Management of Neck Trauma

FRCA teaching 9 Feb 2022, UHCW

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Why is this important?

- Not the most common problem in trauma
- Management needs to be individualised to the situation - no standard protocol to follow
- You are the SME
- BJA ED article 8 months ago

Reference:


BJA Education
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REVIEW ARTICLE | VOLUME 21, ISSUE 9, P329-335, SEPTEMBER 01, 2021
PDF [594 KB]
Initial management of blunt and penetrating neck trauma
J. Shilston • D.L. Evans • A. Simons • D.A. Evans
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Scope

- Key principles and anatomy
- Airway concerns
  - Blunt neck trauma
  - Penetrating neck trauma
- Rest of the primary survey
- Take home messages

- ‘Getting the story’
- Potential Exam Qs to think about

Key principles

- Trauma may be BLUNT or PENETRATING

- What is the mechanism?
- What is the trajectory?
- What structures am I worried about?

- Early help

Anatomy

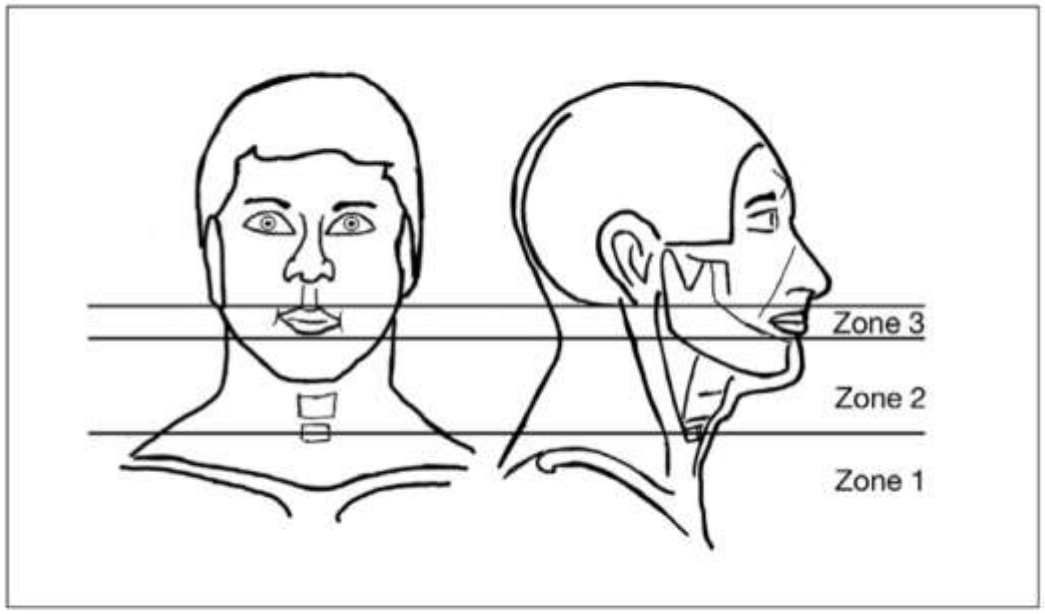
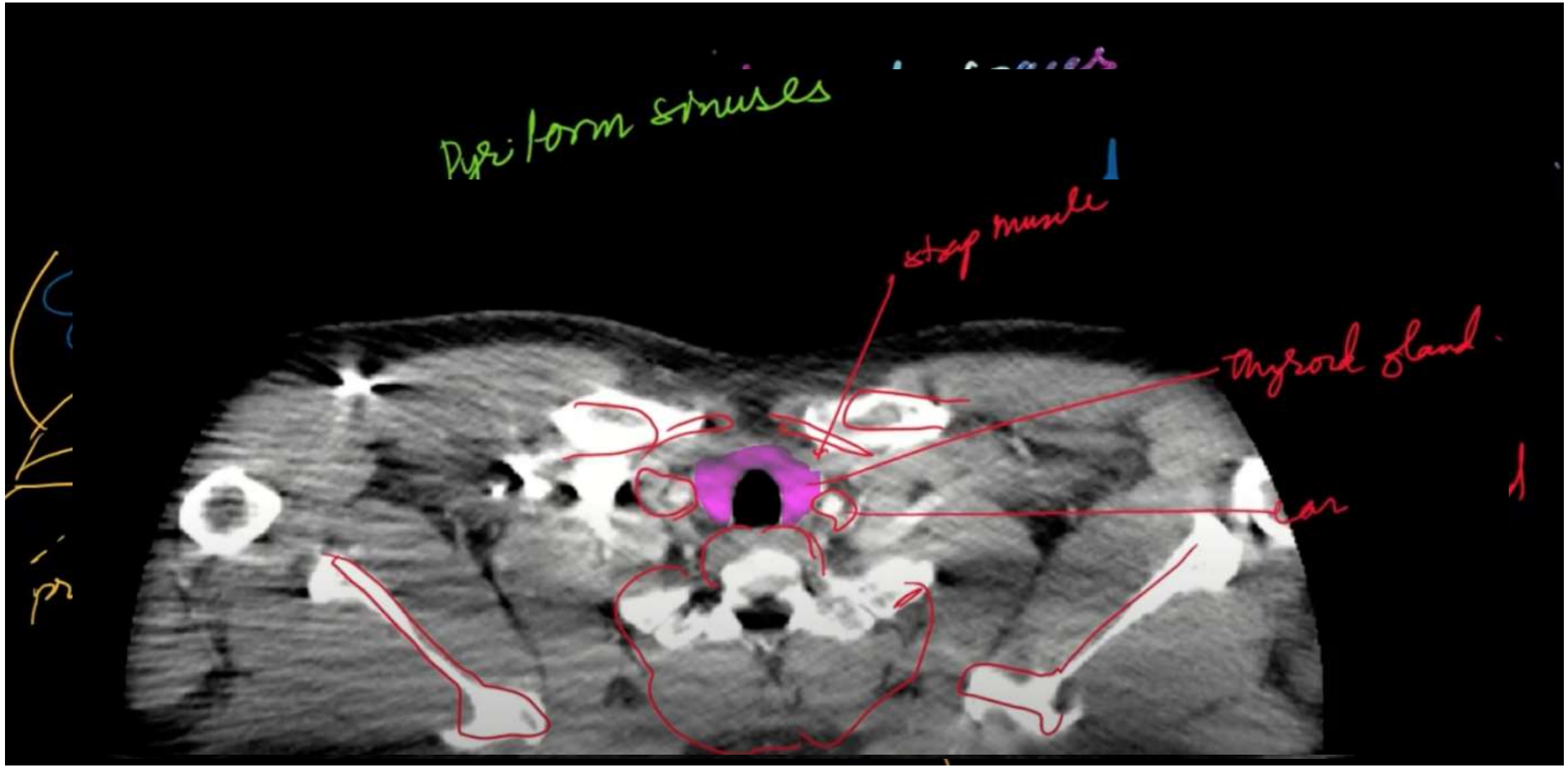


