

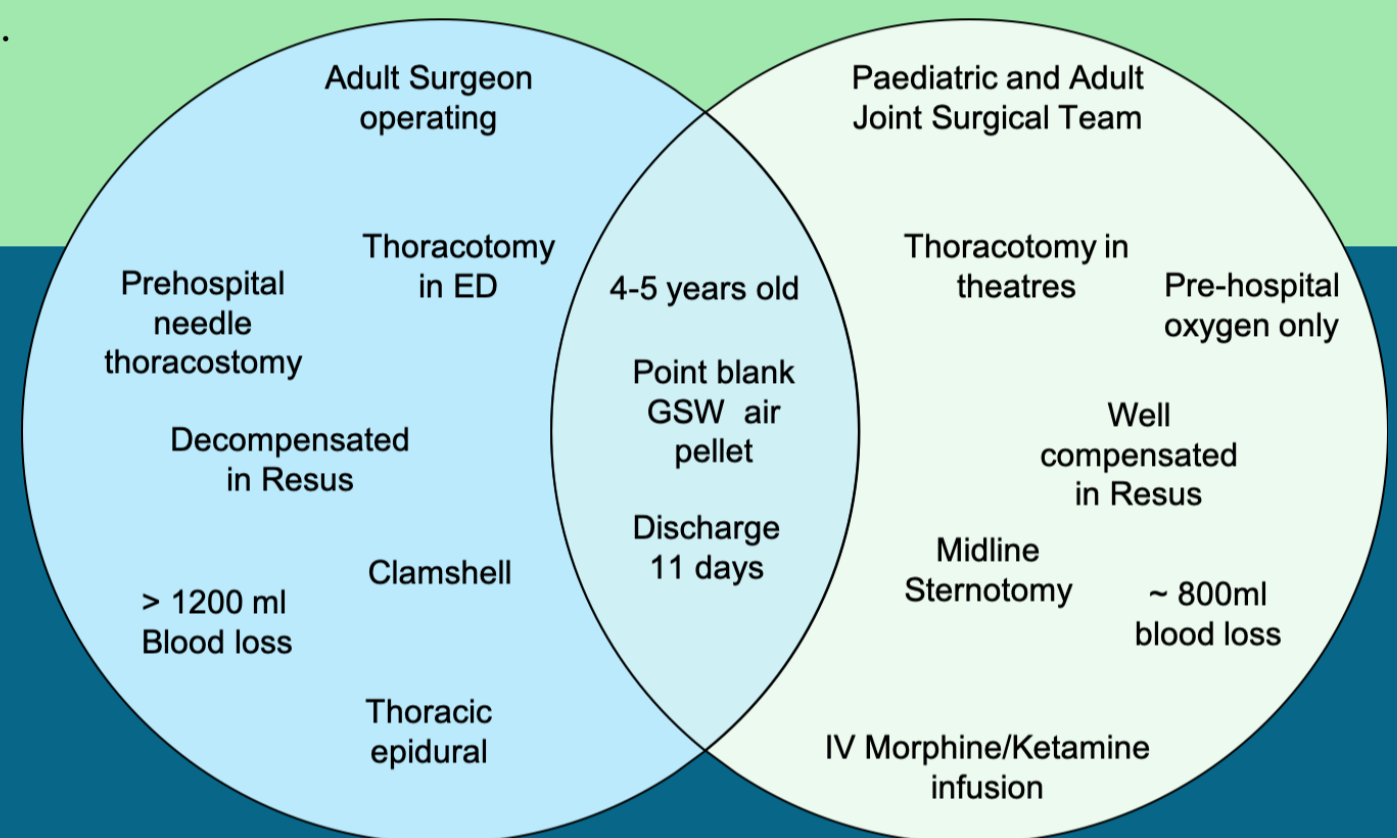
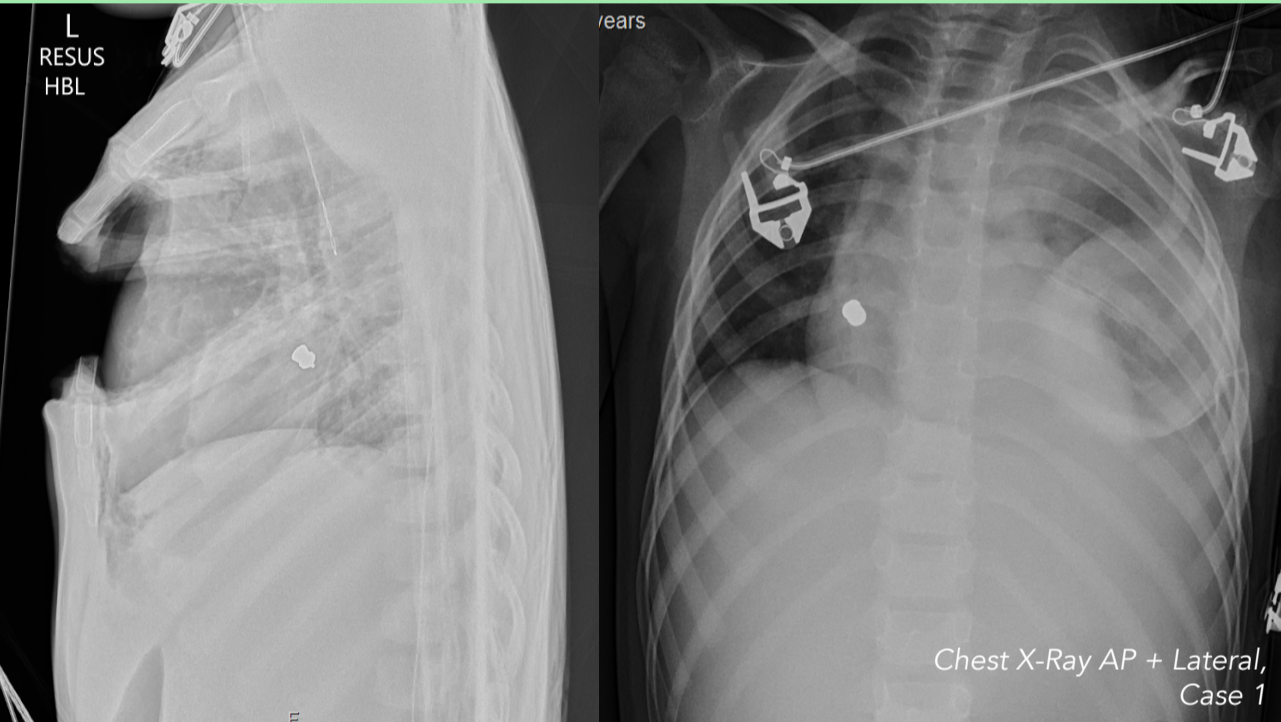
## Description

