

Associated Urogenital Injuries Following Pelvic Trauma in Pediatrics, A 15-year Single-Center Retrospective Study

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Introduction

The association between pelvic trauma and urogenital injuries in adult patients is well-established, whereas literature concerning pediatric patients is sparse.^{1,2}

Better understanding pelvic trauma, primarily pelvic fractures, in pediatric patients, and their potential association with urogenital injuries, may enhance care algorithms, improve treatment plans, and ultimately improve longitudinal outcomes for pediatric patients.³⁻⁵

Aims and Objectives

The purpose of this study was to determine the association between pelvic trauma and urogenital injuries in the pediatric population, including incidence, trends in injury modality, treatment patterns, imaging, and outcome.

Methods

Single-center, retrospective chart review of patients aged 0-16 years admitted for pelvic fracture, pelvic dislocation, proximal femur fracture, and injury of urinary and pelvic organs over a 15-year period.

Outcomes assessed included fracture diagnosis, urogenital injury diagnosis, treatment, mechanism of injury, demographics, length of hospital stay, length of ICU stay, imaging, catheter placement, and other associated injuries.

Charts for 371 patients were reviewed, and following additional exclusion criteria, data from 303 patients was analyzed.

Results

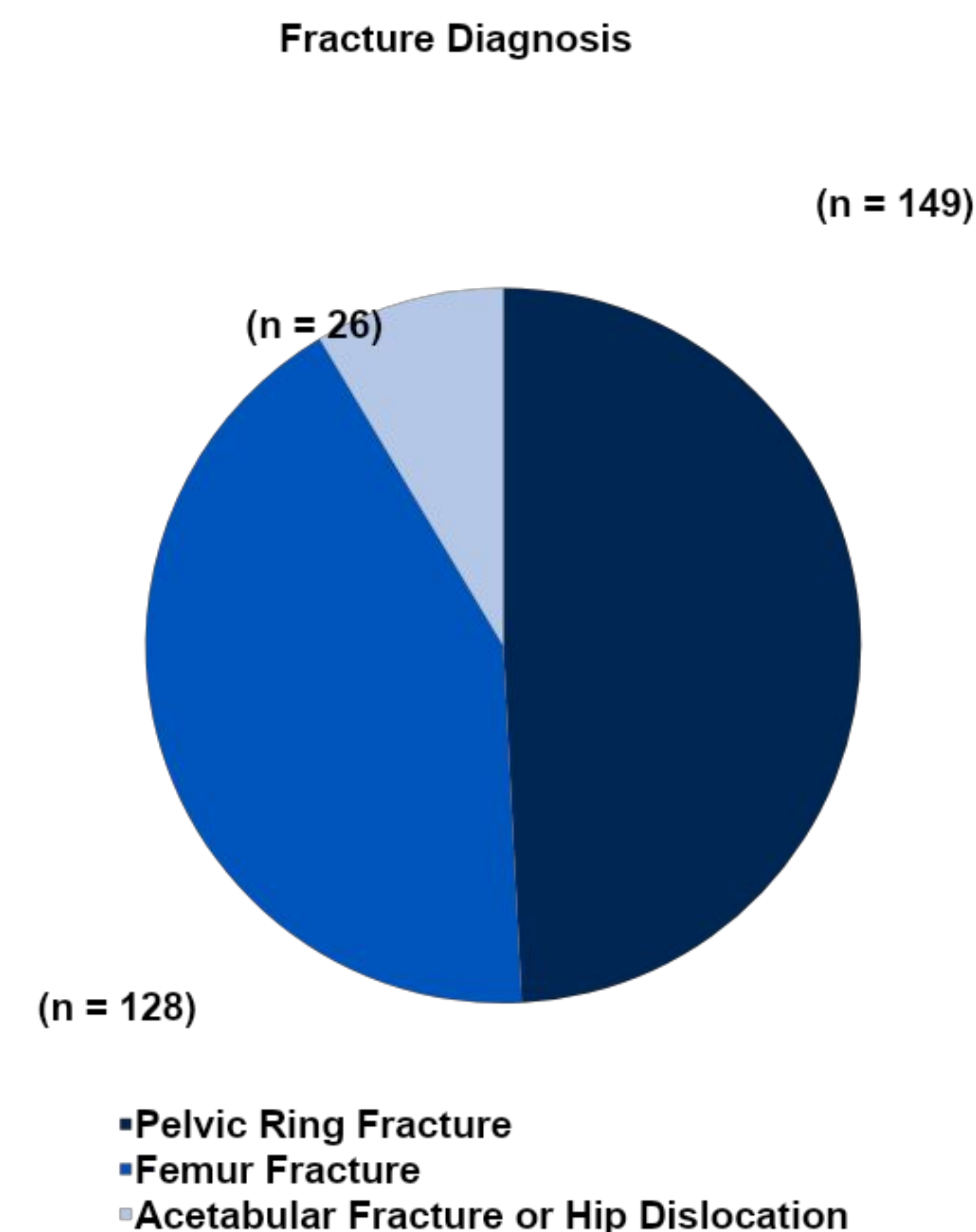
303 patients were divided into three groups based on primary fracture diagnosis: pelvic ring fracture n = 149 (49.2%), femur fracture n = 128 (42.2%), and acetabular fracture/hip dislocation n = 26 (8.6%).