Fig 1 Diagram showing the anatomical zone of penetrating neck injury.

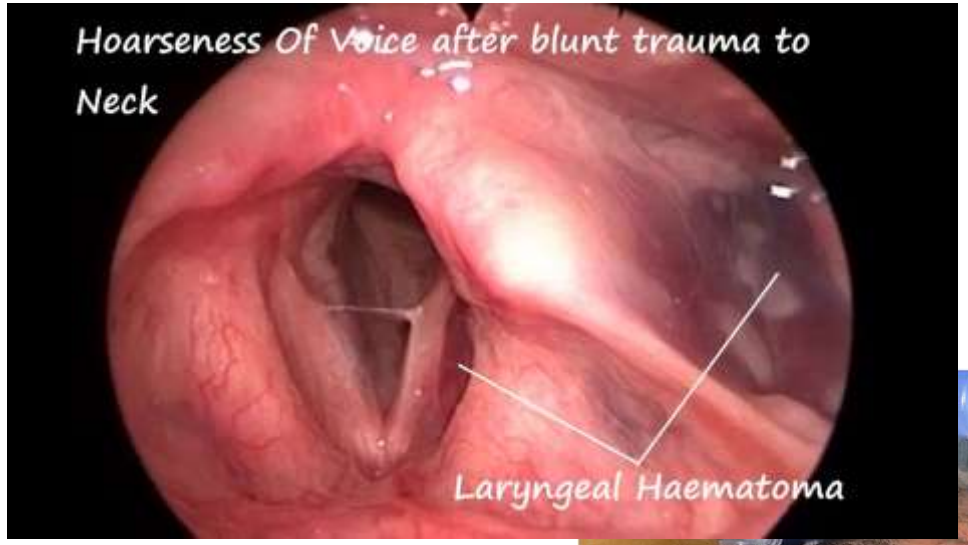
Table 1 Anatomical definitions of zones of penetrating neck injury and anatomical structures at risk

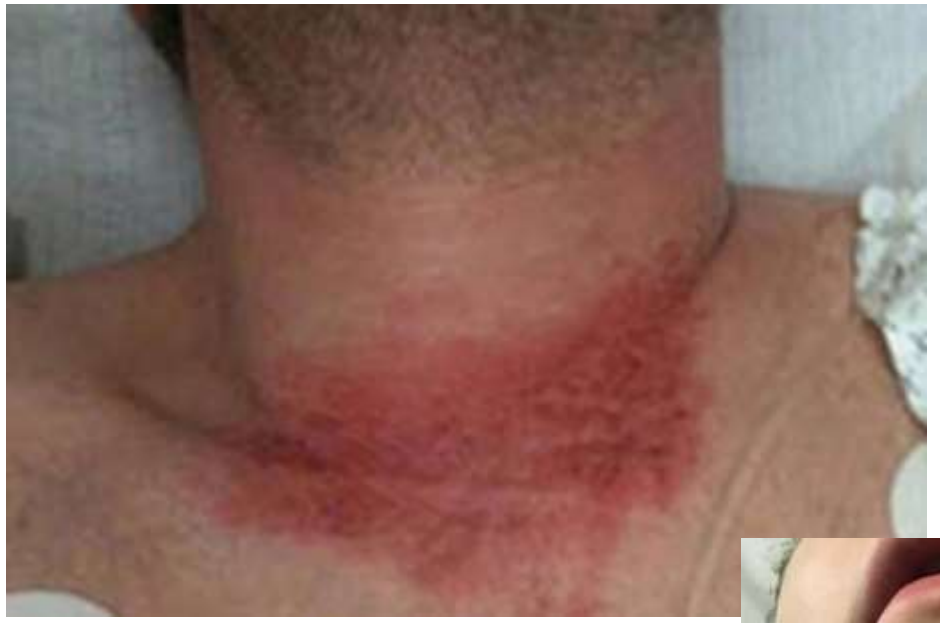
Zone	Anatomical boundaries	Anatomical structures at risk
3	Superior boundary: skull base Inferior boundary: angle of the mandible	Pharynx Carotid arteries Internal jugular veins Cranial nerves Sympathetic chain Parotid gland
2	Superior boundary: angle of the mandible Inferior boundary: cricoid cartilage	Laryngotracheal complex Pharynx Oesophagus Carotid artery Jugular veins Vertebral arteries Spinal cord Vagus and phrenic nerves
1	Superior boundary: cricoid cartilage Inferior boundary: clavicles	Trachea Oesophagus Carotid artery Jugular veins Thoracic duct Spinal cord Cranial nerves Vertebral arteries

