

“Wound Recognition in Death Investigation”

Tom Hensley, F-ABMDI
Chief – Forensic Operations and Investigations
Jackson County Medical Examiner’s Office
Kansas City, MO

1

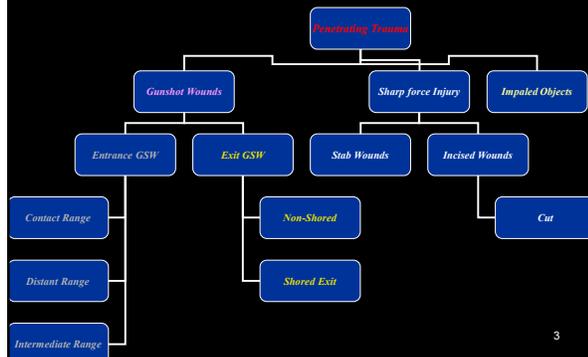
What Type of Injuries are there?

- Blunt Trauma
 - Penetrating Trauma
 - Chop Wounds (Combo of Blunt and sharp)
 - Sharp Force
 - Stab Wounds
 - Incised Wounds
- *** More than (1) type of injury may be seen in a single injury incident (mva – fall etc).

2

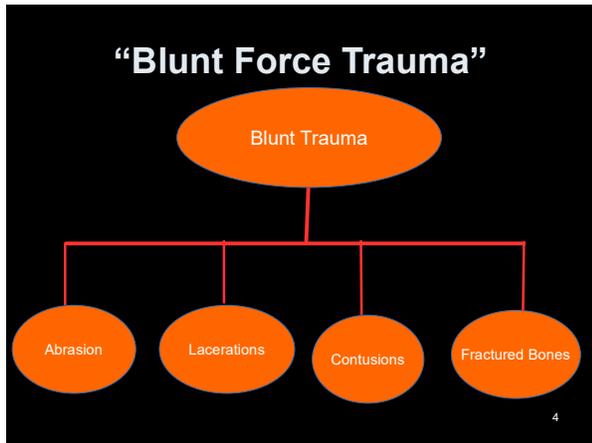
2

“Penetrating Trauma”



3

3



4

Wound Recognition “Blunt Force”

5

Define - Blunt Injuries

- Blunt Trauma
 - Definition:
 - * Energy is applied to the body sufficient to produce disruption of the body's structure. Injuries produced by impact of the body against surfaces or by the impact of items against the body. Result is an injury which disrupts the integrity of the tissues (underlying & surface tissue) and or underlying organs/structures.

6

Blunt Injuries

- Blunt Trauma

- It Is the most common type of Injury:
 - Can be lethal or non-lethal
 - To differentiate between accidental, suicidal and homicide, the investigator must be able to properly recognize, classify the injury and understand the mechanism of injury.

7

7

Blunt Injuries

- Consideration while evaluating injury
 1. Is injury caused from blunt trauma?
 2. How did the trauma occur (mechanism)?
 3. When did the injury occur (before, at or about, or after death)?
 4. Is the injury the COD?... contributor?... incidental to death?
 5. What instrument was used? Any trace evidence or pattern injury that would link an object or a specific class of weapon to the wound?

Con't

8

8

Blunt Injuries

- Consideration while evaluating injury
 - Con't
 6. What is the direction of force?
 7. How much force might be needed to inflict the injury?
 8. What might the survival time be?
 9. If there are different types of violent injuries present, which one is the most lethal? survivable? disabling?
 10. Is there any predictable, assoc evidence that should be present at the scene of injury or in the wound?

9

9

Blunt Injuries

- Consideration while evaluating injury
 - Con't
11. How many times was a class of wound inflicted?
 12. Is there more than one time interval over which the blunt force injury was inflicted? (episodic beatings, recurrent falls?)
 13. Is the blunt force injury accidental or is an assault involved?

10

10

What Type of Blunt Injuries are there?

- **Blunt Trauma**
- Four categories:
- Abrasions (scrapes)
 - Bruises (contusions)
 - Lacerations
 - Fractures (Broken Bones) / Dislocations

11

11

Blunt Injuries

- Description of Categories of Blunt Trauma
- * The terms used to describe blunt injury are precise and not the same meaning as another word.
- 1) A single injury may have several different blunt injury components.
 - 1a. i.e example abrasion vs abrasion-contusion vs laceration

12

12

Abrasion - Scrape

- Characteristics:
 - Top layer of skin friction - scraped, abraded away, rubbing or direct pressure.
 - May exhibit minimal bleeding
 - May exhibit direction of force with heaped up tissue at the side opposite the direction of force
 - Colors range from red – black – yellow
 - Yellow may indicate postmortem injury
 - May be a pattern abrasion with the imprint of the object upon the skin
 - Possible swelling present near the abrasion site
- Pattern Abrasions – Abrasions that exhibit characteristics of the object that the body was struck with or that the body struck.

