

Guidelines for Emergency Management of Facial Trauma

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Description

Between 2-4 years sufficient number of fully formed deciduous teeth is present facilitating application of arch bars or eyelet wires. 5 to 8 years age old group may present with some difficulty owing to loss or loosening of deciduous teeth. Slight occlusal discrepancies resulting from lack of perfect reduction correct spontaneously as permanent teeth erupt and bone undergoes remodeling with function. No displaced body or syphilis fractures without malocclusion can be treated by close observation, slenderized diet and avoidance of physical activity. If displaced closed reduction and immobilization is performed. Exact method of immobilization depends on child's chronologic age and state of dental development. In less than 2 years age very little anchorage can be taken from teeth as most are erupted or incompletely formed. In mixed dentition only 6 years molars are adequate for circumvented wires. If possible arch bars are placed and elastic immobilization is done. If teeth are inadequate then fracture site is immobilized with gunning splint or lingual splint.

Inter maxillary fixation is used if splint stabilization is not enough as in fracture of posterior body beyond point of extension of splint. Appliance should be fixed in place using caecum and fibular wires one on either side of fracture or two wires to add stability to the splint. If IMF is also required then wires can be added from caecum and fibular wires to wires at perform region or sigma. Trauma to chin producing temporal and fibular joint injury is frequent occurrence in childhood.

Mandibular condyle in children

Mandibular condyle in children is short, stout and highly vascular with thin cortical plate. The impact displaces condyle poster superiorly against skull base thus leading to range of injury from capsular tear, hemarthrosis to fracture of condylar head or neck. Occasionally a crush injury to condyle can produce comminuted fracture. Children less than 3 years of age with trauma to condyle are at greatest potential for growth disturbance especially due to amyloses. Inadequate or overtreatment may lead to growth retardation or excess while excessive immobilization may lead to mandibular hypo mobility. So the two main goals for treatment in such patients are Preservation of function Maintenance of ramus height. When this is achieved normal growth usually occurs. Splint should be

left in place for three weeks. Alternatively if possible monocortical plate at inferior border can be placed. Short (4 mm) and broader screws 2 mm should be used as they are more retentive in pediatric bone.

Emergency Management of Facial Trauma

The emergency management of facial trauma in pediatric population also needs extra-consideration. Clinical signs of shock may occur with even insignificant amounts of rapid blood loss due to small blood volume. Because of small size of airway laryngeal edema or retro position of base of tongue may produce sudden obstruction. Tracheostomy if required should be done using vertical incision avoiding first tracheal ring and high lying left innominate vein. The shape and shortness of deciduous crowns may make the placement of circumvented wires and arch bar slightly more difficult in children. However the narrow cervix of tooth in relation to crown and roots provides better retention of wires as in Ivy loops or stout wires. Mandibular cortex is thinner in children so care must be taken to avoid pulling a wire through the mandible when placing circummandibular wiring for splints.

In children in primary and mixed dentition stage with unilateral condylar fractures analgesics and slenderized diet for 5-7 days is usually adequate treatment. Minor malocclusions will correct spontaneously. Deviation on opening is treated with midline opening exercises. If there is significant pain and severe malocclusion short period of immobilization for 7-10 days with or without bite opening splint is indicated. This can be followed with training elastics. In bilateral sub condylar fractures in children in primary and mixed dentition stage relatively normal opening and stable occlusion may be present. Analgesics and slenderized diet for 7-10 days followed by soft diet for two weeks may be adequate. However bilateral fractures with significant dislocation often produce open bite malocclusion. In these cases jaw should be immobilized for 7-10 days and after release of fixation guiding elastics for 7-10 days should be given, if still malocclusion persists then open reduction should be considered.

Decreased vertical height of mandibular body and alveolus may occur after fracture of horizontal ramus of mandible if teeth are lost due to injury or hardware through tooth buds. Contour defects may occur due to severely comminuted or compound

fractures when bone undergoes desorption during remodeling. In general however mandibular body fractures present little risk for long-term growth abnormalities. Unilateral and bilateral condylar fractures may however cause mandibular asymmetry and retrognathism with open bite respectively. Leaked et al demonstrated no growth abnormalities in 13 children with unilateral and 8 children with bilateral sub condylar fractures treated with analgesics, liquid diet, exercises and guiding elastics. According to Kabana 1 out of 39 patients developed slight asymmetry after sub condylar fracture. Mac leman found late facial growth deformities in patients with intra capsular fractures prior to age 2.5 year.

Lund 6 carried out a prospective study of 38 patients with sub condylar fractures to study the effect of injury on mandibular growth and the extent of remodeling that took place. 38 patients 32 were 12 years or less and 6 were 13-17 years. There were 11 bilateral fractures and 27 unilateral fractures. 35 patients were treated with close observation alone or in

combination with inter maxillary fixation. Three patients had open reduction and fixation with K-Rod and condylectomy. In Lund's study mandibular growth was generally greater on fractured side than no fractured side so that the fractured ramus which was initially shorter had greater incremental growth rate so that possible disproportion between two sides reduced with time. This was evident when measuring distance between chin points to condyle.

Earlier most of the pediatric cases were treated with conservative measures or closed reduction techniques. Only recently have the distinct advantages of accurate primary repair and the stable fixation of facial fractures been applied to the rehabilitation of injuries in children too. With the advent of better investigative facilities like CT scan and 3D reconstruction, and newer airway management techniques with reliable anesthesia techniques and specifically introduction of mini and micro plates open reduction and fixation of pediatric facial fractures is getting commoner.