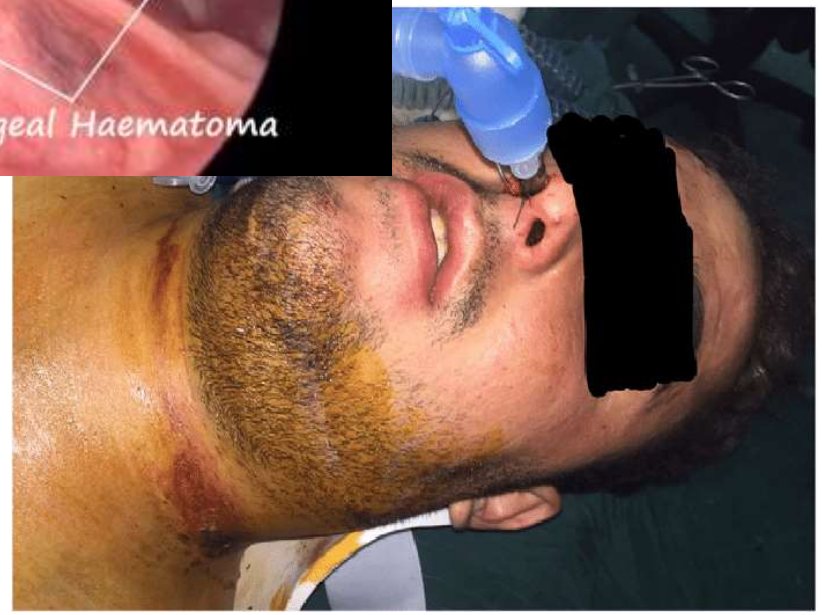
Anatomy

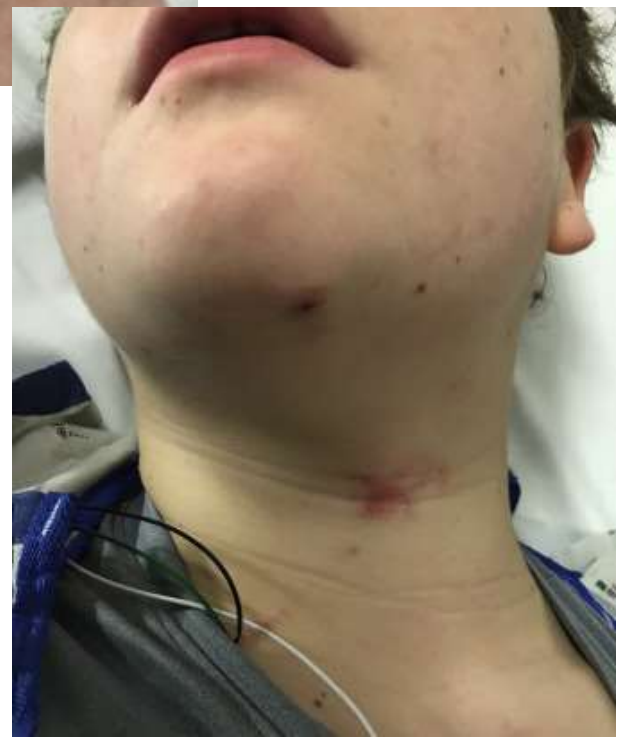


Blunt trauma

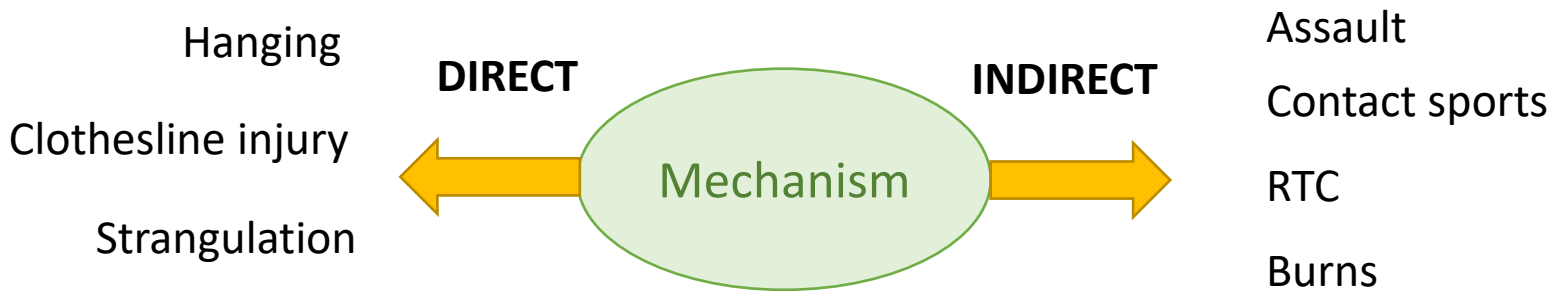


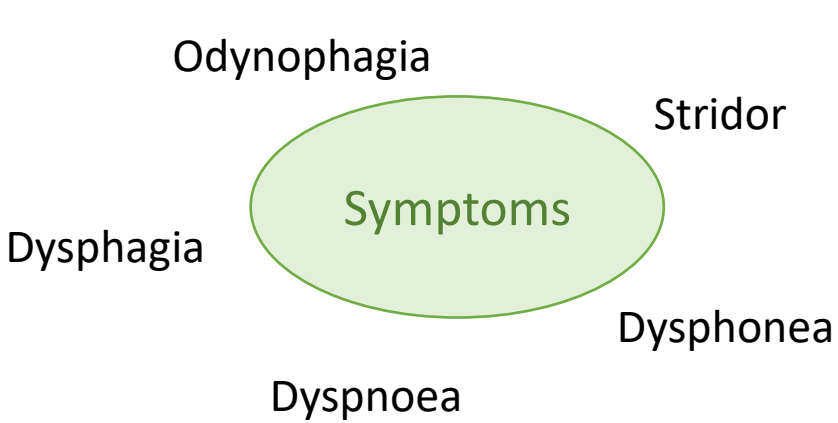


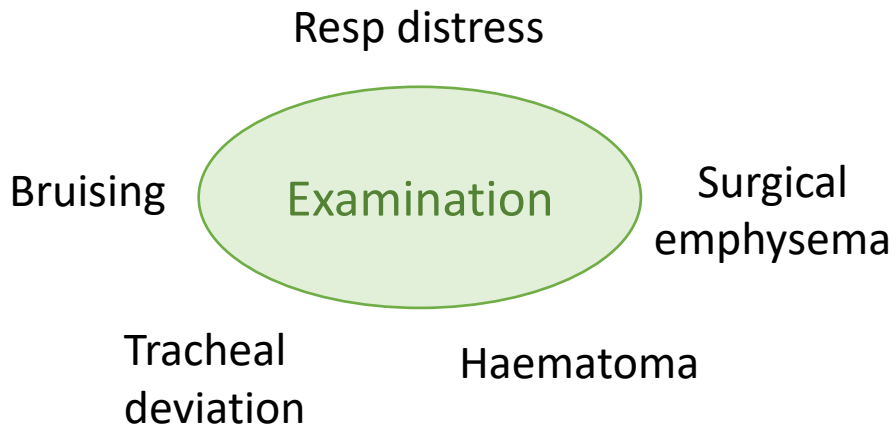




Blunt trauma: Red flags







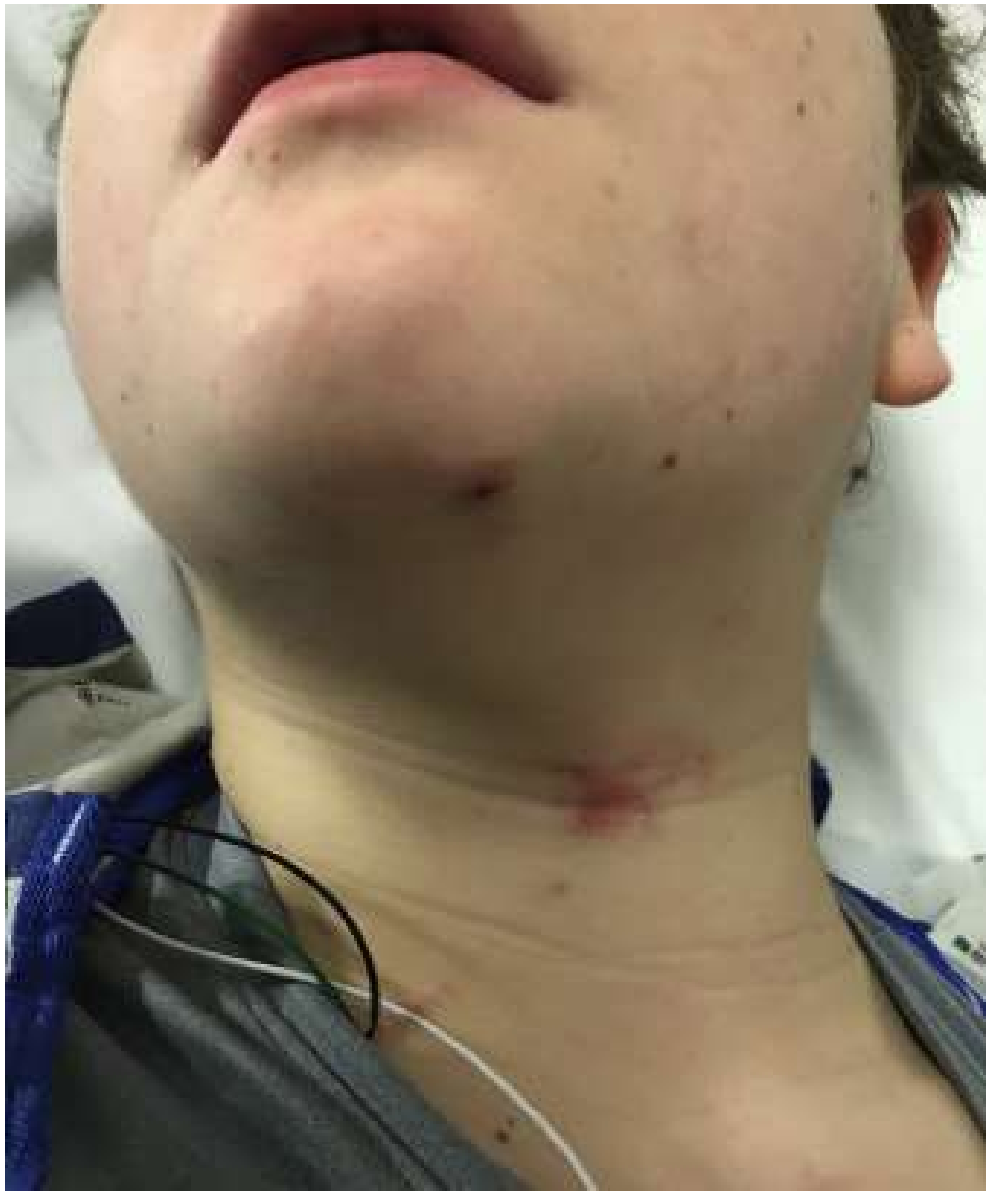
Airway management

- Avoid positive pressure (until airway secure)
- Blunt trauma -> C-spine immobilisation
- Avoid blind bougie or intubation
  - May disrupt haematoma, dislodge fractured cartilage or create false passage
- Airway options
  - Tracheostomy under LA
  - Awake FOI if cooperative and not impending loss of airway
  - Videoscope and Asleep FOI if impending compromise or distressed

