MEDICAL ASSESSMENT

HEAD TO TOE

HEAD TO TOE ASSESSMENT

- Simultaneous head to toe assessment during your exam
- Objective information
- What you see, feel, hear, smell, exam findings
- Subjective + Objective = complete forensic examination

- Document ALL findings, regardless of situation

HEAD TO TOE ASSESSMENT

- AVOID!
- Never write WNL – document your objective findings of what you see, feel, smell, observe
- Forensic examinations are NOT general medical assessment, your responsibility is to document EVERYTHING

HEAD TO TOE ASSESSMENT

- Systematic assessment for each body region
- Cephalocaudal
  - Start at head and move down body

INITIAL PRESENTATION

- General appearance (clothing, demeanor, orientation, emotions)
- Who is with the patient (at the bedside)
- General safety assessment of patient
- Medically stable for exam

CORRELATING

- Use subjective (questionnaire, narrative) to guide your objective assessment
- Correlating information
- Pertinent positives (+ correlations)
- Pertinent negatives (- correlations)

CORRELATING

- Examiner responsibility is to see if correlating findings are present
- May be absent
  - Consider normal variants on WHY a finding may be absent
  - Ex: 24 yo F, LMP 16 days ago, acquaintance rape during 2nd date

ASSESSMENT TECHNIQUES

- Inspection!
- Palpation!
- Focused assessments – auscultation and percussion rarely if ever used during a forensic examination
- Ambient light, tangential light, ALS

ALS

- Use of ALS several times throughout exams
- Attempt to consolidate use (average 3 times per exam)
  - Upon initial arrival (with clothes on – front and back)
  - During anogenital exam
  - On conclusion of head to toe exam – inspect entire body front/back

ASSESSMENT TECHNIQUES

- Inspection!
- Ambient light (direct overhead lighting)
- Tangential light (pen light, otoscope light) w/room lights dimmed
- ALS (capillary bed disruption, contrast, fluorescence)

HEENT

- Critical assessment performed with possible strangulation history from subjective information
- Perform Strangulation Assessment – form walks you through assessment critera

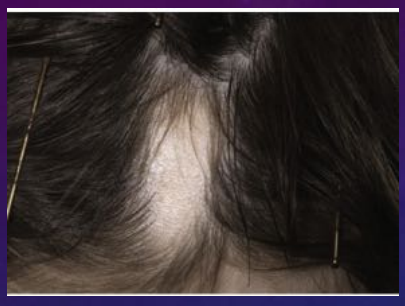
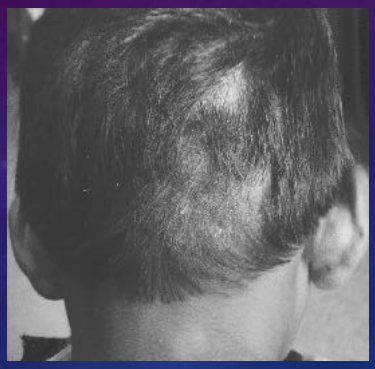
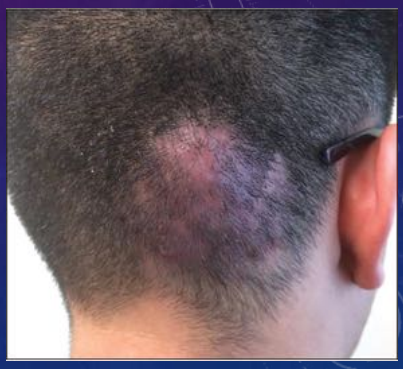
HEAD/SCALP

- Inspect scalp with ambient room light
  - Missing hair segments
  - Scalp injuries, membrane disruptions, petechiae, lacerations
- Inspection with ALS
  - contrast, fluorescence
  - Can request to cut small portion of hair if + findings
  - Use sterile scissors (suture kit) or obtain dry stain

HEAD/SCALP

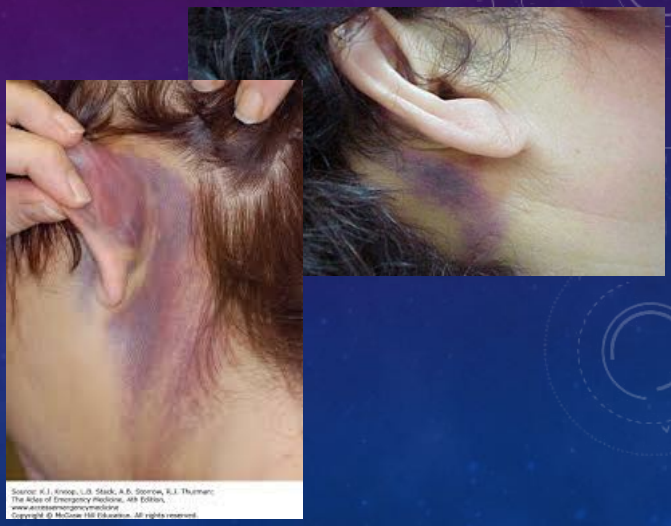
- Palpate
  - Swelling
  - Tenderness/pain
  - Crepitus
  - Deformity

HEAD/SCALP

HEAD/SCALP-EARS – BATTLE'S SIGN

- Indication of a basal skull fracture
- Notify MD immediately

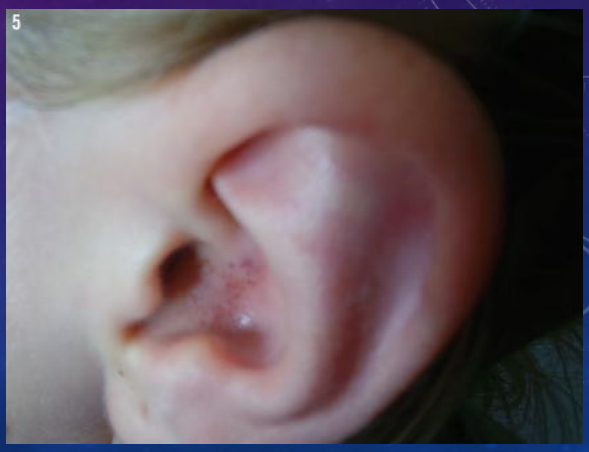


HEAD/EARS

- Inspect ears with ambient room light
  - Petechia , injury, swelling, deformity
  - Piercings (intact, missing) – important if left at assault location
  - Clear fluid – contact physician ASAP (possible CSF)
- Inspection with ALS
  - contrast, fluorescence
  - Contrast = scant blood in ear canal

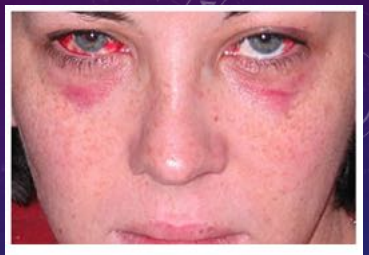
HEAD/EARS

- Ringing in ears
- Finger nail impressions
- Common location of petechia after strangulation
  - Inside ear canal and behind ears

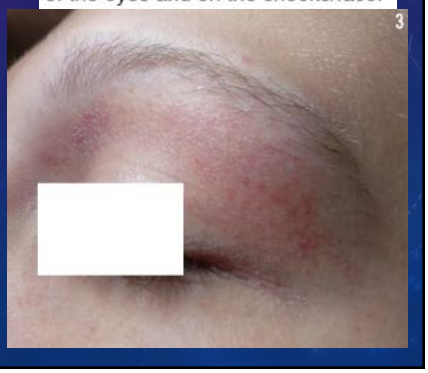


HEAD/EYES

- Inspection
- Eyelids, sclera, pupils (PERLA)
- Conjunctiva, hemorrhages
- Piercings (intact/missing)
- Pull lids down to assess
- Visual acuity (if applicable)
  - May suggest to MD on report



Pronounced petechiae in the whites of the eyes and on the cheeks/face.



