indian Country for the specific offenses of strangulation and suffocation. Section 113(a) provides that:

whoever, within the special maritime and territorial jurisdiction of the United States, is guilty of . . . an assault of a spouse, intimate partner, or dating partner by strangling, suffocating, or attempting to strangle or suffocate, [shall be punished] by a fine under this title, imprisonment for not more than 10 years, or both.

18 U.S.C. § 113(a)(8) (2014).

In this section, the term “strangling” means “intentionally, knowingly, or recklessly impeding the normal breathing or circulation of the blood of a person by applying pressure to the throat or neck, regardless of whether that conduct results in any visible injury or whether there is any intent to kill or protractedly injure the victim[.]” The definitions of spouse, intimate partner, and dating partner are found in 18 U.S.C. § 2266. *Id.* § 133(b)(3).

Prior to the passing of VAWA 2013, strangulation cases were typically prosecuted as an Assault Resulting in Serious Bodily Injury (ARSBI), pursuant to 18 U.S.C. § 113(a)(6). ARSBI is punishable by a fine, imprisonment for not more than 10 years, or both. Serious bodily injury is defined in 18 U.S.C. § 1365 as:

- (a) a substantial risk of death;
- (b) extreme physical pain;
- (c) protracted and obvious disfigurement; or
- (d) protracted loss or impairment of the function of a bodily member, organ, or mental faculty[.]

18 U.S.C. § 1365(h)(3) (2014).

Most federal prosecutors charging a defendant with ARSBI following an allegation of strangulation argue that the crime presented a “substantial risk of death” to the victim. AUSAs may need to enlist expert medical testimony to explain just how easy it is to strangle someone to death and yet leave no visible external injuries. Only 11 pounds of pressure placed on the carotid arteries (arteries that supply oxygenated blood to the head and neck) for 10 seconds is necessary to cause unconsciousness. J.L. Luke et al., *Correlation of Circumstances with Pathological Findings in Asphyxial Deaths by Hanging: A Prospective Study of 61 Cases from Seattle, WA*, 30 J. FORENSIC SCI. 1140, 1140–47 (1985). Brain death will occur in four to five minutes if strangulation continues.

The crime of ARSBI was infrequently used to charge strangulation cases occurring in the context of intimate partner violence. And, if other assaults occurred during the violent episode, charges were more likely to address those violent acts as opposed to the strangling. *See, e.g., United States v. Mitchell*, 420 F. App’x 920, 921–22 (11th Cir. 2011) (defendant strangled the victim and was charged with one count of assault with intent to commit murder and one count of assault resulting in serious bodily injury); *but see*,

e.g., *United States v. Martin*, 528 F.3d 746, 748–49 (10th Cir. 2008); *United States v. Juvenile Male N.R.*, 24 F. App'x 638, 639–40 (8th Cir. 2001).

Because this new statute became effective in March 2013, prosecutors are just beginning to charge defendants. It is important to note that § 113(a)(8) only addresses situations where the victim is the spouse, intimate partner, or dating partner of the defendant. Consequently, a defendant who committed a strangulation offense outside this context will not be charged in federal court as a violation of § 113(a)(8). The prosecutor will instead need to look to the crimes of ARSBI, attempted murder, or murder, depending on the facts. To date, there are no pending cases on appeal where the new strangulation/suffocation statute itself is being challenged.

IV. Understanding strangulation

While most people think that they understand strangulation and that it would be easy to recognize when someone has been strangled, identifying strangulation is much more nuanced. It is a serious, violent act that has historically been treated as a minor incident in the criminal justice system. Such treatment resulted for a variety of reasons, some of which stem from misconceptions about the act itself and its potentially fatal consequences.

A. Identifying strangulation

The terminology used to describe the act displays a misunderstanding of what strangulation is. Choking and suffocation are the typical misnomers used by victims, law enforcement agents, and even legal professionals, to describe strangulation incidents. While all three lead to asphyxia, a lack of oxygen to the brain, the mechanics are different. Choking is the internal blockage of the airway preventing the victim from breathing. Suffocation is the obstruction of the airway at the nose or mouth. Strangulation is the external compression of the neck that can either directly block the airway, preventing breathing, or can impede the flow of blood to and from the brain by closing off arteries and jugular veins. There are three forms of strangulation: manual (hands, forearm, kneeling on victim's throat), ligature (use of a cord-like object), or by hanging.