Teenage hockey player

- HR 95, BP 130/75, RR 18,
  Sats 100% RA
- Bilateral crepitus
- No stridor
- No C-Spine tenderness

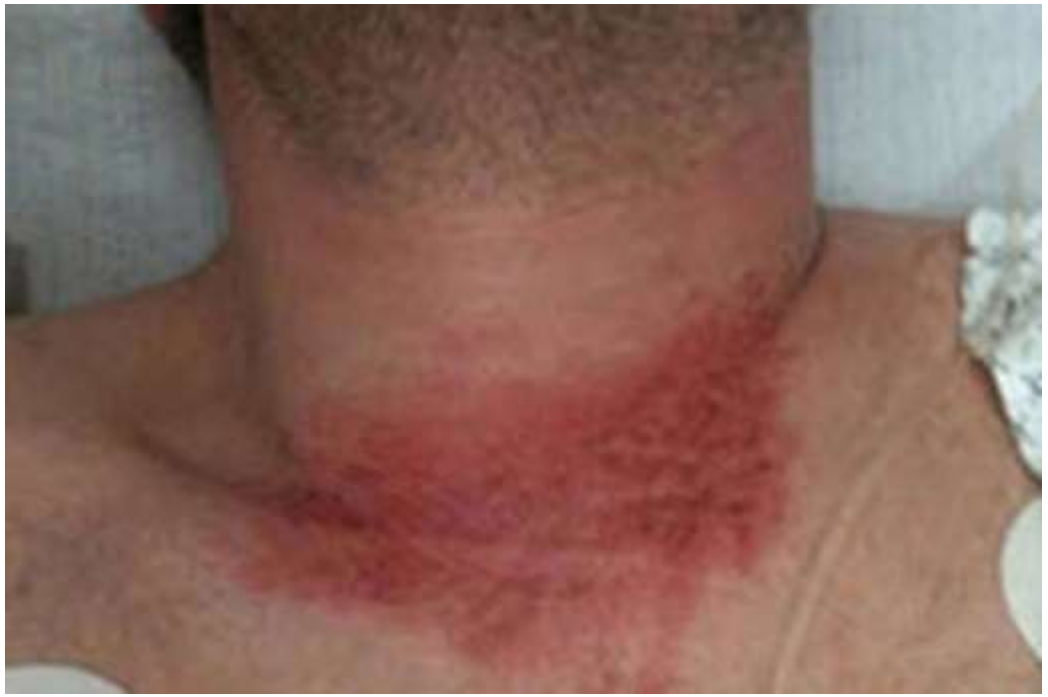
- What would you do and where?



https://www.jem-journal.com/article/S0736-4679(19)30428-7/fulltext

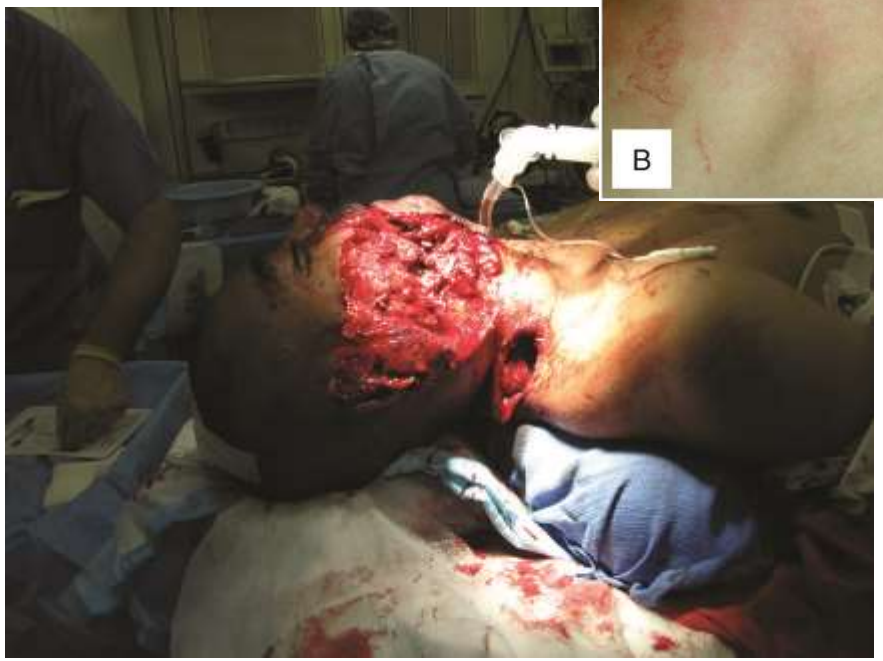
Unrestrained driver in RTC

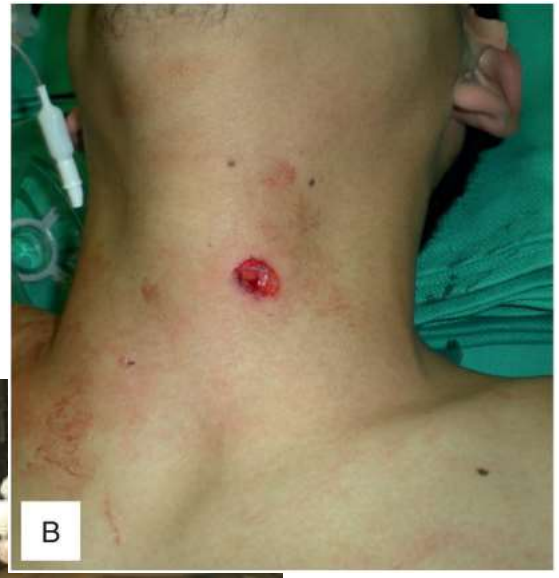
- Stridor, 96% on 15L NRM
- RR 32, reduced AE left side, tracheal central
- HR 125, 83/68, CRT 4s
- Pelvic binder, abdominal tenderness
- GCS E2 V2 M4, pupil equal



- What would you do and where?