13

13

Abrasion - Scrape

- Color Characteristics:
 - **Red** Vital reaction to injury...BP & Circulation of blood usually present at time of injury
 - **Yellow** May indicate post-mortem injury (at death or after death) Drying of injured tissue exposed to air.
 - **Black** - Effects of air drying the initial red abrasion

14

14

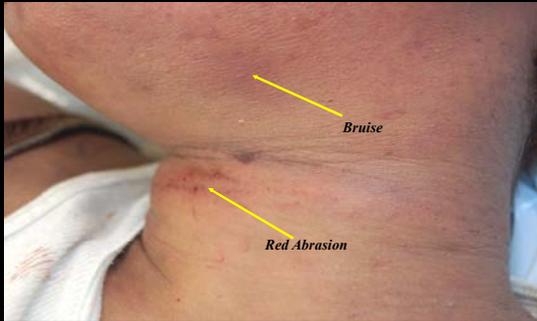
Abrasions



15

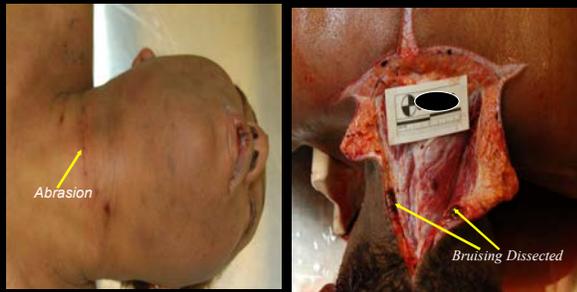
15

Abrasions



16

Abrasions & Bruising



17

Abrasion



18

Abrasion



19

19

Abrasion



20

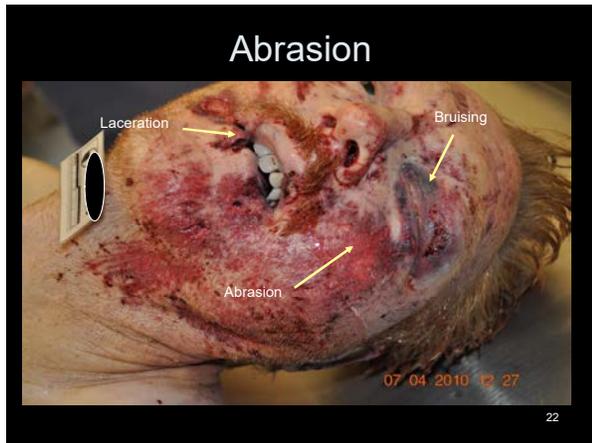
20

Abrasion



21

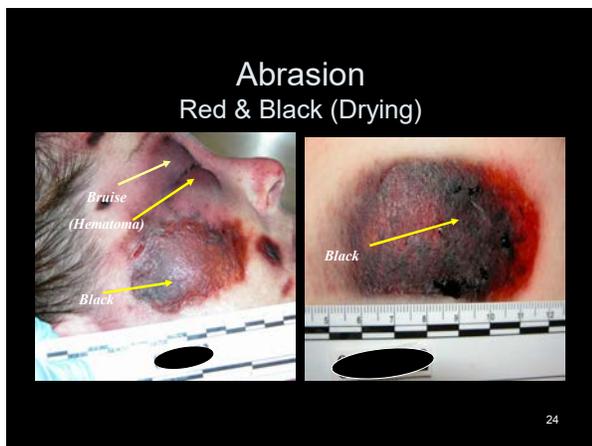
21



22

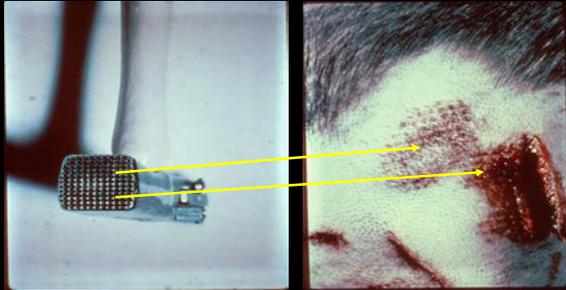


23

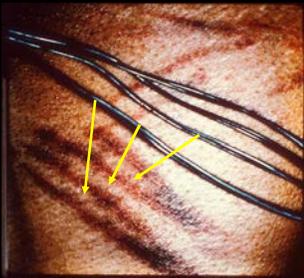


24

(Pattern) Abrasions



(Pattern) Abrasions



(Pattern) Abrasions



25

26

27

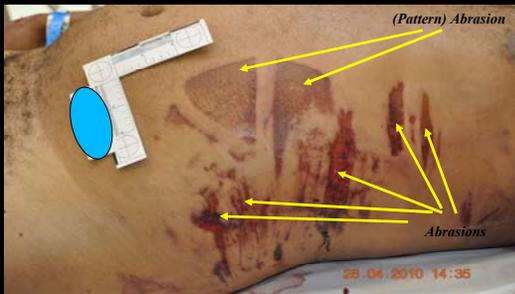
Abrasions



28

28

(Pattern) Abrasion



29

29

Abrasions



30

30

Bruise (Contusion)

