

# ***Imaging Findings in Intimate Partner Violence***

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## ***Learning Objectives***

To provide an overview of the public health problem of IPV and of the challenges associated

To define the role of radiologist in diagnosis of IPV

To illustrate imaging findings associated with IPV



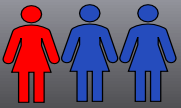
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# Background

**Intimate Partner Violence:**  
Physical, sexual or emotional violence between current/former partners

Lifetime prevalence for 25-30% in US

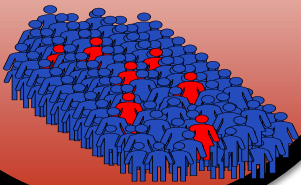


Children exposed to IPV (silent victims) 50% higher ER visits

Cost to US: \$10.7 billion/yr.

Annual health care costs 42% higher for victims

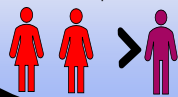
Estimated incidence in 9 cases per 1000/year in US



> 55% of homicides linked to IPV



1 in 4 - 1 in 9



38-year-old ♀ presenting to the ED with arm pain and swelling. Patient was assaulted by her husband, who hit her with a baseball bat and tried to strangle her, after years of abusive behavior and multiple episodes of violence. X ray of the humerus shows a transverse humeral fracture.



13 years before, at the age of 25, patient presented to the ED with arm pain allegedly after a fall. X ray of the humerus acquired during the admission shows an oblique humeral fracture of the contralateral arm, which is more likely related to violent pulling. During these 13 years, patient had 68 imaging studies performed over multiple ED admissions, yet possibility of IPV was never raised.

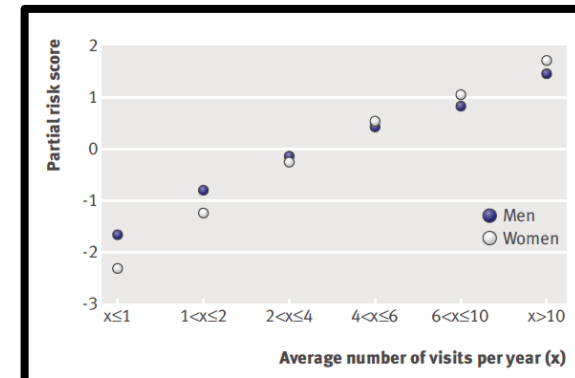


## IPV-related conditions

- Long standing pattern of escalating abuse
- Acute and recurring episodes

## Longitudinal approach of diagnostic data

- Potential to detect IPV years in advance of first IPV diagnosis
- Longitudinal patterns of diagnosis differs between IPV and controls
- Strongest predictor of IPV: frequency rather than severity of the injury

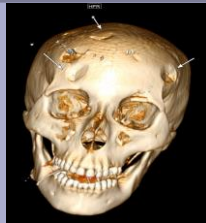


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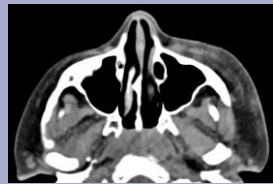
## Craniofacial injuries

- IPV: 34%-73% of facial injuries in ♀
- 67% of ♀ with facial injuries assaulted by husband or boyfriend
- 68-94% IPV patients sustain facial injuries
- Contusion most common injury
- Nasal bone, zygomatic, mandible most common fractures

61-year-old ♀ brought unconscious to the ED by the emergency medical services after being hit multiple times by her husband with a hammer. Volume rendering CT reconstructed image of the head and face shows multiple depressed cranial fractures (arrows).



33-year-old ♀ presenting to the ED two weeks after being assaulted and punched by her domestic partner. CT of the face shows skin thickening and subcutaneous edema about the left maxilla.



28-year-old ♀ presenting to the ED two weeks after being punched in the face. CT of the face shows a mildly displaced fracture of the left mandibular ramus fracture with, and minimally displaced right parasymphyseal fracture with involvement of the alveolar ridge and fracture of the right lateral mandibular incisor (arrow).



## Musculoskeletal injuries

- Second most common type of IPV related injury
- Commonly combination of old and acute fractures
- Commonly “Defensive” location: hands, wrists
- Spectrum of injury ranges from sprains to fractures to dislocations
- Possibly more central and proximal, whereas accidental fractures tend to be more distal



34-year-old ♀ presenting to the ED six days after being assaulted with a baseball bat by her ex-boyfriend. X ray of the right hand shows mildly displaced fracture of the right fifth metacarpal diaphysis (arrow).