HEAD/EYES

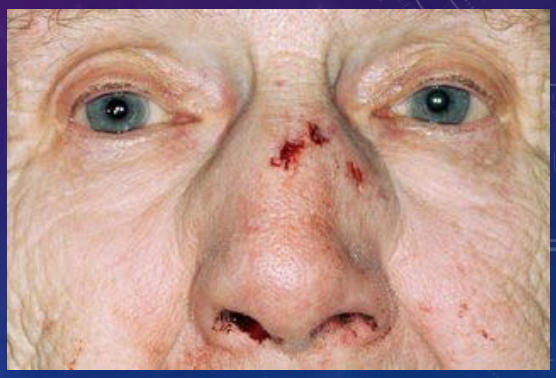
HEAD/EYES

- Palpation
- Orbits, lids, temporal
- Swelling, pain, tenderness, nodules


Petechial hemorrhage of eye lid

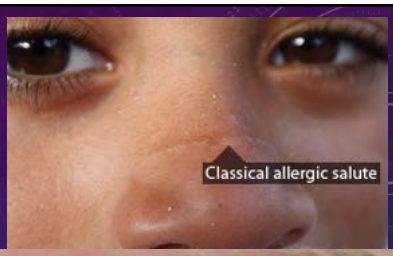
HEAD/NOSE

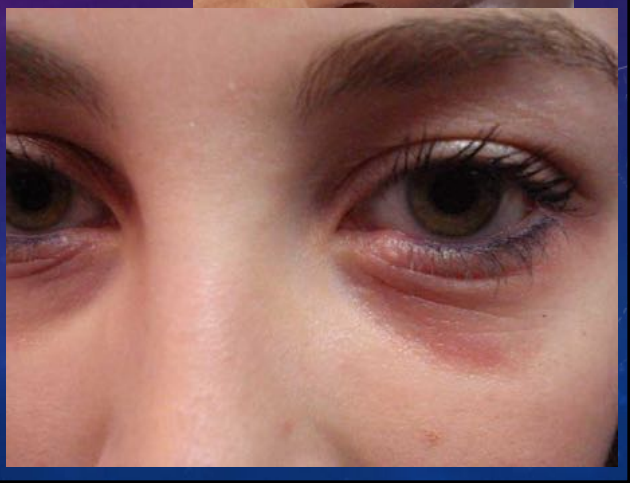
- Inspection
  - Discharge (color, consistency, amount) think DNA!
  - Turbinates – swelling
  - Injury/lesions
  - Deformity
- Palpation
  - Tenderness/pain
  - Swelling
  - Integrity



HEAD/NOSE & EYES

- Common findings
- Allergic shiners/salutes
- Still document finding
- Don’t have to differentiate
- Review med hx (allergies)





HEAD/NOSE

- No finding is too small!
- Hx of successful prosecution from great investigation by PD
  - Patient had severe allergy to dogs
  - Perpetrator had 4 dogs
  - Rhinitis, sneezing during assault, allergic shiners/salute
  - Patient's DNA retrieved from assailant in 6 different locations

HEAD/MOUTH

- Inspection (use pen light, otoscope light)
- Frenulum, soft/hard palate, lips
- Teeth, missing/hardware/piercing
- Petechiae, swollen tongue
- Inspect inside lips/on gumline

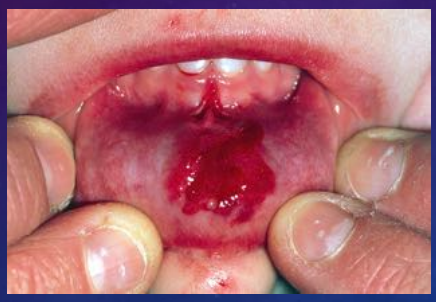
- **obtain oral swabs during assessment

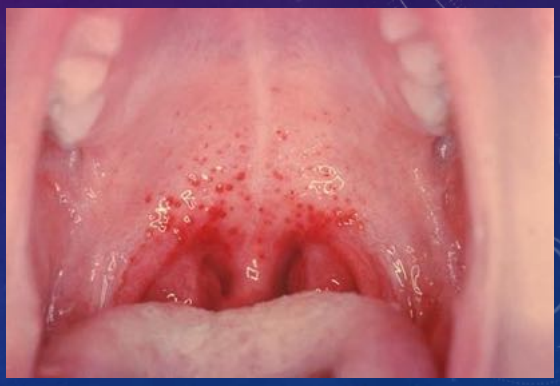
HEAD/MOUTH

- Use objective history to obtain possible circumoral dry stains if report of kissing
  - Also kissing, licking, biting to any HEENT location

HEAD/MOUTH

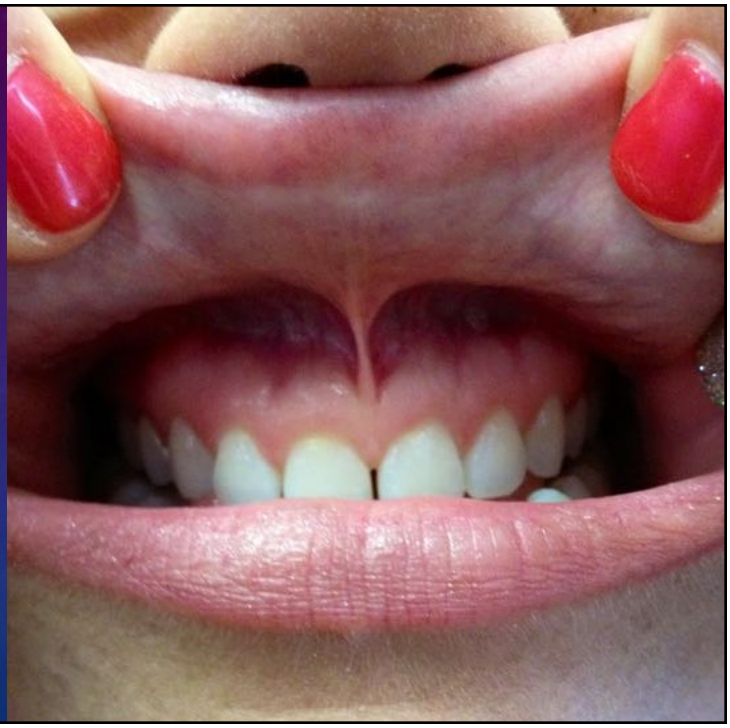
- Forced oral penetration, strangulation
- Frenulum, palate, gums, lips, teeth