B. Identifying injuries

Another common misconception is that strangulation causes bruises or other visible marks on the victim. Strangulation is a form of intimate partner violence often committed without witnesses. Therefore, when police arrive to investigate, they are faced with a “he said/she said” dilemma. A lack of visible injuries may be mistakenly viewed as a lack of harm to the victim, thereby allowing responding police officers, the abuser, and even the victim herself to minimize the assault. If the alleged victim appears unharmed, little to no evidence is collected for later use in prosecuting the abuser.

Absence of bruising should not be mistaken for denial of the act. In a study of 300 police reports on strangulation, victims in only 50 percent of the cases displayed visible injuries. GAEL B. STRACK & GEORGE MCCLANE, *HOW TO IMPROVE YOUR INVESTIGATION AND PROSECUTION OF STRANGULATION CASES 2* (David C. James ed., 1998) (updated January 2003, September 2007). Of the 50 percent, 35 percent of the injuries were too minor to photograph. *Id.* Bruises sometimes take a few days to show the force of the injury, and internal swelling of the throat could develop and restrict breathing hours after the strangling.

Importantly, the statutory definition for strangling under § 113(a)(8) states that the crime can be proven even in the absence of any visible injury. Besides bruising and swelling around the neck, other signs of strangulation may include:

- Scratches, abrasions, and discoloration to the neck, face, chest, shoulders

- Swelling of the tongue
- Appearance of red dots, called petechiae, from ruptured capillaries in the eyes, under the eyelids, on the face, or on the neck
- Voice changes (hoarse, raspy, or no voice)
- Trouble or pain when swallowing
- Breathing changes (difficulty breathing, hyperventilation, wheezing)
- Behavioral changes (restlessness or combativeness, problems concentrating, amnesia, agitation, Post-Traumatic Stress Disorder, hallucinations)
- Involuntary urination or defecation
- Coughing and/or vomiting
- Loss of consciousness/fainting
- Blue fingernails
- Dizziness/headaches
- Miscarriage

In extreme cases, swelling could be an early indication of internal injuries, such as a fractured larynx (voice box) or hyoid bone, seizures, or pulmonary edema (lungs filled with fluid). If medical treatment is not sought, these symptoms can lead to death.

V. Prosecuting cases under § 113(a)(8)

To overcome the misconceptions of strangulation, it is important to bring awareness to the issue and to educate both the public at large and the professionals dealing with the legal or medical consequences of strangulation. Training efforts like those of the Department of Justice's National Indian Country Training Initiative and the Training Institute on Strangulation Prevention (TISP) provide training and technical assistance to family violence professionals, while local women's shelters provide immediate assistance to survivors of domestic abuse and strangulation for medical, psychological, and protective care. (More information on TISP can be found at <http://strangulationtraininginstitute.com/index.php>.)

The Maricopa County Attorney's Office in Arizona took up the fight against domestic violence strangulation. In 2012, a partnership initiative between the local healthcare system, the local law enforcement, and the County Attorney's office created a program to establish more reliable methods of obtaining the necessary evidence to effectively prosecute strangulation incidents. Law enforcement officers received special training on how to recognize and respond to strangulation incidents, which includes transporting domestic violence victims to either a medical care facility or to a family advocacy center. There, forensic nurses are available 24 hours a day to perform specialized medical-forensic examinations and to collect evidence, including photographs of any visible injuries. These forensic nurses then provide testimony as expert witnesses in court. Their testimonies allow certain cases to proceed, even if the victim is unavailable or unwilling to testify. News Release, Maricopa County Attorney, *New Strategies Unveiled to Fight Against Domestic Violence Strangulations* (June 8, 2011) News Release available at <http://www.maricopacountyattorney.org/pdfs/news-releases/2012-06-08-New-Strategies-in-Fight-Against-Domestic-Violence-Strangulations.pdf>. Since launching the program, Maricopa County was awarded the National Association of Counties Award in the category of Criminal Justice and Public Safety, and more than 38 percent of reported strangulation allegations have resulted in convictions. News Release, Maricopa County Attorney, *Strangulation Program Honored with NACo Award* (June 13, 2013), available at <http://www.maricopacountyattorney.org/pdfs/news-releases/2013-06-13-Strangulation-Program-Honored-with-NACo-Award.pdf>.