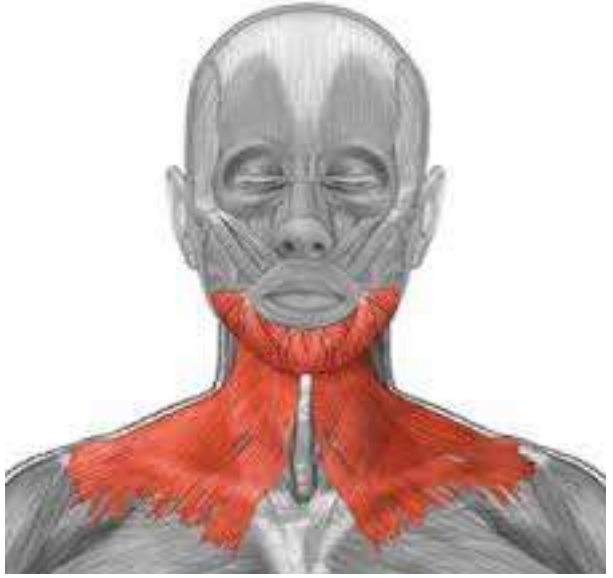
Penetrating neck trauma



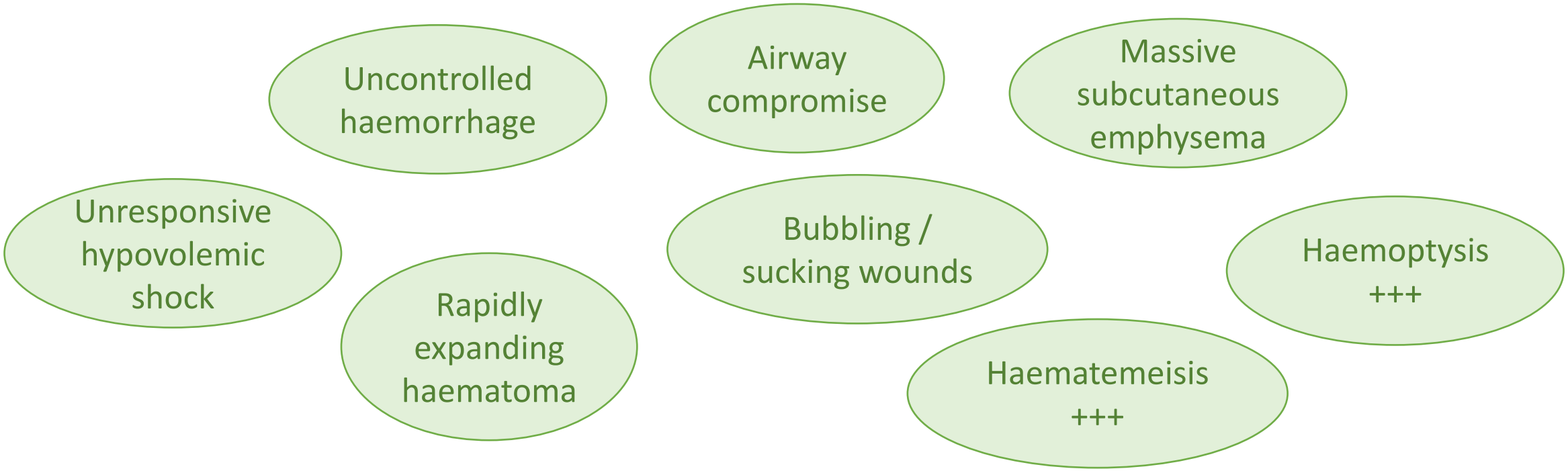


Penetrating neck trauma

- If a penetrating object is in-situ DO NOT REMOVE
- Do not routinely immobilise C-spine
- Patient positioning
  - upright / lateral
- Avoid positive pressure, consider airway options
- Consider haemo- / pneumo-thorax
- Manage bleeding
  - Direct pressure, haemostatic agent, foley catheter