HEAD/MOUTH

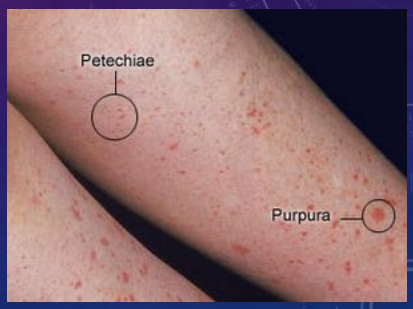
- Retract lips to assess



HEAD/NECK

- Inspection with ambient light, tangential light
- Injury, swelling, petechiae, purpura
- Trachea midline
- JVD (strangulation)
- Fingernail indentations
- Ligature marks
- Difficulty breathing

- ALS!
- Deeper capillary bed disruptions
- Common to see fingertip bruising during strangulation



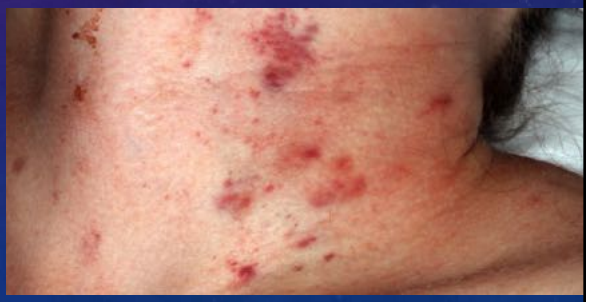
Petechiae <.5cm
Purpura >.5cm

HEAD/NECK

- Assess for
- Voice changes
- Unable to speak
- Trouble swallowing
- Clearing throat (without baseline hx)
- Coughing
- Sore throat
- Stridor
- Drooling
- Facial asymmetry

HEAD/NECK

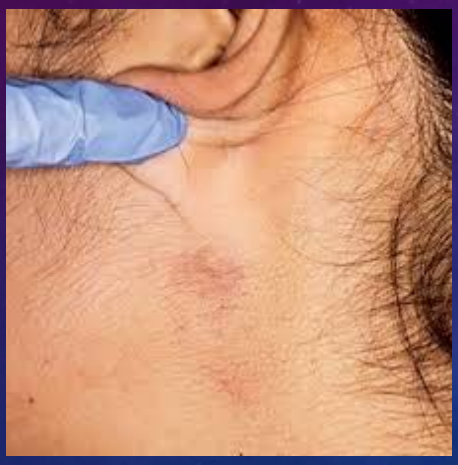
- Palpate for
- Deformity, trachea midline, crepitus
- Tenderness, pain
- Swelling

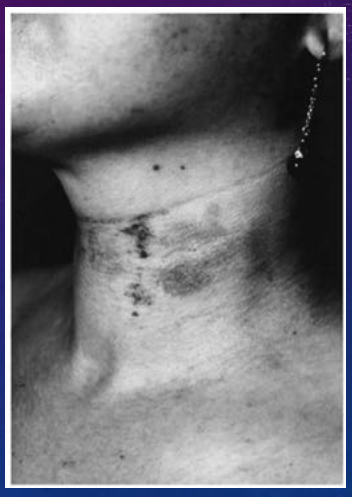


HEAD/NECK

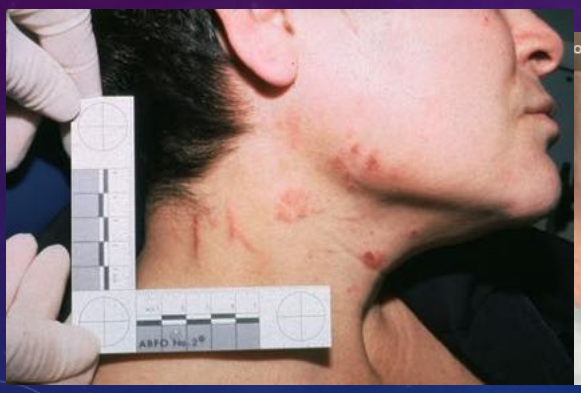
- Obtain dry stains to neck area for
- Touch DNA if subjective information indicates
- Dry stain if subjective information dictates
- Any area licked, kissed, bitten

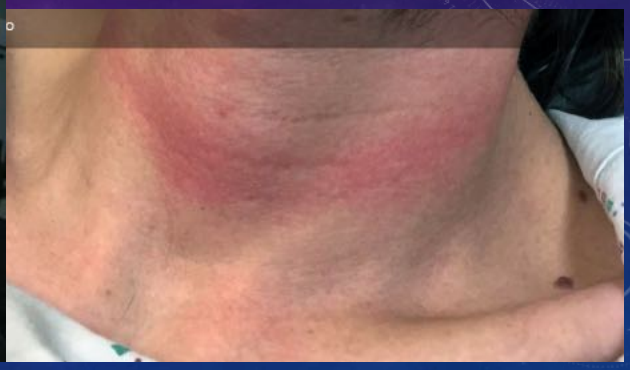
HEAD/NECK



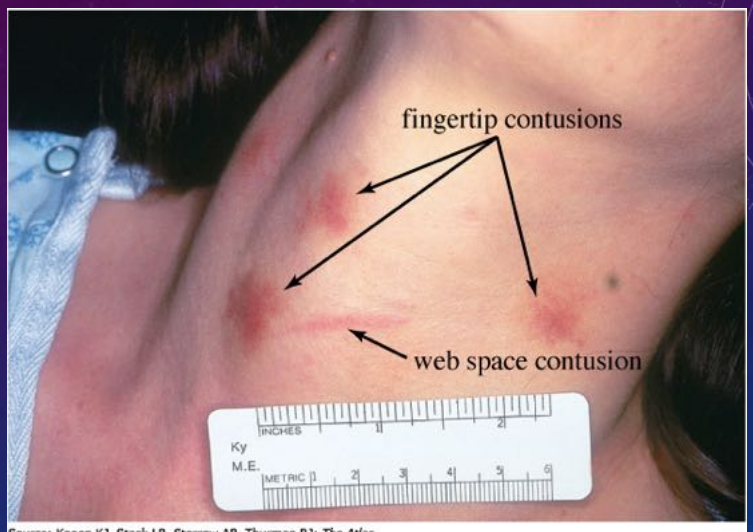


HEAD/NECK



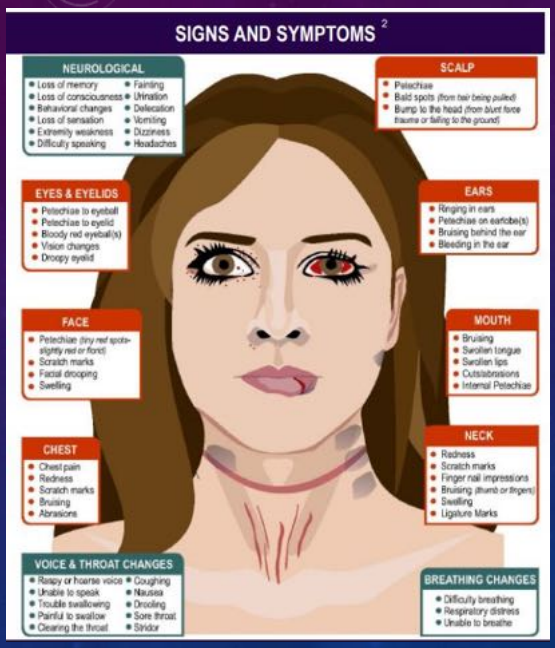


HEAD/NECK



Source: Knoop KJ, Stack LB, Storrow AB, Thurman RJ: *The Atlas of Emergency Medicine, 3rd Edition:* http://www.accessmedicine.com

