

Strangulation

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Disclaimer

- The speaker has no conflict of interest
- The content of the presentation is a collection of work from experts in the field and personal experience
- Opinions are those of the presenter and may not have been reviewed by the funders

Objectives

- Understand the physical impacts of strangulation.
- Define terminology and identify methods of strangulation.
- Identify strangulation related symptoms and clinical findings.
- Discuss the logistics of providing a medical forensic examination.

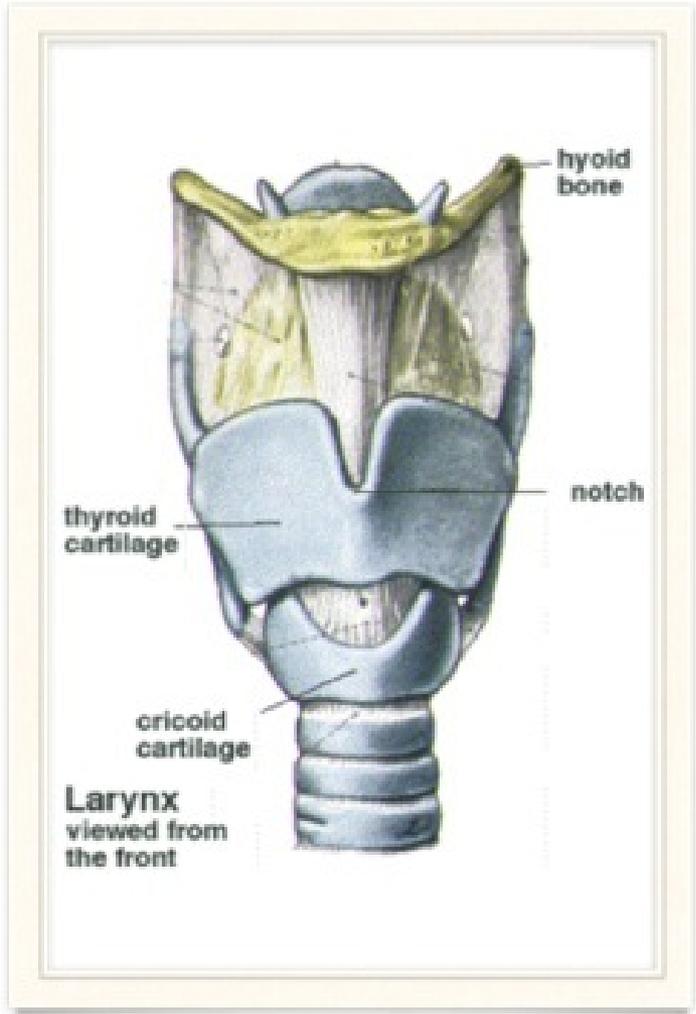
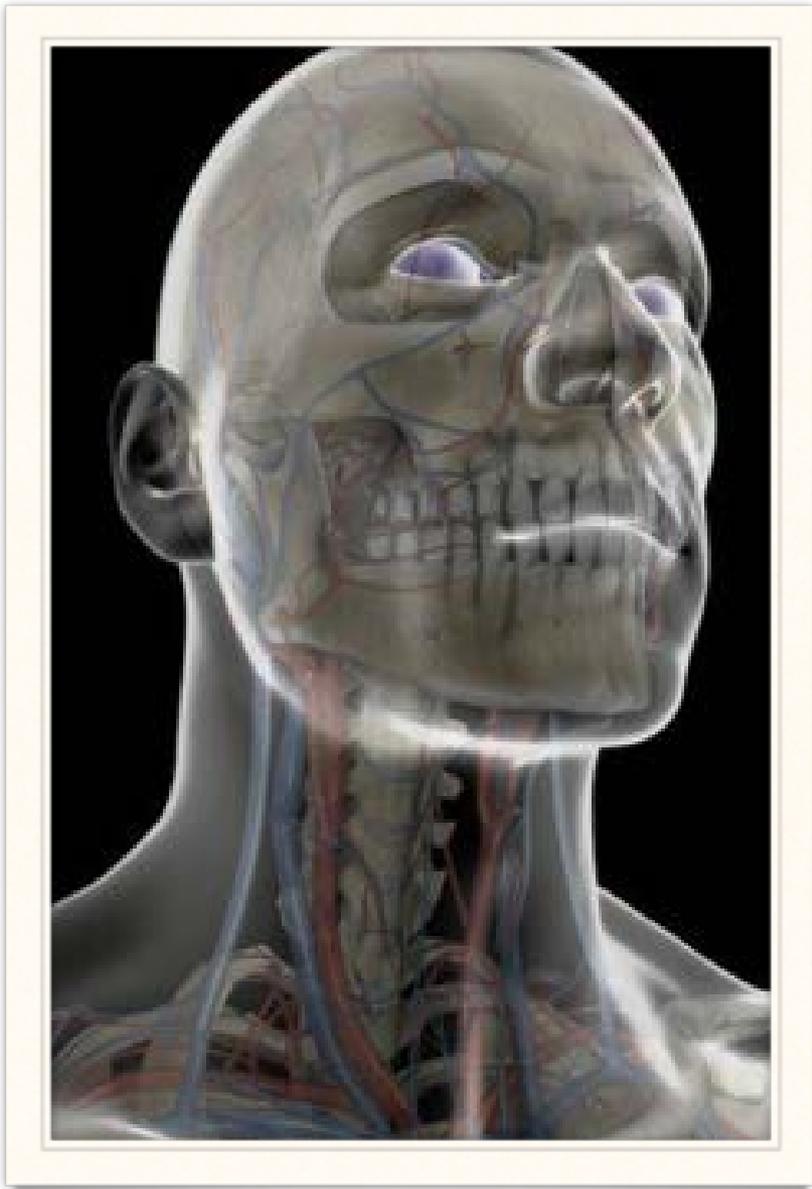
Physiology