Signs of significant injury

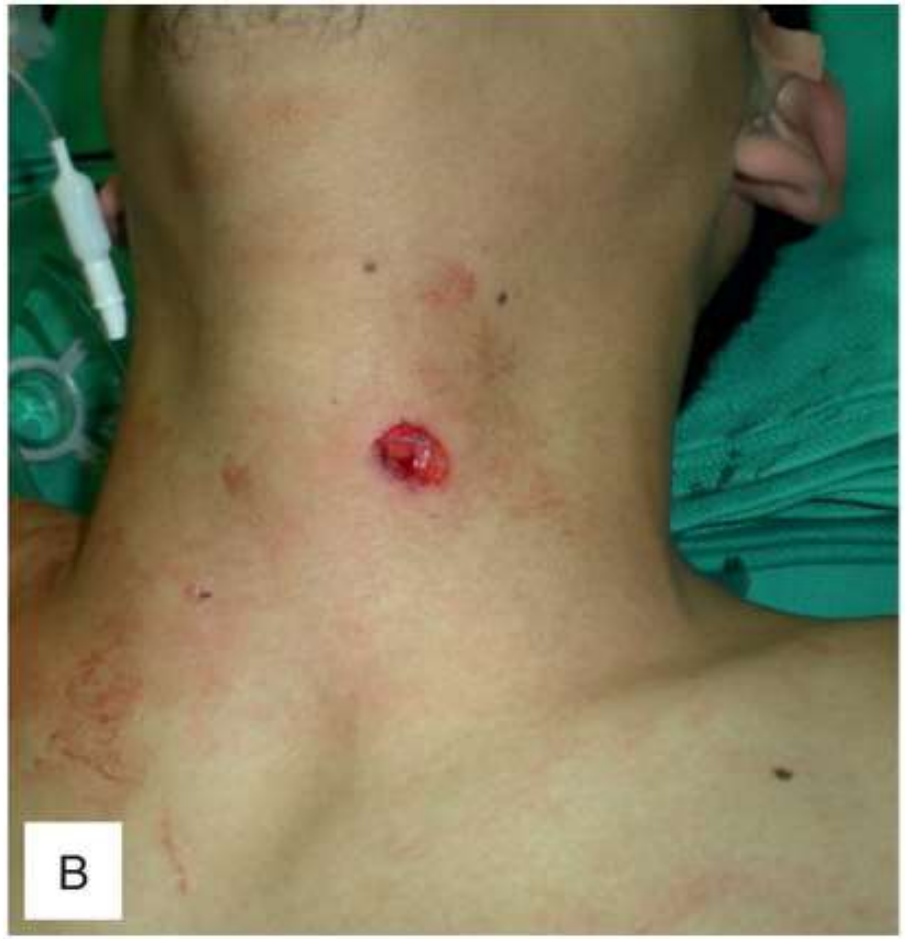


What if there are only soft signs, and the patient is stable?

Stabbing with screwdriver

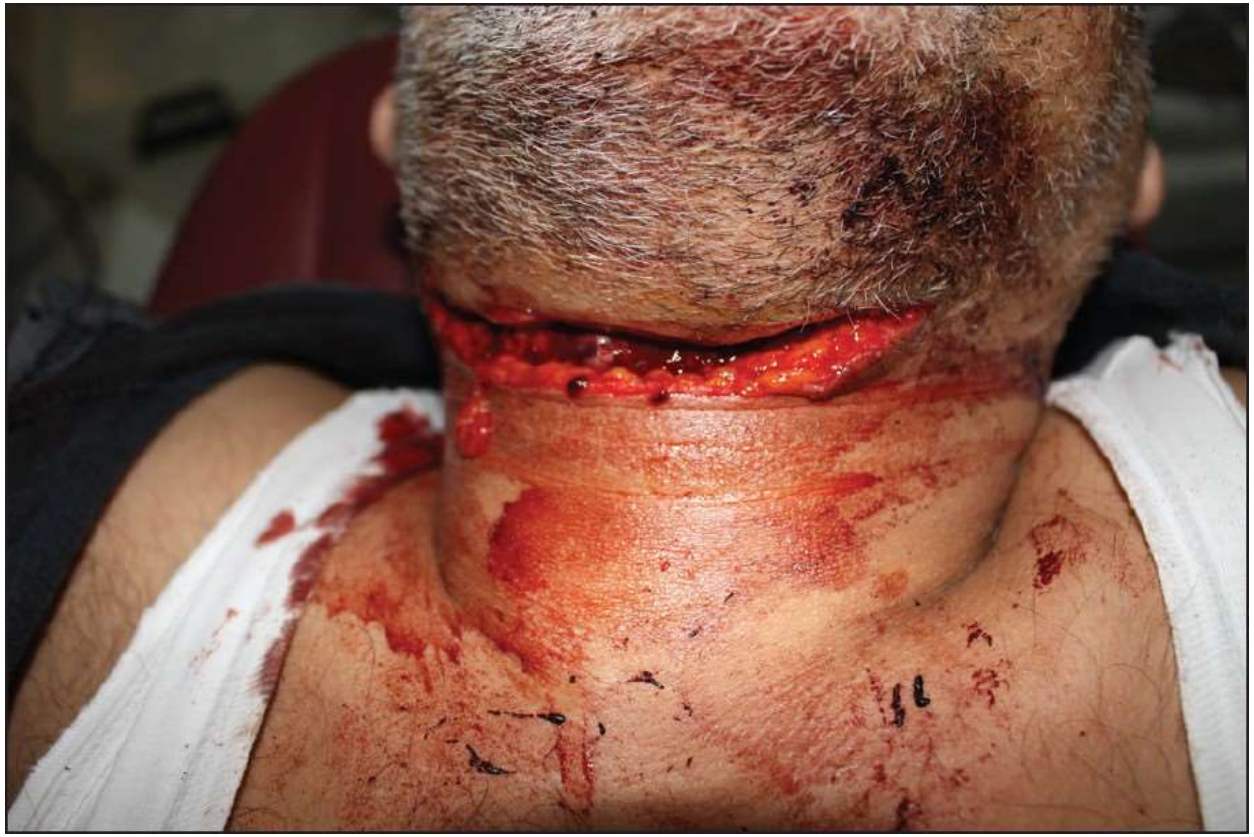
- Airway patent
- Spont breathing, RR16, 99% room air
- HR 82, BP 126/78, CRT 2
- E4V5M6