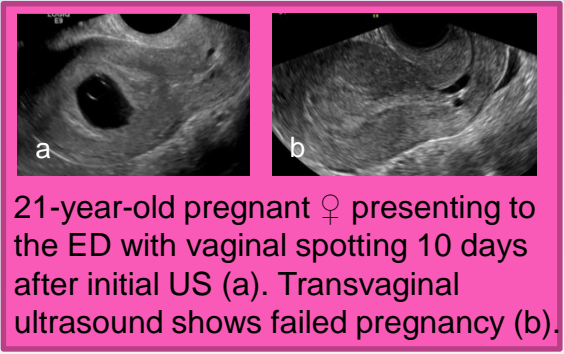


44-year-old ♀ presenting to the ED with wrist pain, reported fall on outstretched hand. X ray of the wrist shows a oblique ulnar fracture (arrow), unlikely to be related to the fall. Patient admitted being pulled by her husband during an altercation.



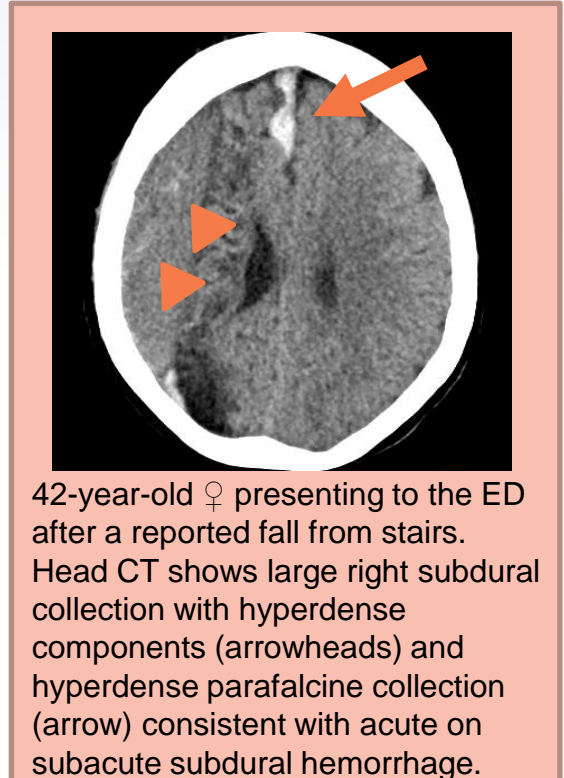
# Obstetric-gynecologic injuries

- Associated with 2-4-fold ↑ odds of IPV
  - IUGR
  - subchorionic hematoma
  - failed pregnancy
  - RPOC



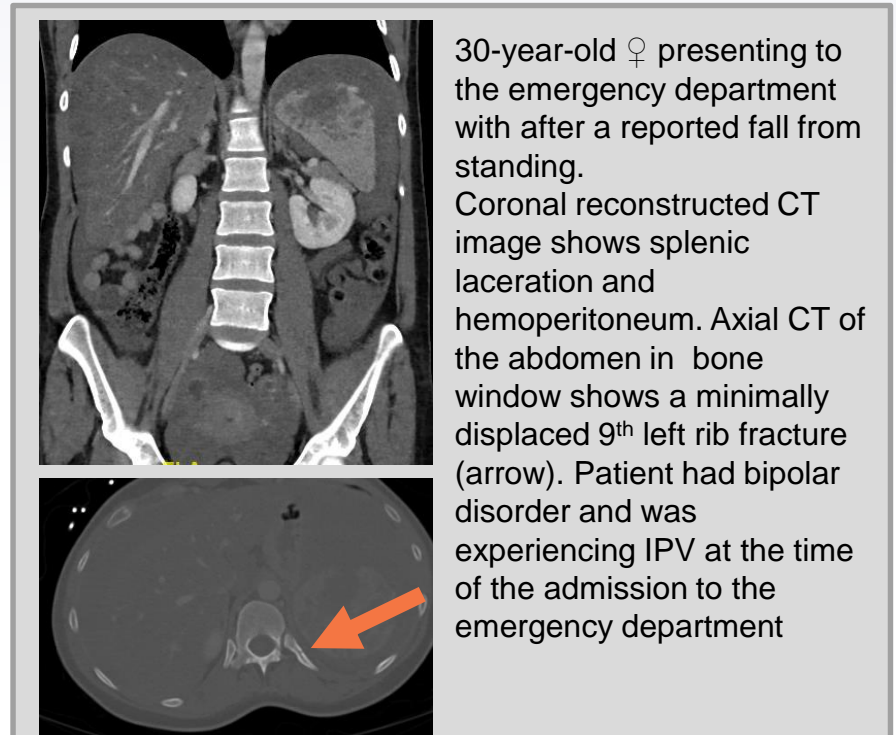
# Head and neck injuries

- History of strangulation
  - 27% of 185 patients with IPV
  - ↑ 7-fold odds of future homicide
  - imaging findings are uncommon: soft-tissue, airway, vascular injuries in the neck
- Intracranial hemorrhage
  - nonspecific



# Abdominal and thoracic injuries

- Traumatic pneumothorax
  - 6% related to IPV - in series of 191 patients with emergency thoracostomy
- Rib fractures, lung contusions reported in IPV
- Duodenal hematomas and pancreatic fractures nonspecific in IPV
- Guns and knives associated injuries
  - 0.5% of IPV cases





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