

Pediatric Pelvic-Fracture Urethral Injuries: A Review of the National Trauma Data Bank

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Background

- There is limited information on the prevalence and associated injuries in pediatric pelvic fracture-associated urethral injuries (PFUI).
- The association between traumatic pelvic fractures and urethral injuries is well defined in the adult population, occurring in ~2% of adult men with traumatic pelvic fractures.
- The incidence of pediatric PFUI has been previously estimated between 2.4-7.5%, <1-5% and >30%.
- Objective is to perform descriptive analysis of pelvic fracture urethral injuries (PFUI) in pediatric patients utilizing a national dataset.

Ismail et al. J Pediatric Surg 1996;31:82–5
Silber et al. J Pediatric Orthoped 2001;21:446–50
Tarman et al. Urology 2002;59:123–6.
Hagedorn et al. Arab J Urol. 2015;13(1):37-42.
Johnsen et al. Urology 2017;102:234-239

Methods

- Data reviewed from the National Trauma Data Bank (NTDB)
 - 10 year study period - 2007 to 2016
 - Age <18 years old
 - ICD-9 codes for traumatic pelvic fracture
- Patients with associated urethral and/or bladder injuries were further isolated using specific AIS codes.
- Subject demographic and injury data were used to determine associated presentation, concurrent injury and outcomes during index hospitalization

Results

- 32,504 total pediatric traumatic pelvic fracture patients
- 31 PFUI children (63.3%) were male with a median age of 16 years (IQR 15-16).

	N	%
Total Pelvic Fractures	32504	
Male	20575	63.3
Female	11929	36.7
Motor Vehicle Related Injuries	26523	81.6
University-Affiliated Hospitals	23890	73.5
Urethral Injury	49	0.15
Bladder Injury	1182	3.6
Urethral Injury + Bladder Rupture	9	0.03
Sacral Fractures	16	32.7
Pubic Bone Fractures	21	42.9
Multiple Unspecified Fractures	22	44.9
Renal Injury	9	18.4
Liver Injury	15	30.6
Lower Extremity Fractures	17	34.7
Splenic Injury	18	36.7
Intracranial Injury	35	71.4
Thoracic Injury	44	89.8

Results

- PFUI subjects were compared to subjects with pelvic fracture and associated bladder injury
- Relative to children identified with traumatic bladder injuries from the database, PFUI patients had:
 - Higher Injury Severity Scores
 - Lower Glasgow Coma Scores on presentation to the ED
 - Longer ICU length of stay
 - Higher mortality rates

	<u>PFUI</u>	<u>PF Bladder Injury</u>	<u>P-Value</u>
Injury Severity Score	39	25	<0.001
Glasgow Coma Score	3	15	<0.001
ICU Length of Stay	5	2	<0.001
Mortality Rate	22.5%	6%	<0.001

Conclusion

- Urethral injuries in pediatric patients are associated with a significantly elevated overall injury severity, multiple competing injuries, and substantial mortality risk.
- Mechanisms required for PFUI in pediatric patients are significant and likely associated with substantial high-velocity or high-impact traumas.
- While no established management protocols are in place at present for pediatric PFUI, prompt and appropriate urinary drainage are vital

References:

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