31

Blunt Trauma

- **Contusion – Bruise**

Definition - A bruise or contusion is a blunt force injury that occurs when blood vessels near your skin's surface or blood vessels in internal organs are ruptured. This allows a small or large amount of blood to leak into the tissues under the skin or in the organs. The resulting bleeding may be small (petechiae) or large (hematoma).

32

32

Blunt Trauma

Contusion – Bruise

Implications/Factors/Conclusions

- *Bruises (Pattern), like abrasions, may allow inferences to be drawn about the nature and shape of the object (e.g. belt, wire coat hanger);
- *The time of the injury (e.g. color changes may reflect the age of the bruise);
- *The type of the assault (e.g. bruises in the neck and genitalia in rape strangulation);
- *The cause and mechanism of death (e.g. severe beating by a stick etc).
- *The extent to which a person bruises may also depends on the age (e.g. Older people bruise easier than young people)
- *The gender of the person (e.g. women bruise easier than men)
- *The presence of an underlying disease (e.g. hemophilia, liver diseases, and alcoholism).

33

33

Blunt Trauma

- **Contusions – Bruises**

- Other blunt force injuries such as lacerations, swelling and or abrasions may accompany the contusion
- As with pattern abrasions, pattern contusions may be transferred on the skin from the object that struck the body or from the body striking the object.

34

34

Blunt Trauma

- **Contusions - Bruises**

Characteristics:

- Varying colors from red - blue or purple – green – yellow - brown
- Usually pain is associated with bruise
- Swelling may be seen in the bruise (hematoma) or adjacent to a bruise as well as visual deformity (fractures) or other internal injuries may be noted

35

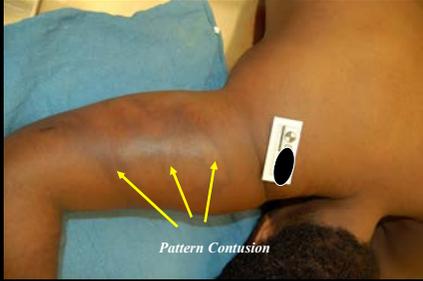
35

Contusion – Bruise



36

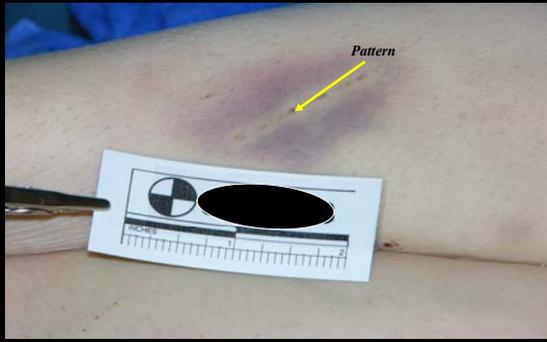
(Pattern) Contusion – Bruise



37

37

(Pattern)
Bruise



38

(Pattern) Contusion – Bruise



39

39

(Pattern) Contusion/Bruise



40

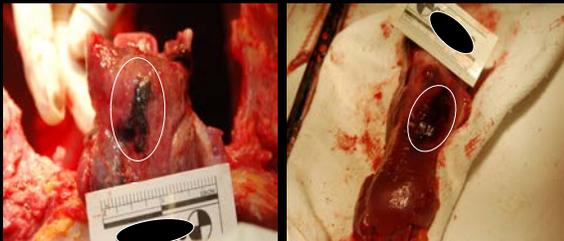
40

Bruise



41

Internal Bruising



42

42

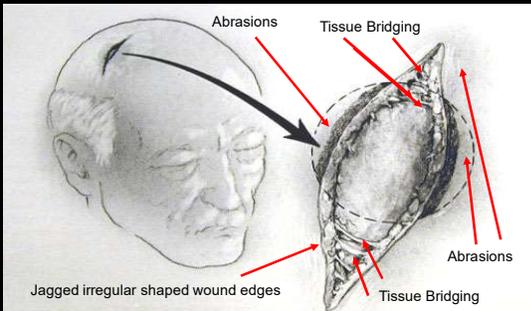
Blunt Trauma

- **Laceration**
- A laceration is an open wound with irregular jagged wound edges which results from the application of blunt force which causes tearing or splitting of the skin.
- Break in the skin of varying depths resulting from a forceful impact; deeper injury than is seen in abrasions, with larger blood vessels involved and more bleeding.