HEAD/NECK



TORSO - ANTERIOR

- Inspection (ambient/tangential/ALS)
- Injury, swelling, lesions, scars, deformity

- Palpation
- Pain, tenderness, deformity, swelling, crepitus

TORSO - ANTERIOR

- Don't forget
- Striae, eschar if applicable
  - Older = general statement
- **rationale – if you didn't document simple findings then how can competency be proven

TORSO - ANTERIOR

- Example:

Objective:

"multiple striae to anterior RLQ and LLQ, white in appearance with various measurements ranging from 0.5 cm (smallest) to 6.5 cm (largest)"

Subjective:

"those are from my pregnancy"

TORSO - POSTERIOR

- Repeat assessment for posterior torso

TORSO - EXTREMITIES

- Inspection (ambient/tangential/ALS)
- Injury, swelling, lesions, scars, deformity

- Palpation
- Pain, tenderness, deformity, swelling, crepitus

TORSO – EXTREMITIES (ANTERIOR & POSTERIOR)

- AVOID:
- Do not “assume” puncture wounds are needle sticks
- Document objectively what you see
- Ex: “0.5 x 1.0 hematoma, blue in color to right antecubital fossa with central pinpoint puncture wound, tender on palation, no acute bleeding noted”

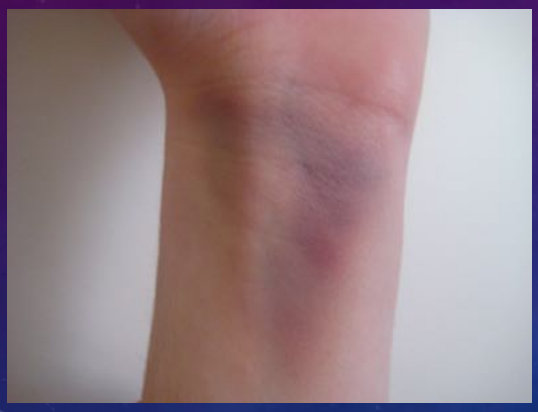
TORSO – EXTREMITIES (ANTERIOR & POSTERIOR)

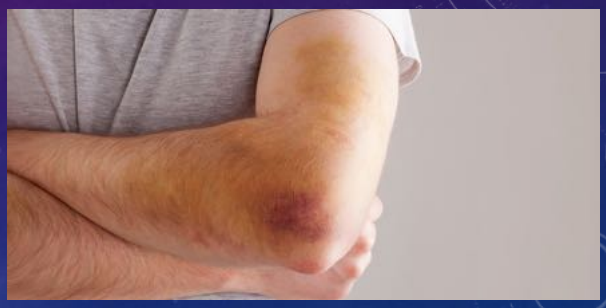
- Don’t forget range of motion to extremities
- Important to establish correlation
- Ligature marks, fingertip bruising, patterned injury
- Assess for defense wounds to extremities
  - Mechanical injury

TORSO – EXTREMITIES (ANTERIOR & POSTERIOR)

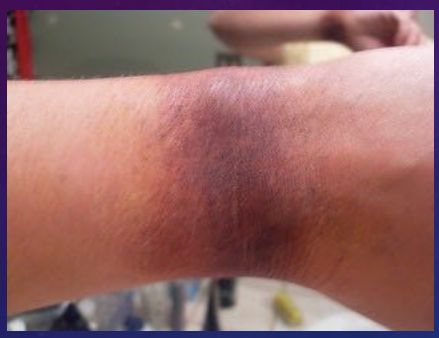
- **can collect fingernail swabs during this part of assessment
- Touch DNA
- DNA sites from subjective statement

TORSO – EXTREMITIES (ANTERIOR & POSTERIOR)





TORSO – EXTREMITIES (ANTERIOR & POSTERIOR)



GENITALIA

- Genitalia assessment covered in detail in previous lectures
- Consider – use of ALS prior to initiation of genitalia exam

FORENSIC INJURY ASSESSMENT

CAUTION ON DESCRIPTIONS OF WOUNDS

- Tendency for examiners to fall into patterns of labeling all injury types the same – AVOID THIS!
  - Ex: laceration > incision, traction, torsion, shear stress
- Recognize the types of injuries related to most likely cause and use appropriate nomenclature

SIZE AND SHAPE

- Measure size (in 2 different fields – ex 2cm x 4cm)
- Describe shape of wound
  - Linear
  - Ovoid
  - Crescent
  - V shaped, S shaped, etc

COLOR & CHARACTERISTICS

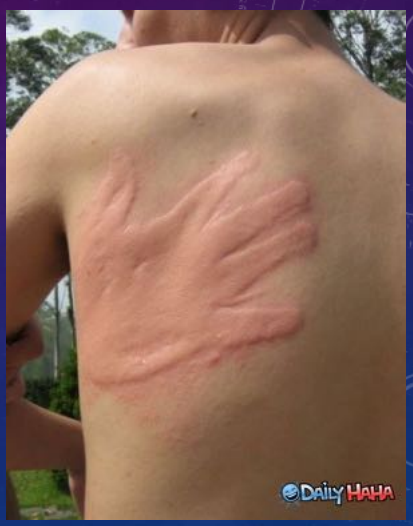
- Color
- Characteristics / Drainage (amount)
  - Bleeding
  - Oozing
  - Serous, sanguineous, serosanguinous

LOCATION

- Use anatomical landmarks
- Clock method anywhere on body

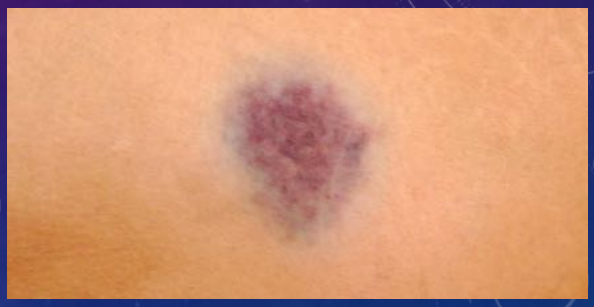
TYPES OF INJURIES

- Transient Lesion
- Blunt impact with the skin
- No break in skin integrity
- Slight swelling with wheal like appearance
- ”slap mark”
- Usually dissipates/fades within few hours



