

Pediatric Maxillofacial Trauma

Maxillofacial fractures occur in a significant proportion worldwide and can occur as an isolated injury or in combination with other severe injuries including cranial, spinal, and upper and lower body injuries requiring prompt diagnosis with possible emergency interventions. Maxillofacial trauma is infrequent in pediatric population. Studies have shown that maxillofacial fractures in children under 16 years old account for 1%–14% of all fractures, while those in children under 5 years old account for only 0.87%–1%.¹ Children are more prone to facial fracture because of greater cranial mass to body ratio (8:1) however the flexibility of the facial bones, the lack of pneumatization of the paranasal sinuses, and the protection allowed by the prominent buccal fat pad in infants may be some of the reasons for such a low incidence.¹

Owing to the influence of social, environmental, and economic factors, the characteristics of pediatric maxillofacial trauma are variable with respect to time and region. The causes of maxillofacial injuries in children vary widely and mainly include falls, motor vehicle collision, sports accidents and assaults. Falls are more common in younger age groups, whereas sports accidents are more common in adolescents. The adolescent age group is also most prone to interpersonal violence.² Regarding the monthly distribution of injuries, it was observed that the frequency was high in the months of summer.^{2,3} In a study conducted by **Kosba et al.(2022)**⁴, incidence of dentoalveolar injuries and soft tissue injuries were higher than facial fractures. Mandibular fractures were the most frequent facial fractures followed by maxilla, zygoma, orbital and nasal fractures. **Bhutia DP et al. (2019)**⁵ carried out a retrospective review on 1,221 pediatric patients with facial injuries, reporting to the trauma center and outpatient department of King Georges Medical University, Lucknow. Majority of these injuries were encountered among boys (64%). Motor vehicle collisions (46.5%) were the leading cause of facial fractures and dentoalveolar injuries in children aged 6-16 years, whereas falls were the most common cause in the 0-5 age group. Mandible was the most commonly fractured bone (34.7%) followed by nasal (33.3%), maxilla (17.5%), and zygoma (14.3%). More than 50% sustained concomitant injuries which mainly included facial soft tissue injury, dentoalveolar injuries or brain injury. The presence of dental injuries is high in paediatric patients with facial fractures and occurs in 23% to 31% of patients.⁶

Although pediatric trauma is rare, it is nevertheless of utmost importance to diagnose and plan the appropriate treatment as there is no predictable trauma pattern and thus treatment

protocols may vary.⁷ Maxillofacial trauma in children is a challenge to healthcare professionals as the child is more difficult to examine both clinically and radiologically. Significant considerations have to be made prior to the treatment, like age of the patient and the status of facial bone maturation, types of fracture, involvement of neighboring structures, protection to the developing tooth bud and other associated injuries as well.⁸

Further, it is more difficult to make use of teeth in children for fixation because the deciduous teeth may be either insufficient in number or their roots may be resorbed, and permanent teeth may be incompletely erupted. The shape of the deciduous crown being bell shaped with little undercut area is not favorable for the retention of wires and splints.⁹ Treatment modalities can mainly be divided into 3 categories: conservative treatment, closed reduction and open reduction. Conservative treatment includes prescription of antibiotics and analgesics, soft diet and active physiotherapy. Closed reduction includes various techniques such as composite splinting of teeth, arch bars and acrylic splints wired to teeth.⁷ The osteogenic and remodeling capabilities of pediatric skeleton is higher, and hence, conservative treatment is often given priority. Facial trauma may compromise oral function, aesthetics and self-confidence of the pediatric patient. If not appropriately managed, complications such as malocclusion, facial asymmetry, growth disturbances and temporomandibular joint (TMJ) ankylosis may occur.⁷

References:

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