The three most common Tile classifications were A1 (46.9%, n = 69), A2 (23.1%, n = 34), and B2 (15.0%, n = 22). The three most common Torode and Zieg classifications were I (46.3%, n = 68), IIIB (20.4%, n = 30), and IIIA (15.0%, n = 22).

There was no associated urogenital injury in 81.9%, 90.6%, and 100.0% of the pelvic ring fracture group, femur fracture group, and acetabular fracture group, respectively.

Patients with a group IV Torode fracture classification had the highest association with urogenital injuries (56.2% injury rate), accounting for the greatest number of urogenital injuries in a single group (n = 9) when compared to the other groups (p < 0.0001).

Figure 1. Pie chart representing the breakdown of primary fracture diagnosis at the time of admission within the study cohort.



Results

Table 1. Injury mechanisms and urogenital injuries differentiated by fracture type.

	Fracture Diagnosis			P-value
	Pelvic Ring Fx ¹	Femur Fx ¹	Acet. ² Fx ¹ or Hip Dlx ³	
	(N=149)	(N=128)	(N=26)	
Injury Mechanism, n (%)				<.0001 ⁴
Fall	30 (20.1%)	64 (50.0%)	6 (23.1%)	
Motor Vehicle Collision (MVC)	60 (40.3%)	12 (9.4%)	8 (30.8%)	
Blunt Trauma	3 (2.0%)	4 (3.1%)	1 (3.8%)	
Other	56 (37.6%)	48 (37.5%)	11 (42.3%)	
Urogenital Injury, n (%)				0.0690 ⁴
None	122 (81.9%)	116 (90.6%)	26 (100.0%)	
Hematuria	10 (6.7%)	1 (0.8%)	0 (0.0%)	
Superficial Injury	5 (3.4%)	1 (0.8%)	0 (0.0%)	
Urethral/Bladder Injury	3 (2.0%)	0 (0.0%)	0 (0.0%)	
Urinary Retention or Incontinence	8 (5.4%)	8 (6.3%)	0 (0.0%)	
Other	1 (0.7%)	2 (1.6%)	0 (0.0%)	

¹Fx = Fracture, ²Acet. = Acetabular, ³Hip Dlx = Hip Dislocation, ⁴Chi-Square p-value

Conclusions

When compared to the adult population, pelvic trauma and associated urogenital injury are less likely in pediatric patients.

Pelvic ring fractures with associated urogenital injuries were related to a greater severity of bony disruption according to Tile and Torode fracture classifications.

Treatment modality depended on the type of fracture, with pelvic ring and acetabular fractures predominantly receiving non-operative treatment, whereas femur fractures were more commonly treated surgically.

Pediatric development, and thus the potential for long-term consequences, differs from adult patients.

References

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