TYPES OF INJURIES

- Ecchymosis
- Capillary disruption under the skin
- ”bruising”
- Lack of swelling – no blood collection Under skin (causing raised elevation)

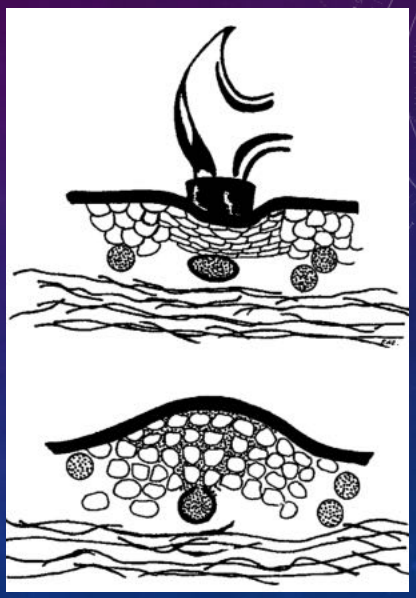


TYPES OF INJURIES

- Hematoma
- Capillary disruption under the skin
- ”bruising WITH swelling
- Blood escapes into perivascular tissue
- Raised/elevated contour
- Larger collection of blood
- Fluctuant mass under skin

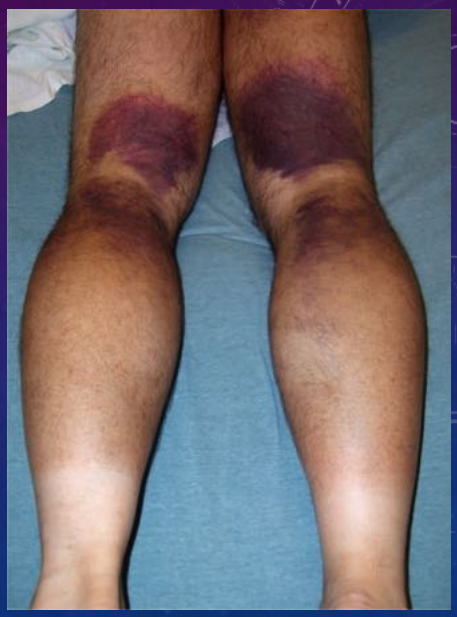
TYPES OF INJURIES

- Hematoma



TYPES OF INJURIES

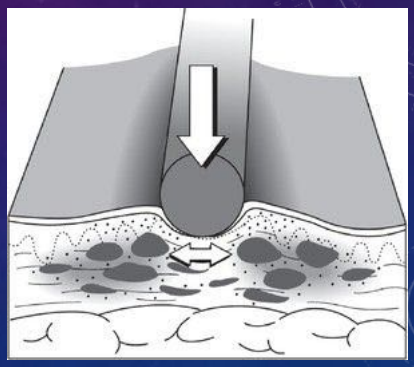
- Migratory Ecchymosis
- Common with crushing injury of tissue against bone
- Deep injuries, migrates to dependent
- Bruising may not appear for days
- Delayed migration of blood through deeper perivascular tissues to surface



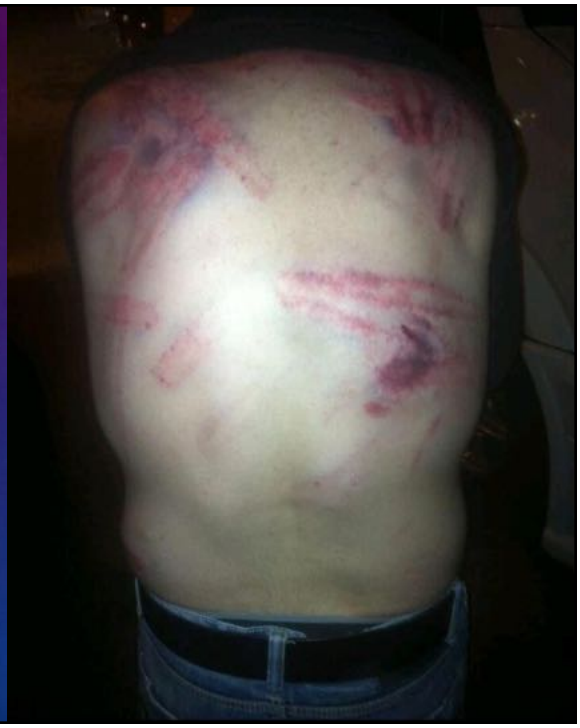
TYPES OF INJURIES - TRAMLINES

- Tramline Ecchymosis
- Central clearing with flanking parallels
- Impact extravasates blood into flanks
- Common with impact injuries from rods sticks, or whip like objects

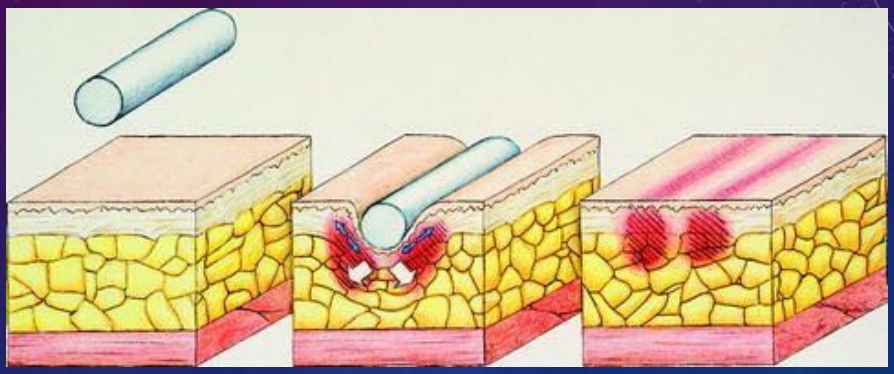
**important to relay this to PD to look for potential weapon used in assault



TYPES OF INJURIES-TRAMLINES



TYPES OF INJURIES - TRAMLINES

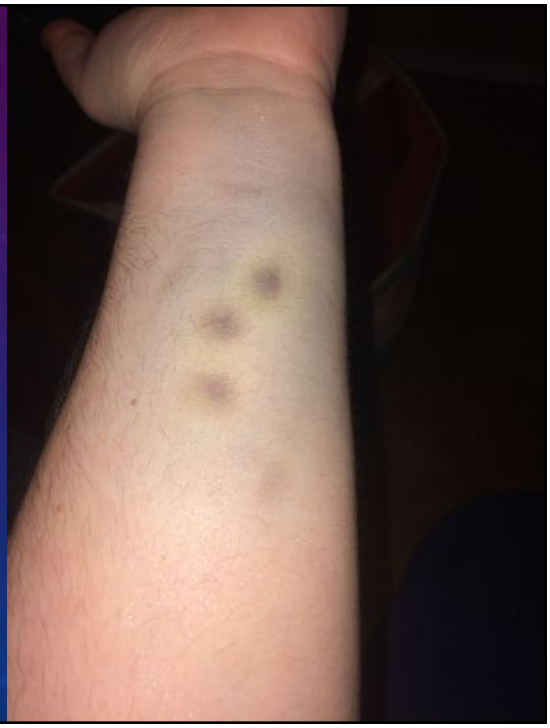


TYPES OF INJURIES

- Fingertip Patterned Ecchymosis
- 1-2 cm in diameter
- Usually 2-3 ipsilateral, 1 contralateral