The Maricopa County program is effective because it addresses three obstacles that hinder the prosecution of domestic violence: the inability of first responders to recognize strangulation, the reluctance of victims to testify, and the loss or lack of evidence.

A. Training first responders

Law enforcement officers in every jurisdiction—federal, state, and tribal—must be trained on the severity of strangulation, and the common misconceptions that officers may hold need to be corrected. Officers should be aware that strangulation is a potentially lethal form of intimate partner violence and that it should not be associated with other abuse, like a slap in the face. Without that training, police will not be able to effectively identify signs of strangulation. The signs of strangulation are easy to overlook because visible injuries are not always evident when police officers or medics first arrive at the scene of a domestic dispute. Police officers need to be trained on how to detect the initial symptoms and signs of strangulation.

When law enforcement arrives at a domestic violence scene, officers should assess the situation. They should make note of the surroundings, the demeanor of the victim, and the demeanor of the alleged abuser, if still present. If the abuser has apparent injuries, those should be noted and photographed along with any visible injuries to the victim. If an officer suspects that strangulation has occurred, he or she must call for paramedics or at least strongly encourage the victim to seek medical attention because, as mentioned earlier, swelling or other undetected injuries of the throat can be life threatening.

Ironically, medical personnel, who should be the most qualified to recognize symptoms of strangulation, often under-evaluate reports of strangulation and attribute the signs of strangulation to other causes. For example, a victim's hoarseness may be reported as resulting from screaming during an argument, not from strangulation, and broken blood vessels in the victim's eye may be reported as resulting from pink eye or a substance abuse problem. Gael B. Strack, George E. McClane & Dean Hawley, *A Review of 300 Attempted Strangulation Cases Part II: Clinical Evaluation of the Surviving Victim*, 21 J. EMERGENCY MED. 311, 312 (2001). Medical personnel should not minimize these signs, but should note in the medical record that the victim is displaying signs consistent with strangulation. Having the record state that the symptoms are consistent with strangulation is helpful when it comes to gathering evidence for the prosecution.

When interviewing the victim, it is important for police officers or investigators to quote the victim's own words ("He choked me.") when she is describing the event, but should otherwise use the word "strangulation" in the official report. Any symptoms that the victim is experiencing should be noted on the report along with any apparent injuries. The more details the officer includes in his report, the more useful it will be in prosecuting the case later.

It is important to ask the victim to demonstrate how she was strangled and to ask questions that will elicit specific information about the signs and symptoms of strangulation. Below is a list of questions police and prosecutors should consider asking when interviewing strangulation victims. (A two-page interview form is attached to the end of this article for additional guidance.)

1. Ask the victim to describe and demonstrate how she was strangled. Take photographs.
2. Document whether the victim was strangled with one or two hands, forearm, and/or objects.
3. If an object was used to strangle the victim, locate, photograph, and impound the object.
4. Determine if the suspect was wearing any jewelry, such as rings or watches. Look for pattern evidence.

5. If an object was used, how did it get there? Determine if the suspect brought the object with him to the crime scene. This information may be used to show premeditation.
6. What did the suspect say when he was strangling the victim? Use quotes.
7. Describe the suspect's demeanor and facial expression.
8. Was the victim shaken simultaneously while being strangled?
9. Was the victim thrown against the wall, floor, or ground? Describe surface.
10. How long did the suspect strangle the victim?
11. How many times and how many different methods were used to strangle the victim?
12. How much pressure or how hard was the grip?
13. Did the victim have difficulty breathing or hyperventilate?
14. Any complaint of pain to the throat?
15. Any trouble swallowing?
16. Any voice changes? Complaint of a hoarse or raspy voice?
17. Any coughing?
18. Did the victim feel dizzy, faint, or lose consciousness?
19. What did the victim think was going to happen? (For example, did she think she was going to die?)
20. Did the victim urinate or defecate as a result of being strangled?
21. Was the victim pregnant at the time?
22. Did the victim feel nauseated or vomit?
23. Any visible injury, however minor? If so, take photograph and follow-up photos.
24. Any prior incidents of strangulation?
25. Any pre-existing injuries?
26. Were the injuries shown to anyone? Were any subsequent photos taken?
27. Did the victim attempt to protect herself or himself? Describe.
28. Was any medical treatment recommended or obtained? If so, obtain medical release.
29. Were there any witnesses?

