

# Clinical Outcomes of Children with Traumatic Hemothorax Treated with Non-Operative Management, Video-Assisted Thoracoscopic Surgery, or Thoracotomy

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## BACKGROUND

- Pediatric thoracic trauma can be associated with a 30% mortality rate in the setting of multiorgan system injuries
- Hemothorax is one of the most common thoracic injuries
- Due to the relative rarity of traumatic hemothorax in children, few studies have compared the outcomes of non-operative management to VATS and thoracotomy

## METHODS

Patients <18-years-old in the ACS Trauma Quality Programs database with traumatic hemothorax (n=16,998)

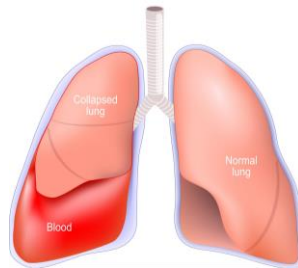
Non-operative management (n=7604)

Early VATS (n=66)

Late VATS (n=91)

Thoracotomy (n=13444)

Stratified by trauma type



### Outcomes:

- Conversion to open
- Reintervention
- ICU length of stay
- Ventilator days
- Pneumonia
- Time to discharge

## RESULTS

- A total of 9105 patients met inclusion criteria, including 4005 penetrating injuries and 5100 blunt injuries
- Across both trauma types, the thoracotomy group had the lowest initial GCS and highest ISS

### Penetrating Injuries



- Mean age was 15-years
- Females were more likely to be managed non-operatively or with late VATS
- Black patients were least likely to undergo early VATS

### Blunt Injuries



- The early VATS group was the youngest
- Female and black patients were less likely to be treated with VATS

Table 1. Penetrating Injuries

	Non-Operative (n=2966)	Early VATS (n=44)	Late VATS (n=58)	Thoracotomy (n=937)	P
Conversion to Open, n (%)		14 (31.8)	10 (17.2)	92 (9.8)	
Reintervention, n (%)		1 (2.3)	1 (1.7)	1 (1.1)	
ICU Days	3.0 (2.0; 5.0)	3.0 (2.0; 6.5)	4.0 (2.0; 7.0)	4.0 (2.0; 8.0)	<0.01
Ventilator Days	2.0 (1.0; 4.0)	2.5 (1.0; 4.0)	2.0 (1.2; 6.0)	2.0 (1.0; 5.0)	0.01
HA-Pneumonia, n (%)	59 (2.6)	1 (3.2)	0 (0.0)	43 (5.1)	<0.01
HR of Discharge	1.00 (referent)	0.86 (0.63-1.17)	0.69 (0.43-0.90)	0.68 (0.63-0.74)	

Table 2. Blunt Injuries

	Non-Operative (n=4638)	Early VATS (n=22)	Late VATS (n=33)	Thoracotomy (n=407)	P
Conversion to Open, n (%)		4 (18.2)	5 (15.2)	35 (8.6)	
Reintervention, n (%)		0 (0.0)	1 (3.0)	1 (2.5)	
ICU Days	4.0 (2.0; 9.0)	2.0 (1.0; 5.0)	9.5 (6.0; 17.0)	7.0 (3.0; 15.0)	<0.01
Ventilator Days	4.0 (2.0; 10.0)	1.0 (1.0; 12.5)	6.0 (3.0; 15.0)	4.0 (1.0; 12.0)	0.15
HA-Pneumonia, n (%)	237 (6.6)	1 (5.9)	4 (14.3)	51 (13.6)	<0.01
HR of Discharge	1.00 (referent)	0.97 (0.63-1.49)	0.84 (0.58-1.20)	0.67 (0.59-0.75)	

## CONCLUSIONS

- We should likely be judicious in our use of VATS for children with traumatic HTX, as the majority of these patients appear to be successfully managed non-operatively
- If operative intervention is necessary, VATS within 48-hours may reduce time to discharge for both penetrating and blunt injuries, as well as ICU length of stay and ventilator days for blunt injuries