(not all fingers have same grasp strength)

- Arms, wrists, neck, thighs
- Usually has slight arch
- Assess for contralateral pattern (thumb)



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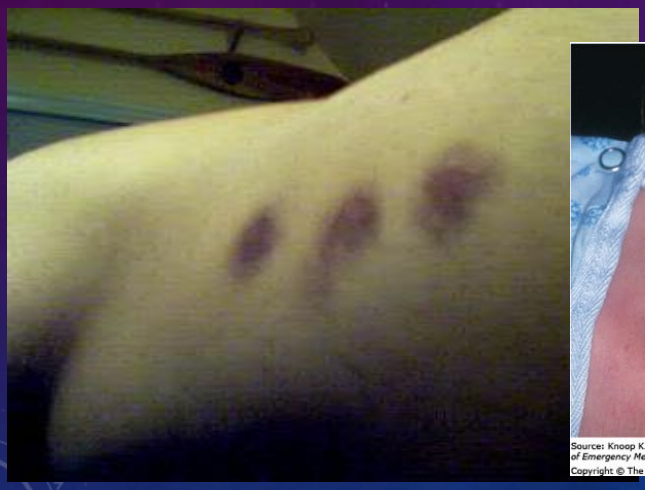
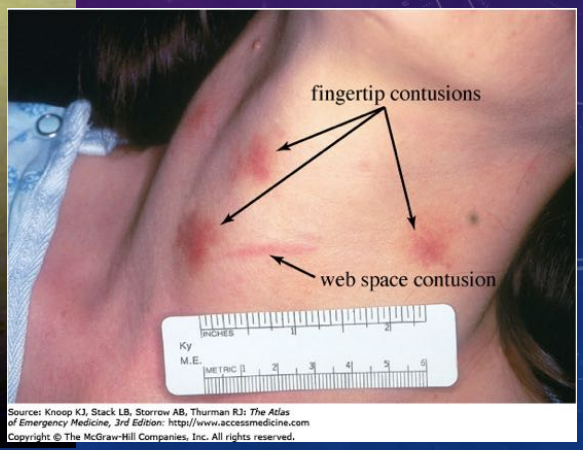
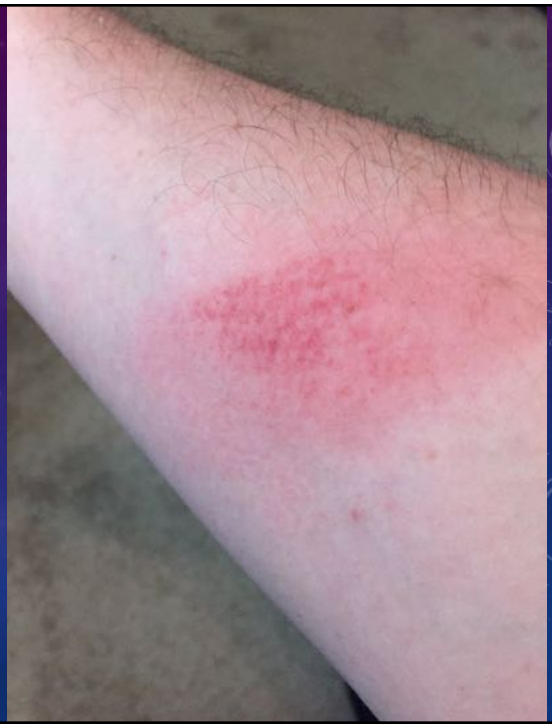




TYPES OF INJURIES

- Abrasion/FRICTION BURN
- Superficial reddened area
- NO linear markings
- May penetrate dermis
  - Depends on velocity



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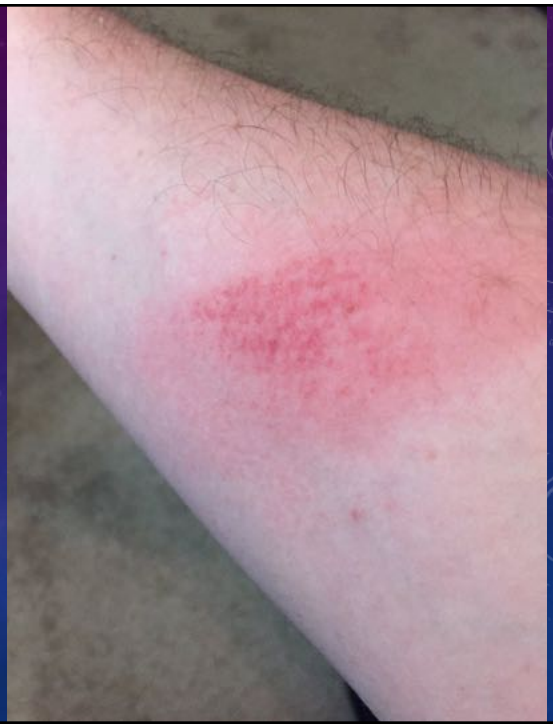


TYPES OF INJURIES

- Abrasion/GRAZE
- Larger surface area than scratch
- Friction of skin over rough surface
- Sliding, scraping, grinding injuries
- UNEVEN PARRALEL LINES w heaping w/trails
- Usually linear appearance
- Epithelial heaping/ruffling shows force direction
- Superficial, may have exudate/bleeding
- Do not confuse with scratch

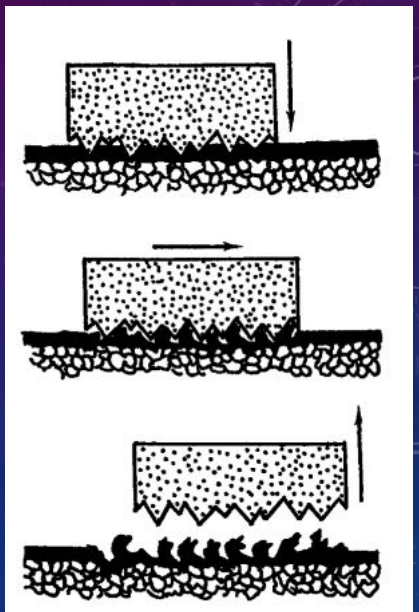
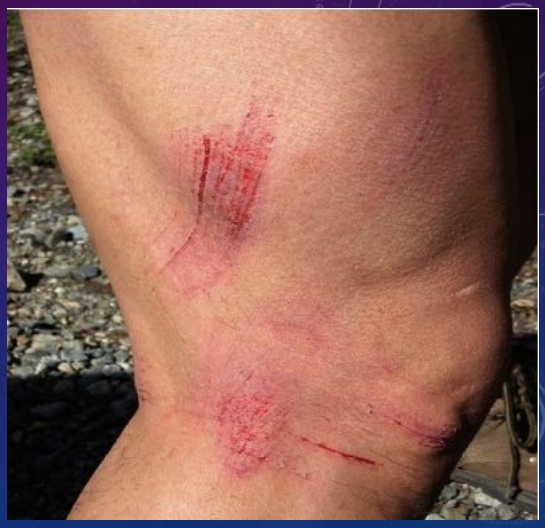


Fig. 5. Production of an abrasion.