GAEL B. STRACK & GEORGE MCCLANE, HOW TO IMPROVE YOUR INVESTIGATION AND PROSECUTION OF STRANGULATION CASES 2 (David C. James ed., 1998) (updated January 2003, September 2007), available at http://www.ncdsv.org/images/strangulation_article.pdf.

B. Victim testimony

Another obstacle in these cases is the reluctance of domestic abuse victims to get involved in the criminal justice system and to testify. Even though these women have suffered pain and feared for their and their children's lives at the hands of their abusers, myriad emotions exist that prevent victims from removing themselves from the abusive relationship. As opposed to other violent crimes, domestic violence and frequent sexual assault occur in the privacy of homes between people with intimate

relationships. While they fear their partner, they also love them and rely on them not only emotionally, but often times financially, as well. If their abuser is prosecuted and sentenced to jail or prison, that affects the family's income and leads to financial hardship. Also, imprisonment only offers temporary relief to the victim. The abuser will eventually be released, and victims fear the retribution that will follow. Retribution is also a concern if the prosecution is unsuccessful.

Because of that fear, studies show that 80 to 85 percent of abused women will deny allegations of abuse after the incident and will refuse to testify. Tom Lininger, *Prosecuting Batterers After Crawford*, 91 VA. L. REV. 747, 768 (2005). As a result, prosecutors are placed in the difficult position of having to explain to the court and the jury why a victim is unavailable to testify, calling into question the legitimacy of the claims in the jury's and court's eyes.

As a way to introduce evidence from the victim despite their reluctance or inability to testify, prosecutors can attempt to use exceptions to the hearsay rule. However, in *Crawford v. Washington*, 541 U.S. 36 (2004), the Supreme Court held that, where the Government offers at trial hearsay evidence that is "testimonial" in nature, the Confrontation Clause of the Sixth Amendment requires actual confrontation, that is, cross examination, regardless of how reliable the hearsay statement may be. *Id.* at 59. Consequently, testimonial statements to police or emergency personnel may be excluded if the victim does not testify, but non-testimonial statements, which include statements given by the witness to police or 911 responders to help them resolve an ongoing emergency, may be admitted. *See Davis v. Washington*, 547 U.S. 813, 828 (2006). And, because medical attention should be sought for all survivors of strangulation, it may be the case that a physician, a Sexual Assault Nurse Examiner, or another medical provider, can testify to what the victim told them about the assault pursuant to Federal Rule of Evidence 803(4), the medical hearsay exception. Moreover, if the victim is unavailable to testify because of the defendant's actions, the prosecutor should explore using the forfeiture by wrongdoing exception under Federal Rule of Evidence 804(b)(6). This exception allows a victim's statements to come into evidence if the victim stays away from the court because of actions by the defendant that were purposefully done to keep the witness from testifying. *See Giles v. California*, 554 U.S. 353, 367 (2008).

C. Evidence

To overcome any skepticism that the judge or the jury develops due to a lack of participation by the victim in the criminal proceedings, it is helpful to have physical and demonstrative evidence of the crime. Evidence that is useful during prosecution includes photographs of the victim's injuries and of the scene of the abuse, physical evidence, medical evaluation forms, expert testimony, and if possible, a recording of the 911 call. Brigitte P. Volochinsky, *Obtaining Justice for Victims of Strangulation in Domestic Violence: Evidence Based Prosecution and Strangulation-Specific Training*, 4 STUDENT PULSE 1, 3 (2012).

Photographs: Photographs should always be taken. They are important to a judge and jury because they humanize the victim and make the assault personal. Photographs of the victim's injuries, if any are evident, should be taken soon after law enforcement arrives. Officers and investigators should continue to monitor the victim to ensure her safety and to capture any emerging bruises or injuries that can become visible hours after the assault took place. Full-shot photographs should be taken along with close-ups of injuries. The full-shots help the jury place the injuries in perspective to the victim's body and the close-ups show the details of the injuries that can be lost in distance shots.

Besides the victim, photographs of the scene should be included in the evidence. If a domestic fight occurred, furniture could be displaced and objects strewn about the room and broken. Also, because strangulation can cause urination, defecation, or vomiting, it is important to photograph any bodily fluids at the scene. These photographs will help portray the struggle a victim went through and will help set the scene for the strangulation.