### Case one:

A four-year-old child presented to the emergency room after a gunshot wound to the chest from an air rifle. Pre-hospital paramedics performed a needle thoracostomy for a haemopneumothorax. He was in moderate shock when he arrived with a reduced GCS. After RSI he underwent a negative FAST scan for cardiac tamponade. Decision was made for CT scan however just before transfer he acutely deteriorated to peri-arrest, whereby the adult trauma surgeons in attendance performed a clamshell thoracotomy. Clots were evacuated from the pericardium and pleura and spontaneous circulation was re-established. He was transferred up to theatres for exploration, damage control and closure of chest. The pellet was embedded in the right hilum and removed. He was discharged from hospital 11 days afterwards with no neurological deficit.

### Case two:

Six weeks later, a five-year-old boy presented to the emergency room after gunshot wound to the chest with an air rifle. He did not undergo any pre-hospital interventions. Upon arrival he was in moderate shock with clinical signs suspect of cardiac tamponade. FAST scan was conclusive for a tamponade showing a large amount of fluid in the pericardial sac. He was swiftly transferred to theatre where he underwent RSI, midline sternotomy and repair of his perforated right atrium. Surgery was performed by both adult and paediatric surgeons. He was discharged from hospital 11 days later with no neurological deficit.



Top: Paediatric trauma simulation  
Bottom: Paediatric Code Red and Black Grattells



## Discussion

Thoracic trauma in children is uncommon and when coupled with the need for emergency thoracotomy survival rates are very low. Review of the literature shows that there is a 100% mortality for emergency room thoracotomy for blunt trauma in the paediatrics whilst penetrating injury has a survival of 14-25%. (1, 2) Exposure to life threatening penetrating trauma in younger children is an extremely rare event. The assessment, investigation and management of these two cases had outstanding results which merits discussion.

## Conclusions

Within our institution, we are seeing an increase in the numbers of penetrating paediatric trauma with earlier presentations and greater severity of injury. We benefit greatly from having a paediatric trauma service co-located with our adult trauma service both in terms of infrastructure and shared expertise between specialist nursing and medical teams.

The simultaneous presentation of these two paediatric penetrating thoracic cases influenced our planning for future management. Robust governance meant that lessons learnt from the first case had immediate benefit on the second, in terms of available resuscitative equipment and personnel.

Educational packages have also included rotation of theatre staff between adult and paediatric areas and development of a specific theatre team simulation course for paediatric major haemorrhage and neurotrauma.

We have demonstrated that expert multidisciplinary teamwork comprising both paediatric and adult clinicians has resulted in favourable patient outcomes.