TYPES OF INJURIES

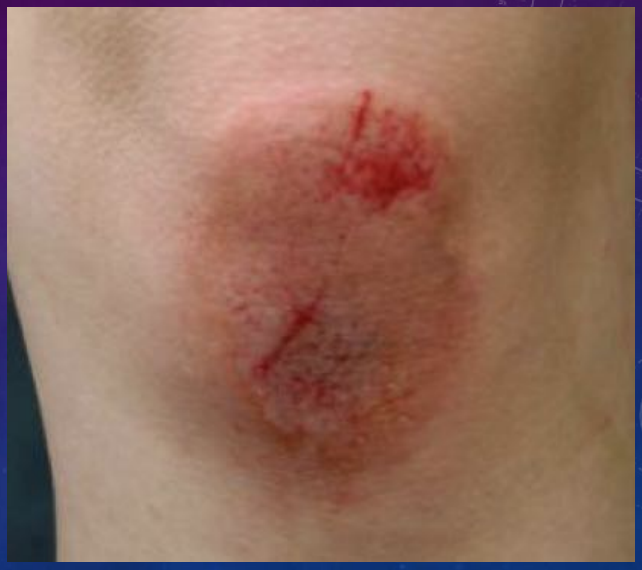
- 1st degree – no dermis involvement
- 2nd degree – dermis involved
- 3rd degree – subcutaneous involved
  - avulsion

- CONSIDER SUBJECTIVE HISTORY AND BODY MECHANICS DURING ASSAULT



TYPES OF INJURIES

•Abrasion/GRAZE

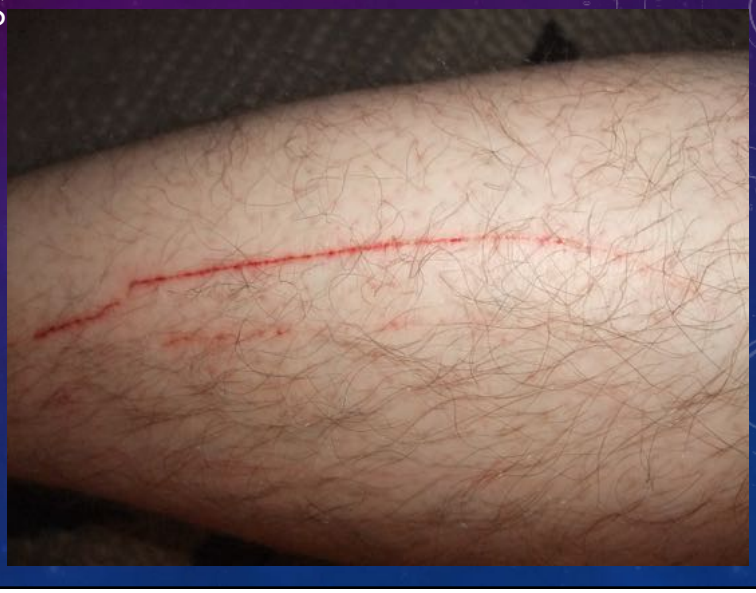


TYPES OF INJURIES

- Abrasion/SCRATCH
- Linear abrasions
- Deeper wound at initial impact site
- Trailing/skipping at end
- Shows direction of force

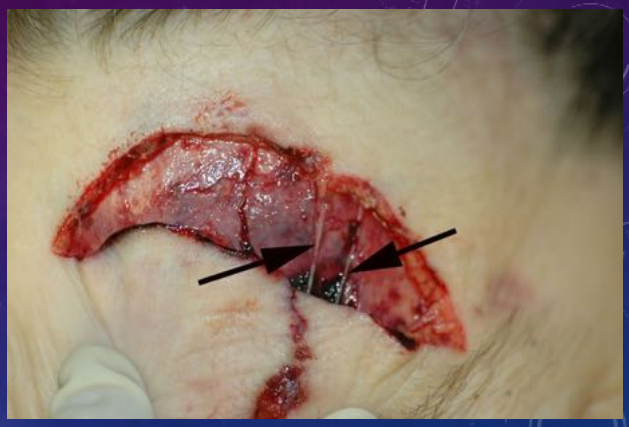
TYPES OF INJURIES

- Abrasion/SCRATCH



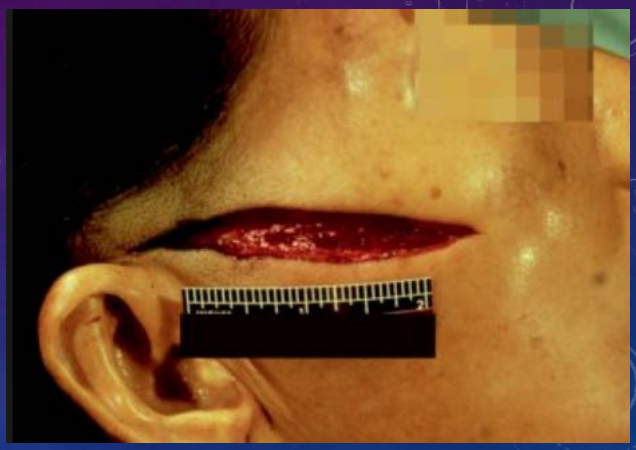
TYPES OF INJURIES

- LACERATION
- Mimics incision wounds
- Shear force, tearing skin (over bone)
- Margins slightly inverted
- Gape open, ragged edges
- Margins bruised/abraded
- Vessels, tissue = Bridging
- Soiled with dirt, grit, fragments



TYPES OF INJURIES

- INCISION
- Clean edges
- Clean penetration through skin
- NO inversion of margins
- Lack of bruised/abraded margins
- Lack of tissue/vessel bridging



TYPES OF INJURIES

- INCISION VS LACERATION

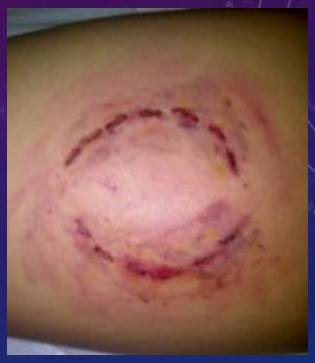
TYPES OF INJURIES

- STAB WOUNDS
- Fishtail injury (dull side)
- Elliptical (double edged)
- Rounded/oval (scissors – dull edges)
- Notched wounds – withdrawn then re-inserted or twisted during penetration