Physical evidence: There may not be a lot of physical evidence, but it is important to present what is available during trial. Persuasive evidence can include the clothes of either the victim or the assailant if they are torn or ripped, and if they have any blood on them. Also, if the assailant used a ligature to strangle the victim, having the ligature and demonstrating how it was used on the victim is powerful evidence of the crime.

Medical forms: Studies show that victims sought medical attention in only three percent of strangulation cases. GAEL B. STRACK & GEORGE MCCLANE, *HOW TO IMPROVE YOUR INVESTIGATION AND PROSECUTION OF STRANGULATION CASES 2* (David C. James ed., 1998) (updated January 2003, September 2007). The records from those visits may be crucial to the prosecution. If no visible injuries are present, the documentation of internal injuries, if present, may be the only medical evidence that the victim was strangled. Also, the victim's description of her injuries to the medical personnel can also be introduced as evidence, if it is documented in the medical record.

Expert testimony: A couple of different types of expert testimony may be used in a strangulation trial. First, expert testimony on strangulation may be introduced. This can be important because it provides the opportunity to educate the court and the jury about the physical mechanics of strangulation and also its inherent lethality. Medical personnel frequently provide this type of testimony; however, a law enforcement officer or investigator trained in strangulation may also serve as an expert witness. The prosecutor may also want to call an expert on the nature and dynamics of domestic violence and the effects it has on victims, particularly if the victim recants or is a hostile witness. Many jurors may be unable to understand why a victim will remain with her assailant and/or be reluctant to testify against him at trial. An expert witness can make these seemingly counterintuitive behaviors understandable to the judge and jury.

911 recording: If the victim dialed 911 after the incident, this can be extremely useful evidence. It will likely be the first time that the victim explains what happened. The stress and fear in the victim's voice will have a strong effect on the jury. More importantly, the recording may show that the victim's voice was hoarse, that she was coughing, or that she was unable to catch her breath. All three are indicators of strangulation.

If the victim calls 911 when the abuser is still present or when the victim feels like she is still in danger, the recording may qualify as an exception to the hearsay rule and be admitted into evidence.

VI. Amendments to the Sentencing Guidelines

Once an AUSA secures a conviction for a violation of § 113(a)(8), it becomes necessary to properly calculate an appropriate sentencing guidelines range. On April 30, 2014, the U.S. Sentencing Commission (U.S.S.C.) published amendments to the Sentencing Guidelines. After reviewing the legislative history, public comment, hearing testimony, and relevant data of VAWA 2013, "the Commission determined that strangulation and suffocation of a spouse, intimate partner, or dating partner represents [sic] a significant harm not addressed by the existing guidelines and specific offense characteristics." U.S. SENTENCING COMMISSION, *AMENDMENTS TO THE SENTENCING GUIDELINES 9* (2014), available at http://www.usc.gov/sites/default/files/pdf/amendment-process/reader-friendly-amendments/20140430_RF_Amendments.pdf.

Accordingly, the U.S.S.C. issued the following amendments to the Sentencing Guidelines:

the amendment amends Appendix A to reference section 113(a)(8) to § 2A2.2 (Aggravated Assault) and amends the Commentary to § 2A2.2 to provide that the term "aggravated assault" includes an assault involving strangulation, suffocation, or an attempt to strangle or suffocate. The amendment amends § 2A2.2 to provide a 3-level enhancement at § 2A2.2(b)(4) for strangling, suffocating, or attempting to strangle or

suffocate a spouse, intimate partner, or dating partner. The amendment also provides that the cumulative impact of the enhancement for use of a weapon at § 2A2.2(b)(2), bodily injury at § 2A2.2(b)(3), and strangulation or suffocation at § 2A2.2(b)(4) is capped at 12 levels. The Commission determined that the cap would assure that these three specific offense characteristics, which data suggests co-occur frequently, will enhance the ultimate sentence without leading to an excessively severe result.

Although the amendment refers section 113(a)(8) offenses to § 2A2.2, it also amends § 2A6.2 (Stalking or Domestic Violence) to address cases involving strangulation, suffocation, or attempting to strangle or suffocate, as a conforming change. The amendment adds strangulation and suffocation as a new aggravating factor at § 2A6.2(b)(1), which results in a 2-level enhancement, or in a 4-level enhancement if it applies in conjunction with another aggravating factor such as bodily injury or the use of a weapon.