- 1 hour later
  - Expanding haematoma
  - Dysphonia
  - Increasing distress



Self inflicted laceration

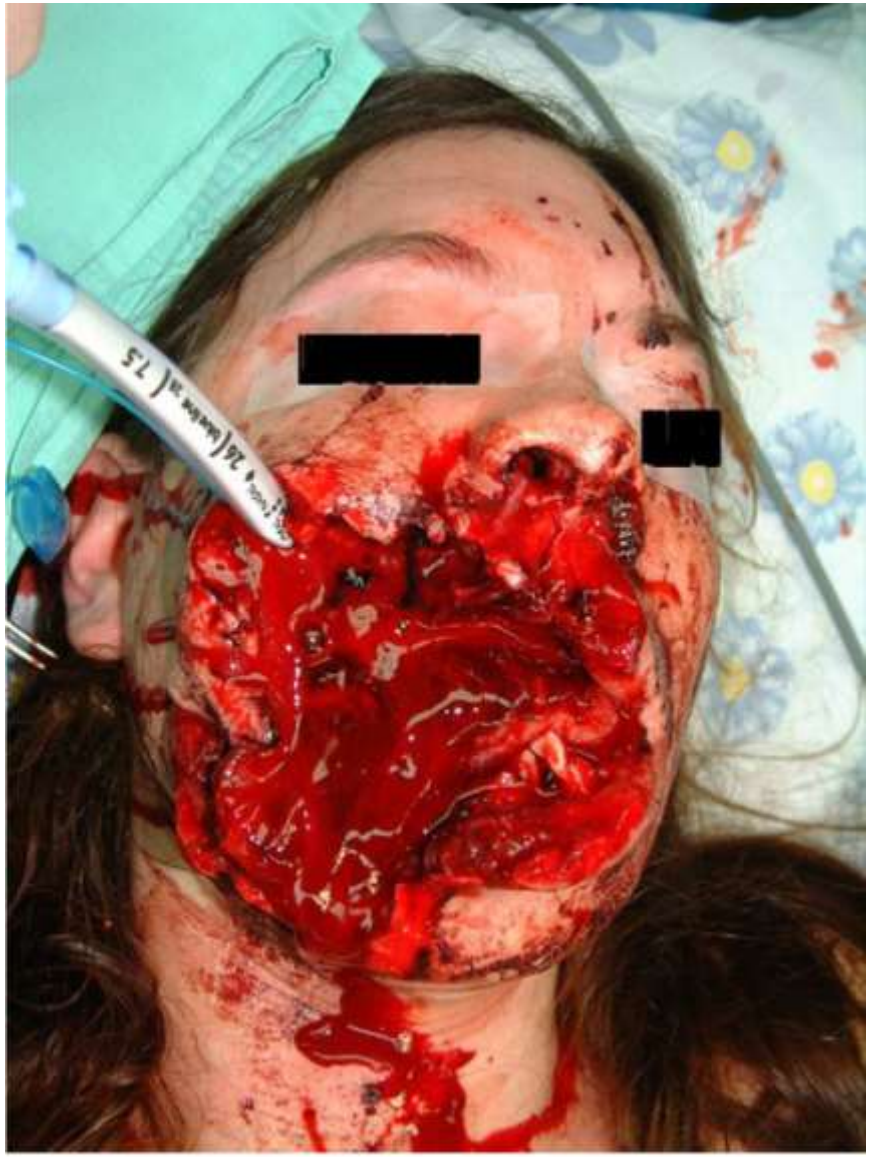
- No sounds of AW obstruction
- Wound continues deep into larynx
- Spont breathing RR 28, mod resp distress
- Venous oozing, HR 95, 135/80
- Slightly agitated



https://www.onlinejets.org/article.asp?issn=0974-2700;year=2013;volume=6;issue=4;spage=289;epage=292;aulast=Kaya

Single GSW

- Sitting upright
- Spont breathing, RR 20
- Venous oozing ++, HR 100, BP 110/75
- Alert



Krausz A, El-Naaj I, Barak M. Maxillofacial trauma patient: Coping with the difficult airway. World journal of Emergency Surgery, Feb 2009
DOI - 10.1186/1749-7922-4-21

Rest of primary survey

B - Consider haemo/pneumothorax

C - Manage haemorrhage
  - IV access, blood samples, TXA, MHP -> balanced transfusion
  - Blunt neck injury unlikely cause - ?other sources
- If hypotension not responsive to transfusion ?neurogenic

Rest of primary survey

D

- ? TBI ?C-spine
- Assess neurology prior to sedative agents

- Vascular injury -> contralateral hemiparesis
- Sympathetic chain injury -> ipsilateral ptosis and miosis
- High cord injury -> resp compromise, neurogenic shock

E

- Warming, correct coagulopathy, consider Abx/tetanus
- Imaging

Take home messages

You have more time than your panicking head thinks !!

- Senior and ENT help
- Consider mechanism, trajectory and at-risk structures
- Avoid positive pressure ventiulation
- Avoid cricoid
- C-spine immobilisation in blunt trauma but not penetrating
- Securing the airway
  - Cooperative patient – LA trache or AFOI
  - Uncooperative or impending airway compromise – videoscope and asleep FOI

Questions?

Trauma alerts: getting ‘the story’

- STOP and LISTEN to the crew handover
- Take opportunity to review the events in a one-to-one with the Pre-Hospital team
  - Look at the pictures, confirm timings
- Liaise with Police
  - Events, confirm identity, security issues
- History from family
  - Past medical, social, recent events, establish best contact no. and password

Other trauma related Qs

- Define Crew-resource management
- Trauma network – when should a severely injured pt go first to a TU?
- DCR – what are the key components?
- Triage categories for major incident
- Dosing of TXA
- Interpretation of TEG
- Options for limb haemorrhage control