Truth or Fiction: Analysis of Patterned Injuries
Melinda Merck, DVM
Veterinary Forensics Consulting
Austin, Texas USA

Guarding Against Bias
- Impt to be objective: thought process, analysis
- Tendency to use mental short cuts, heuristic thinking with information overload
- Prefer less complex
- May believe witness accounts vs. consideration
- Confirmation bias: believe pos vs neg, give less weight to neg info
- Anchor effect: rely heavily on one piece of info, usually first info encountered

Measurements
- Common mistake is lack of photo scale; if weapon, need distortion correction scale
- Use other items in photo if no photo scale
- Send back to get measurements of items

Thermal liquid and Scald burns
- Scalding/Thermal: no hair singeing; splash/spill – fluid cools as it flows due to gravity and gets less severe burn
- Deliberate immersion – straight burn line by fluid level, possible struggle/splash burns
- Thermal burns often cause deeper injury than chemical burns

Chemical Burns
- Consider contact points through animal action
- Variable skin injury to: muzzle, paws, legs
- Oral cavity – if licked, ingested
Case Analyses: Put Your Sherlock Hat On…

Case 1: ‘We just got the dog’

- Brought small breed juvenile dog to vet – just started having difficulty walking
- Claimed just had him a few days and got from someone else in another state
- Vet exam: burns on legs, parts of caudal back and tail
- Questions: what caused the burns?
Burn Pattern Analysis?

Case 2: Stray dog
Dog was found as ‘stray’ and brought to the shelter by police
Burn Pattern Analysis?

Compare to Solar Thermal Necrosis
Considerations for Weapon Type Determination

- Look at denser area of hemorrhage for clues to pattern
- May have clear central areas where compression forced blood to outer edges
- Look at bone/cartilage for pattern imprints
- If cylindrical – consider where would impact could be smaller full width
- Describe weapon type, characteristics. If weapon known may say ‘consistent with’
**Knife Wounds**

- Appearance depends on skin properties, nature and type of knife, movement of victim, movement of knife in body
- If part dull, may have abraded/contused areas
- Beveled margins and undermined tissue opposite if enters obliquely
- Knife characteristics may be imparted to surface, wound margins, wound track

**Knife Wounds**

- If full penetration, entrance wound may be squared at both ends
- Serrated – may see striations on entrance wound margins if entered obliquely; wavy or scalloped patterns on superficial cuts, shallow wounds, organ wound tracks
- Knives can have serrated portions – describe as ‘impact with serrated portion of blade’

---

**Case 4: Dog attack or boyfriend?**
Case Info

Owner of miniature (Elvis) and two giant schnauzers

Came home and found Elvis inside crate with door ripped off; blood around mouth; 'intestines' protruding from abdomen

Boyfriend home at the time and claimed nothing happened; kicked owner in leg; boyfriend is drug user

Took to ER, told vet she suspected boyfriend but needed to know if other dogs attacked Elvis

ER vet: clean margins along external perforating linear wound, appx 2cm long with omentum pulled out; internal linear wound in abdominal wall 1.5cm long exploratory laparotomy – no internal organ damage or bruising as would expect from dog attack; some unusual abrasions on external abdomen that are inconsistent with teeth or nail abrasions. But – he did not tell owner it was not a dog attack because felt uncomfortable

Dog transferred to other hospital for continued care; owner informed tech about her suspicions and her own injuries from boyfriend

I was called in to examine dog
Case 5: Dog face mutilation

- Owners have two dogs that were outside in fenced yard. Let dogs in one evening. Claimed they did not notice one of the dogs was injured. He came in and went to his bed. They did not notice any blood dripping. When they got the dog up the next day to go outside they noticed the injuries and rushed him to the vet.
- Vet: injuries from a machete or large knife; fractured/partially missing tooth
- Owners believe a person attacked the dog while his head was under the fence

Police called…
The missing tooth fragment
Wound Pattern Analysis?