External Auditory Canal Stenosis in a Pediatric Trauma Patient Population

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Background: Temporal bone fractures are a frequent consequence of high-impact trauma, such as motor vehicle accidents, falls, or ballistic injuries. These fractures can lead to considerable morbidity and even mortality. The clinical presentations of temporal bone fractures vary widely, from asymptomatic cases to severe consequences. A less frequently discussed, but critical long-term consequence of otologic trauma is external auditory canal stenosis. This condition not only impacts quality of life due to external deformity and conductive hearing loss, but also increases the risk of cholesteatoma. Managing these sequelae can be challenging, prompting this study's aim to review cases of ear canal stenosis post-trauma from initial treatment through follow up to improve future patient care outcomes and highlight the significance of prompt intervention and meticulous monitoring.
Methods: This IRB approved retrospective chart review analyzed patients with radiographically confirmed temporal bone and/or mandibular fractures and external auditory canal injuries resulting in subsequent stenosis, between September 2018 and September 2023 who were ultimately treated at a tertiary children's hospital. Variables assessed include trauma mechanism, imaging studies, physical exam findings, initial encounter management, follow-up, complications, and surgical interventions.
Results: Four pediatric polytrauma patients (mean age 14.5 years) with external auditory canal stenosis following motor vehicle collisions or gunshot wounds were identified. All patients were evaluated at the time of injury with head and maxillofacial computed tomography (CT) scans; one patient was also evaluated with a CT of the internal auditory canal and temporal bone. Initial physical exams revealed ear canal lacerations, granulation, and debris. One of the four patients had a Merocel sponge placed at the time of first assessment, and all four patients were treated with antibiotic ear drops on consultation. Follow-up periods ranged from five months to five years from their injuries, with three patients developing cholesteatoma and varying degrees of unilateral hearing loss. All four patients required surgical intervention for stenosis and subsequent complications.
Conclusion: External auditory canal stenosis, although not the most common outcome of temporal bone trauma in pediatric patients, can lead to significant long-term otologic complications. This research underscores the critical importance of recognizing and managing external auditory canal trauma to prevent severe outcomes. Further research goals include developing clinical guidelines and protocols to decrease these complications, enhancing patient care.