Human brain and body needs oxygen to live.

- **Oxygen Supply**
 - Airway of mouth and nose allows oxygen to travel to lungs for oxygenated blood supply.
 - Body must continue to inhale and exhale for oxygen supply to the lungs
- **Blood Flow Containing Oxygen**
 - The entire body requires oxygen containing blood to live. It is delivered by arteries. (carotid artery supplies blood to brain)
 - Blood that has been delivered is returned to the lungs by veins for more oxygen (jugular vein returns blood flow from brain)

Physical Impact

- Blocking of the carotid arteries
 - Depriving the brain of oxygenated blood – O₂ 
- Blocking of the jugular veins
 - Prevents de-oxygenated blood from leaving the brain- CO₂ 
- Closing off of the airway
 - Causing the victim from being unable to breathe



Terminology

- Strangulation~ external pressure to the neck that blocks airway or blood flow
- Choking ~ internal block of airway from object
- Suffocation ~ blocked respiration
- Asphyxia ~ lack of oxygen to the brain
 - ❧ No oxygen in lungs
 - ❧ No blood flow containing oxygen to brain
 - ❧ Multiple mechanisms

Varying Factors

- Length of Time
- Amount of Pressure
- Anatomical Structures
- Surface Area

“Point Of No Return”

- Asphyxiation becomes irreversible
- Spontaneous breathing will not resume unless CPR and mechanical external life support measures are started
 - After about 4 minutes of sustained bilateral jugular compression
 - Can happen faster with carotid obstruction, and has occurred as quickly as 15 seconds into a carotid compression “choke hold.”

Symptoms

Pain and discomfort

- ❧ Neck and throat pain
- ❧ Limited range of motion
- ❧ Very common

“Feels like a lump in my throat.”

“It’s like when you have a burning sore throat, but I wasn’t sick before this.”

Symptoms

“How did this affect your breathing?”

❧ Hyperventilate

❧ Gasp for breath

❧ Delayed lung problems-aspirate pneumonia

“It’s like when you’re underwater too long.”

“I could not get air.”

Symptoms

Voice changes

- ❧ Immediate or delayed
- ❧ Raspy voice/hoarse
- ❧ Dysphonia – Pain with talking
- ❧ Aphonia – Loss of voice
- ❧ Directly related to trauma to larynx
- ❧ Common in about 50%

Symptoms

Swallowing changes

- ❧ Odynophagia (Pain with swallowing)
- ❧ Dysphagia (Difficult to swallow)
- ❧ Constant or frequent clearing of throat
- ❧ Increased drooling
- ❧ Unable to swallow saliva
- ❧ Immediate or delayed

Symptoms

Brain - Altered level of consciousness

- Memory loss, gaps
- Passed out
- Lightheaded, dizzy
- Behavior changes (combative, agitated, restless, delayed)
- Immediate or delayed
- Short term and long term damage

Symptoms

Neurological affects

- Facial droop
- One-side weakness to body
- Hearing changes (ringing-tinnitus)
- Vision changes “Everything went black.”
- Bladder and/or bowel changes
- Miscarriage

Lethality

- Even if the initial presentation is clinically benign, all near-hanging victims and patients with evidence of vascular compromise secondary to strangulation should be admitted for 24-hours observation to watch for delayed airway and pulmonary complications.

-The Clinical Practice of Emergency Medicine. 2nd Edition Lippincott Williams & Wilkins; 1996:566

Clinical Findings

- Abrasions - scratches
 - From patient or suspect
- Contusions – bruising
 - Thumb or finger (placement varies)
 - Delay in visibility
- Ecchymosis – blood filled bruising
- Erythema – redness
- Ligature marks vs. Patterned impression injury (necklace, t-shirt seams)

Abrasions



Contusions



Ligature Mark



Patterned Injury



Clinical Findings

- Petechiae
 - ❧ Ruptured capillaries or small blood vessels
 - ❧ Tiny red, flat, non-tender red spots
 - ❧ Occurs with increased venous pressure
 - ❧ Compression of the jugular vein (keeping the blood from returning to the heart - builds pressure)
- ✧ A lack of petechiae in strangulation cases means nothing.