TYPES OF INJURIES

•STAB WOUNDS

TYPES OF INJURIES

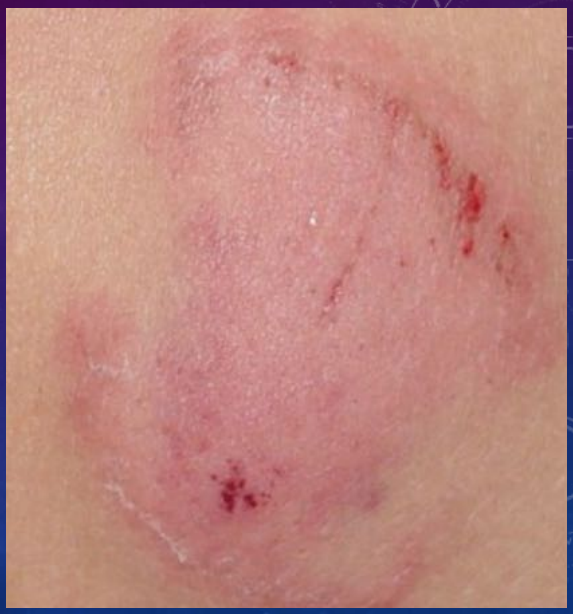


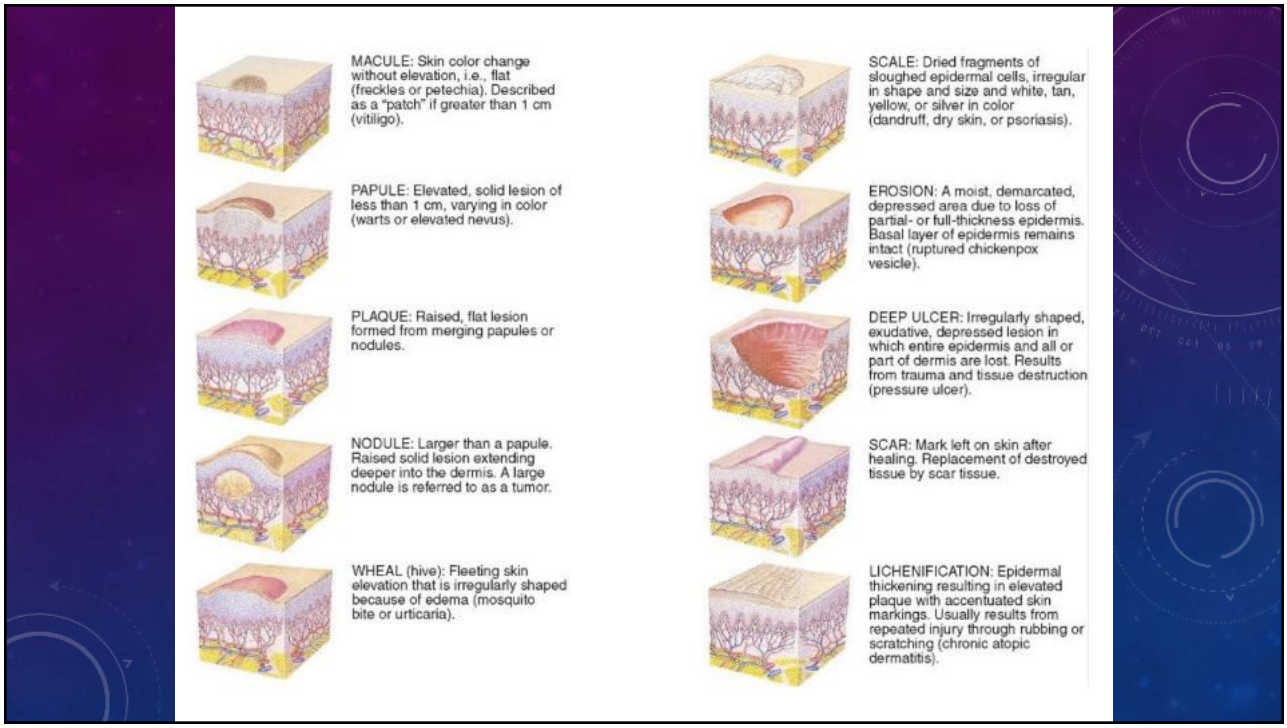
- BITE WOUNDS
- Dental arches, oval/round
- Central sparing with scrape wounds
- Is individual tooth detail visible
- Characteristics tooth size/deformity
- Direct contact with skin or clothed?
- Differentials:
- heel marks, dermatology conditions, electrodes, patterned injuries
- Multiple bites from same assailant may vary
- DNA!!!!!!!

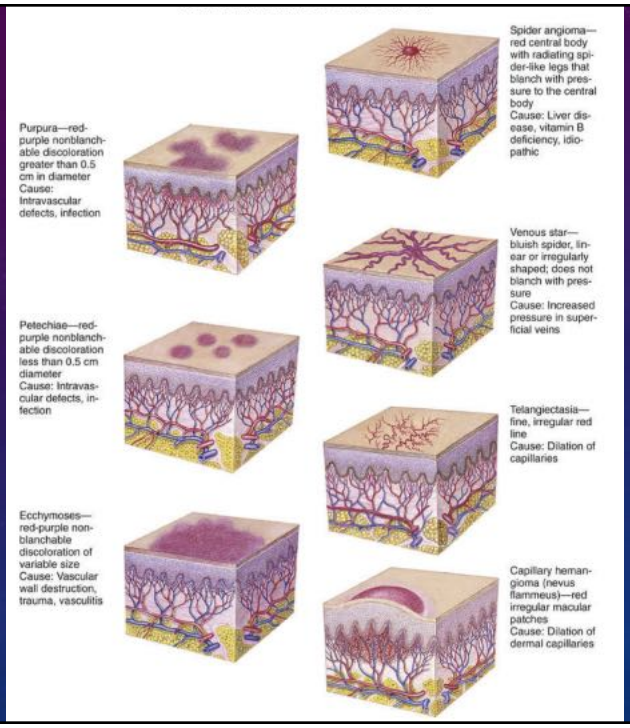
TYPES OF INJURIES

- BITE WOUNDS

Transient lesions
Slight arch
Epithelial heaping at 7:00
Individual teeth pattern
Direction of scraping TOWARDS center
Petechia at 7:00 (common near heaping)






Purpura—red-purple nonblanchable discoloration greater than 0.5 cm in diameter
Cause: Intravascular defects, infection
Petechiae—red-purple nonblanchable discoloration less than 0.5 cm diameter
Cause: Intravascular defects, infection
Ecchymoses—red-purple nonblanchable discoloration of variable size
Cause: Vascular wall destruction, trauma, vasculitis
Spider angioma—red central body with radiating spider-like legs that blanch with pressure to the central body
Cause: Liver disease, vitamin B deficiency, idiopathic
Venous star—bluish spider, linear or irregularly shaped; does not blanch with pressure
Cause: Increased pressure in superficial veins
Telangiectasia—fine, irregular red line
Cause: Dilation of capillaries
Capillary hemangioma (nevus flammeus)—red irregular macular patches
Cause: Dilation of dermal capillaries

QUESTIONS?