These amendments become effective November 1, 2014. Official text of the amendments can be found at www.ussc.gov.

VII. Conclusion

Strangulation is a serious crime that affects too many women in vulnerable positions. A strangulation survivor from Illinois provided written testimony to the U.S. Sentencing Commission in February 2014 as the Commission contemplated appropriate sentencing guidelines for the amended federal assault statute. She succinctly and profoundly described the devastating fear and effects of the crime of strangulation:

After two years of marriage filled with verbal abuse, shoving, and other physical abuse, one night my husband threw me down on the bed and began strangling me. Unlike any other way that he had attacked me in the past, this horror instantly sent me to a level of terror and trauma I had never known in my whole life. I knew I was seconds away from dying. This was a fear unlike anything I had ever known. Everything was suddenly different in my whole consciousness. I was going to die. The unthinking rage in his eyes made that clear.

He had even pulled a gun on me once, slapped me black and blue, but nothing felt as scary as this. There was that first part of the attack that so utterly terrified me as I anticipated my imminent death, panicking with what I could do. The fighting for freedom, the pain of his hands around my neck. Then as I began to suffocate, I could feel myself dying. Gasping for breath, desperate for air. Feeling myself slipping away, so fully conscious and hyper aware. And watching him - how personal the rage was. How he was using his bare hands to kill me - it was so intimate, he was so close to me. His skin on my skin. Like drowning, trapped in the water beneath the ice, the panic, the desperation to breathe, yet not being able to.

He felt me going limp and thankfully let go. I coughed myself back to life. What I learned in the days and the weeks after was the on-going and constant re-traumatization of the aftermath of the strangulation. For weeks, every time I moved my head, I was grabbed with pain. I couldn't sleep, I couldn't eat or drink well. Every move was a painful reminder. I had to take time off work without pay to cover up the worst of it, then I had to lie to deal with answering questions about the bruises, etc., at my teaching job. The aftermath was a constant reminder of what had happened. [Twenty] years later it is as vivid to me as any moment of my life.

The neck is so easy to grab, so vulnerable, so vital to all life, connecting breathing and heart to mind. The viciousness and harm of this terroristic act is far different than mere broken bone or a physical injury. I have suffered the range of these injuries and nothing comes close to strangulation and suffocation in sheer terror.

Jennifer Bishop-Jenkins, Written Testimony to the U.S. Sentencing Commission (2014), available at http://www.ussc.gov/sites/default/files/pdf/amendment-process/public-hearings-and-meetings/20140213/Testimony_VAG.pdf.

Hopefully, with the new provisions in § 113(a)(8), more victims of intimate partner violence in Indian Country will find protection under the law from their abusers, but the enactment of strangulation laws is not enough. Law enforcement, medical care providers, and criminal justice personnel must be able to identify when strangulation has occurred and must be willing to take the necessary steps to help victims who may not be willing to or are unable to help themselves. By training first responders in detection of strangulation and effective evidence gathering techniques, the prosecution of abusers will be more successful.

Documentation Chart for Strangulation Cases

Symptoms and/or Internal Injury:

Breathing Changes	Voice Changes	Swallowing Changes	Behavioral Changes	OTHER
<input type="checkbox"/> Difficulty Breathing <input type="checkbox"/> Hyperventilation <input type="checkbox"/> Unable to breathe Other:	<input type="checkbox"/> Raspy voice <input type="checkbox"/> Hoarse voice <input type="checkbox"/> Coughing <input type="checkbox"/> Unable to speak	<input type="checkbox"/> Trouble swallowing <input type="checkbox"/> Painful to swallow <input type="checkbox"/> Neck Pain <input type="checkbox"/> Nausea or Vomiting <input type="checkbox"/> Drooling	<input type="checkbox"/> Agitation <input type="checkbox"/> Amnesia <input type="checkbox"/> PTSD <input type="checkbox"/> Hallucinations <input type="checkbox"/> Combativeness	<input type="checkbox"/> Dizzy <input type="checkbox"/> Headaches <input type="checkbox"/> Fainted <input type="checkbox"/> Urination <input type="checkbox"/> Defecation

Use face & neck diagrams to mark visible injuries:



Face	Eyes & Eyelids	Nose	Ear	Mouth
<input type="checkbox"/> Red or flushed <input type="checkbox"/> Pinpoint red spots (petechiae) <input type="checkbox"/> Scratch marks	<input type="checkbox"/> Petechiae to R and/or L eyeball (circle one) <input type="checkbox"/> Petechiae to R and/or L eyelid (circle one) <input type="checkbox"/> Bloody red eyeball(s)	<input type="checkbox"/> Bloody nose <input type="checkbox"/> Broken nose (ancillary finding) <input type="checkbox"/> Petechiae	<input type="checkbox"/> Petechiae (external and/or ear canal) <input type="checkbox"/> Bleeding from ear canal	<input type="checkbox"/> Bruising <input type="checkbox"/> Swollen tongue <input type="checkbox"/> Swollen lips <input type="checkbox"/> Cuts/abrasions (ancillary finding)

Under Chin	Chest	Shoulders	Neck	Head
<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks <input type="checkbox"/> Bruise(s) <input type="checkbox"/> Abrasions	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks <input type="checkbox"/> Bruise(s) <input type="checkbox"/> Abrasions	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks <input type="checkbox"/> Bruise(s) <input type="checkbox"/> Abrasions	<input type="checkbox"/> Redness <input type="checkbox"/> Scratch marks <input type="checkbox"/> Finger nail Impressions <input type="checkbox"/> Bruise(s) <input type="checkbox"/> Swelling <input type="checkbox"/> Ligature mark	<input type="checkbox"/> Petechiae (on scalp) Ancillary findings: <input type="checkbox"/> Hair pulled <input type="checkbox"/> Bump <input type="checkbox"/> Skull fracture <input type="checkbox"/> Concussion

Questions to ASK: Method and/or Manner:

How and where was the victim strangled?

One Hand (R or L) Two hands Forearm (R or L) Knee/Foot

Ligature (Describe): _____

How long? _____ seconds _____ minutes Also smothered?

From 1 to 10, how hard was the suspect's grip? (Low): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (high)

From 1 to 10, how painful was it? (Low): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (high)

Multiple attempts: _____ Multiple methods: _____

Is the suspect **RIGHT** or **LEFT** handed? (Circle one)

What did the suspect say while he was strangling the victim, before and/or after?

Was she shaken simultaneously while being strangled? Straddled? Held against wall?

Was her head being pounded against wall, floor or ground?

What did the victim think was going to happen?

How or why did the suspect stop strangling her?

What was the suspect's demeanor?

Describe what suspect's face look like during strangulation?

Describe Prior incidents of strangulation? Prior domestic violence? Prior threats?

MEDICAL RELEASE

To All Health Care Providers: Having been advised of my right to refuse, I hereby consent to the release of my medical/dental records related to this incident to law enforcement, the District Attorney's Office and/or the City Attorney's Office.

Signature: _____ Date: _____

TRAINING INSTITUTE ON STRANGULATION PREVENTION, DOCUMENT CHART AND QUESTIONS TO ASK, available at <http://strangulationtraininginstitute.com/index.php/library/finish/837-documentation-forms/3634-documentation-chart-for-non-fatal-strangulation-cases.html> (reprinted with permission from the Training Institute on Strangulation Prevention). ♦

ABOUT THE AUTHOR

□ **Leslie A. Hagen** serves as the Department of Justice's first National Indian Country Training Coordinator. In this position, she is responsible for planning, developing, and coordinating training in a broad range of matters relating to the administration of justice in Indian Country. Previously, Ms. Hagen served as the Native American Issues Coordinator in the Executive Office for United States Attorneys (EOUSA). In that capacity, she served as EOUSA's principal legal advisor on all matters pertaining to Native American issues, among other law enforcement program areas; provided management support to the U.S. Attorneys' offices; and coordinated and resolved legal issues. She is also a liaison and technical assistance provider to Department of Justice components and the Attorney General's Advisory Committee on Native American Issues. Ms. Hagen started with the Department of Justice as an AUSA in the Western District of Michigan. As an AUSA, she was assigned to Violent Crime in Indian Country and handled federal prosecutions and training on issues of domestic violence, sexual assault, and child abuse affecting the 11 federally recognized tribes in the Western District of Michigan. Ms. Hagen has worked on criminal justice issues related to domestic violence, sexual assault, and child abuse for over 25 years. *