43

43

Laceration = Blunt Trauma



44

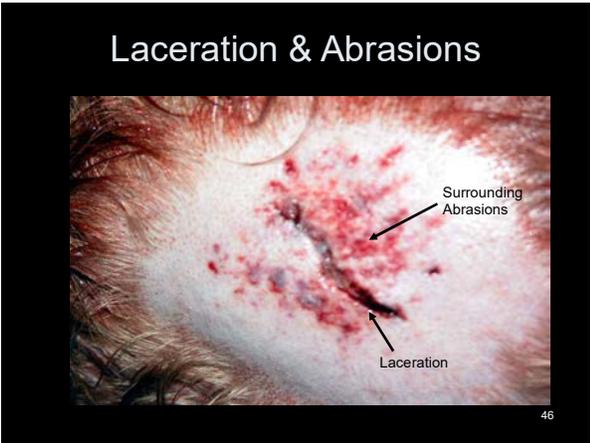
44

Laceration



45

45



46

Blunt Trauma

- Laceration
 - Characteristics:
 - Irregular shaped wound edges
 - Undermining with “tissue bridging” seen
 - May be surrounded by a bruise and or abrasion
 - May sometimes have redness associated with injury

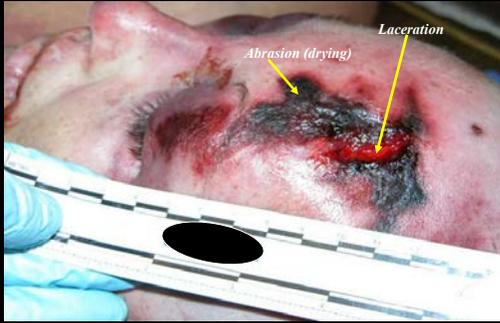
47

47



48

Laceration



49

49

Laceration



50

50

Laceration



51

51

Laceration



52

52

Laceration



53

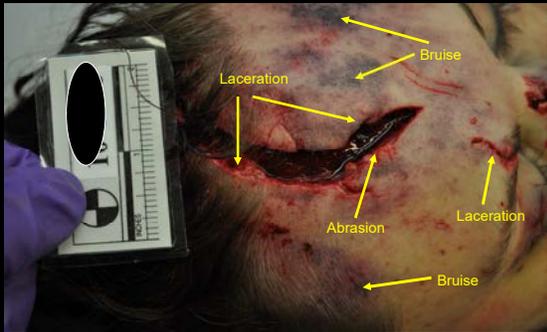
53

Laceration



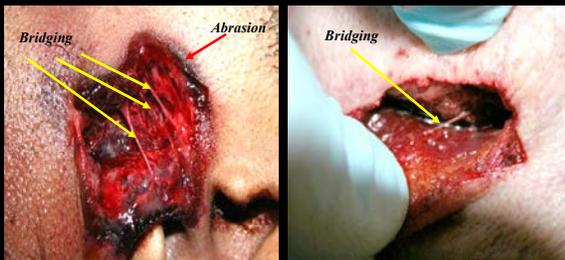
54

Lacerations, Abrasions, Bruising



55

Laceration – Tissue Bridging



56

56

Blunt Trauma

- Fractures
 - Fractures may be Open (compound) or Closed
 - Visually recognized
 - Open Fx (compound)
 - Bone ends protruding from opening (tear) in the skin
 - Deformity seen
 - Possible swelling and bruising noted at the fx site
 - Closed Fx
 - Possible swelling and bruising noted at the fx site
 - Deformity seen
 - Extremities – shortened, rotated

57

57

Open Fracture



58

58

Open Fracture



59

59

Open Fracture



60

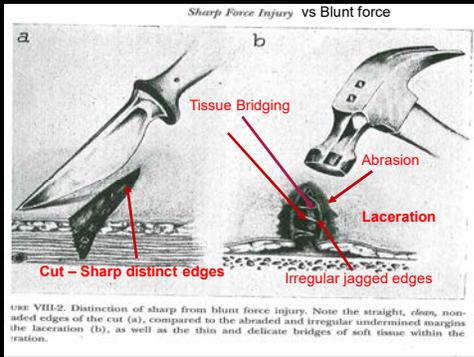
60

Open Fracture



61

Sharp Force VS Blunt Force



62
