

Nicklaus Children's Hospital The Risk of Under-Triaging Impalement Bicycle Handlebar Injuries in Children

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Introduction

Pediatric Trauma centers treat patients with bicycle handlebar injuries. These injuries can present as a simple contusion of the soft tissue or as a serious blunt internal organ injury.1

Penetrating bicycle handlebar injuries are rarely described in the pediatric population but are a major cause of morbidity due to the damage associated with the impalement caused by the handlebar, 1.4

We discuss the cases of children who sustained impalement injuries with their bicycle handlebars. Their initial evaluations underestimated the degree of their injuries. They required multiple surgical interventions, had an extended hospital course with subsequent loss of school attendance.

Objectives

- Describe the frequency of impalement injuries due to bicycle handlebar trauma
- Identify risk factors and early assessment cues associated with bicycle impalement injuries
- Describe the morbidity associated with bicycle impalement injuries

Methods

- Review of prospectively collected trauma database of 3894 patients for all bicycle injuries from January 2010- May 2015
- Variables examined included gender, age, ISS, GCS, use of protective devices, need for surgical intervention, need for ICU care and hospital LOS.

Cases

11 yr old male was riding his bicycle at high speed when he sustained a fall over the manubrium. He presented with groin pain at the scene and paramedics came to evaluate. On the initial exam, they did not detect any injuries so they told the father to take the kid home. When the patient removed his clothing at home, the father observed active bleeding and a 7 cm laceration (Fig 1). Radiographic studies did not show vascular injury, Intraoperative findings included ruptured inguinal ligament and a 7 cm defect extending to femoral canal. A femoral hernia was repaired via groin and femoral approach. He had a VAC dressing placed initially which required several dressing changes until the wound healed up completely (Fig 2).





Fig. 2. Final wound appearance

10 yr old male was riding his bike and lost control going down- hill. He fell over the manubrium and hit his hip and thigh. He was taken to the ER and the injury was underestimated. He received a dose of intravenous antibiotic and the wound was sutured primarily. Five days later, he returned with severe pain and a wound abscess (Fig. 3). The patient was taken to the OR where a deep injury to the fascia lata extending 13 cm in length was found. Debridement of extensive necrotic tissue was done (Fig. 4). A VAC dressing was placed in the wound and it required several dressing changes and debridement procedures (Fig 5). He had a full recovery.







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Meen Age (years)	10		n	NA	NS
Mean ISS		4	7	194	N5
Mean SCS	15	15	15	804	N5
Mean ICU LOS (days)		0	8	106	115
Mean Hosp LOS (days)	2	n,	3	NA	145
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Conclusion

Risk factors identified for susceptibility to bicycle handlebar impalement injuries include riding downhill at high speeds.

Consequences of under-triaging these injuries lead to an increase in morbidity.

Lack of thorough examination and good history taking predisposes patients to missed injuries and delayed interventions.

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