Petechiae



Clinical Findings

- Sub-conjunctival hematoma or hemorrhage
 - Larger area of venous compression
 - Ruptured vessels in sclera of eye (white part)
 - May indicate vigorous struggle or repeat venous compression
 - Blood filled – Visually concerning to patients
 - Does not impair vision
 - Most require no treatment
 - Estimated length of time to resolve is 1-2 weeks

Subconjunctival Bleeding



Strangulation Related Injury



Suffocation Related Injury

- Skin abrasions (scratch marks, fingernail marks) and tiny red spots (petechiae) just over the face in strangulation, or generalized in the skin in suffocation
- Abrasions over nostrils
- Lip incised abrasions where lips are pushed against teeth

Suffocation

- Many cases will have no visible injury.
- If the person is impaired by severe natural disease or medical condition, or is intoxicated, or physically restrained, then suffocation may leave no physical marks.
- If there are no teeth, then the tell tale lip injuries are not likely.
- Suffocation done with a medical device, like obstruction of an endotracheal tube or turning off a ventilator leaves no findings.

Additional Acute Injuries



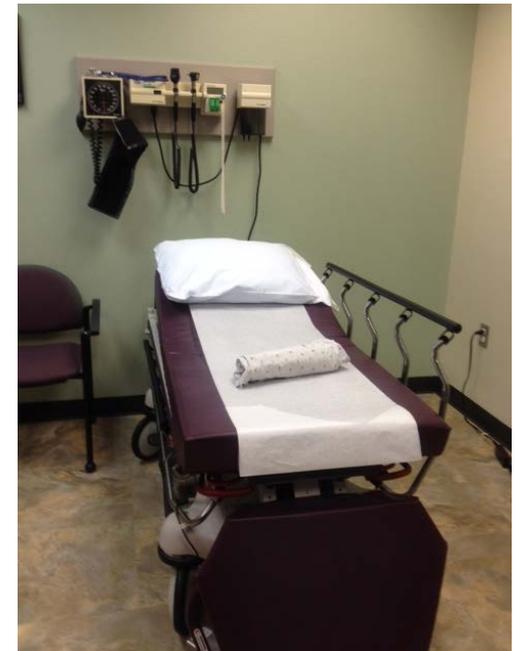
Offender Injuries



Providing a Medical Forensic Exam

- Forensic examiner
 - FNP, NP, MD
 - Training requirements
 - Expertise
- Equipment options
 - Vital signs, pulse ox, fetal doppler, preg test
 - ALS
 - Swab packaging
 - Camera – CD'd for photo review
 - Standard document or report

Exam Room



Providing a Medical Forensic Exam

- Location
 - Hospital
 - Clinical setting
 - Advocacy Center
 - Protocol for examination
 - Charting process
 - Best practice for process
 - Standard protocols for patient
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Medical Examination

- Clinical priority ABC's
 - Stabilization of the patient
 - Complete evaluation and examination
 - Higher level of care – transfer
- Forensic
 - Collection of swabs (neck~touch DNA, bites, saliva)
 - Delayed examination (up to 120 hours)
- Documentation
 - Standard exam form or complete report
 - Photo documentation (initial & follow-up, CD's)

Documentation

- Medical history
- History of assault
 - Open ended narrative, Tell me what happened?
“word for word” quotes.
 - Clarifying questions
- Complete head to toe examination
- Injury documentation
 - Size, color, type of injury described
 - Drawn on Body map
 - Photographed
- Chain of Custody

Documentation

Exact quotes make an impact.

“He had the devil in his eye.”

“My eyes were popped out of my head.”

Observations can be critical.

Constant clearing of throat

Noticeable hard swallow

Cough and spit

Case Study Review

Laura's Experience



Police Response

Laura declines fire on scene.

Medical Forensic Examination:

20 hours post assault at a local
family advocacy center

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Per Protocol

- Medical History:
 - Existing diagnosis, surgeries, medications, allergies, etc.
- History of Event:
 - Chief Complaint – Open Ended “tell me what happened...”
 - Detailed Clarifying Questions
- Head to Toe Exam:
 - Physical Assessment – Complete Documentation of Injuries with Photographs
- Aftercare and Safety Planning

“He pushed me. He slapped me across the face. He strangled me two different times, once one handed and once two handed. He slammed me into the car, like my back kept hitting the car, so did my head. There was a lot of pushing and pulling and shoving, my arms, my hair, my clothes. He shoved me on the ground.”

“He used his knee once to try to bring me down to the ground, to wrap his leg around mine. He held me against the garage with two hands on my neck.”

“Before the entire incident started, I told him if he showed back up I was calling the cops. He said he would give the cops something to find.”



More about Laura

- 23 years old
- Married with a child in common
- Pregnancy history G3P1
- Reports past physical abuse:
“Same stuff, pushing, hitting and slapping”
- Denies previous strangulation
- Reports psychological history of power and control, name calling

Methods of Strangulation

Manual Strangulation

– 2 times during assault

1 hand approached from the front

Both hands approached from the front

Physical Findings

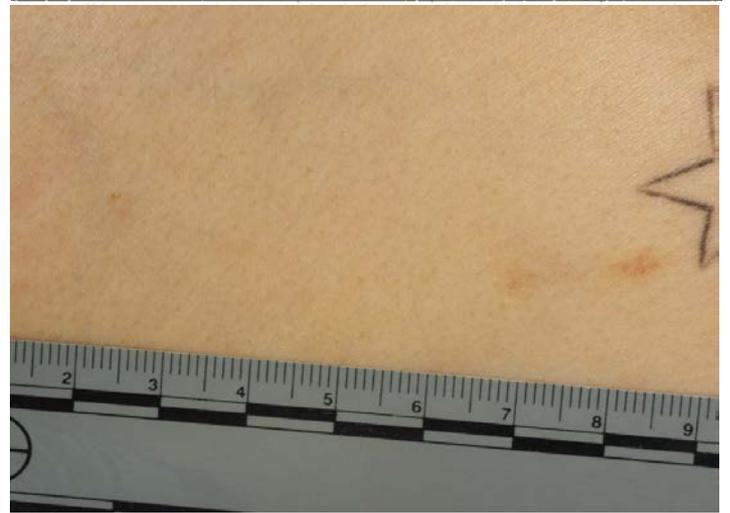
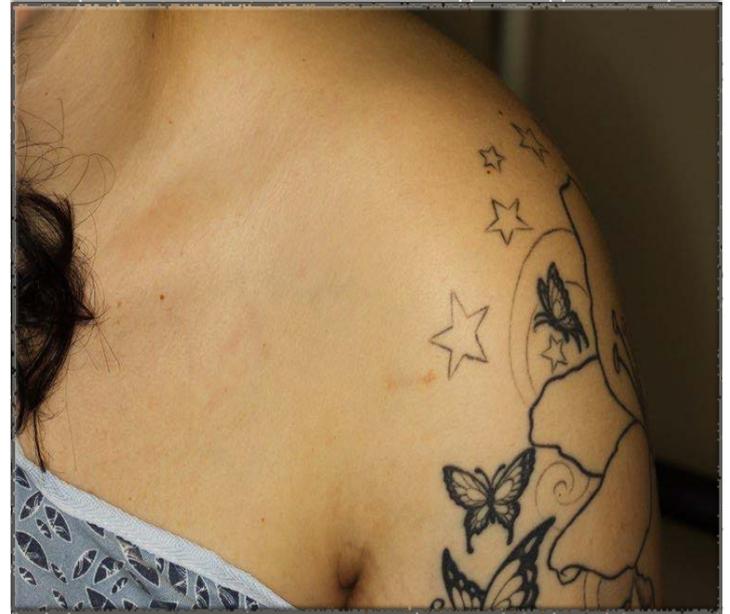
- Patient Reports
 - Headache
 - Throat pain
- Visible Injuries Noted
 - 14 Documented injuries
 - 2 Injuries to the neck
 - 12 Injuries to the extremities













Aftercare

- Strangulation warning signs reviewed
- Aftercare instructions reviewed
- Safety plan given
- Community resources provided
- Follow-up photographs recommend
- Patient did not return for follow-up photographs

Outcome of the Case

Injuries consistent with history?

Injuries consistent with strangulation?

Corroboration of the event?

Pled Guilty Aggravated Assault

Class 6 Felony

~2 years probation

Who took the most important
pictures and wrote the key
report?

Forensic Nurse
Or
Law Enforcement?

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Both!

Medical Forensic Photos

- Accompany medical documentation
- Accompany body map
- Additional piece to record the physical examination
- Non-investigative
- Great visual for a jury

Crime Scene Photos

- Investigative
- Help capture the specifics of the case
- Record the findings
- Solve the crime
- More than the medical findings
- Great visual for a jury

****Reminder****

- Different purposes reporting similar findings make a greater impression
 - The medical forensic exam does not replace any piece of investigation
 - Each responder has an important role to assist domestic violence
 - Get creative and use what you have
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Medical Forensic Exam Benefits

- Non-biased medical documentation of findings
 - Best practice for specialized trauma informed care
 - Opportunity to educate and provide resources
 - Court testimony – expert witness
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Thank You!



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