

Critical Issues for Treatment and Fractures in Children

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Description

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. According to Peterson with the exception of mandibular condyle fractures judicious use of ORIF is preferable to the closed reduction and immobilization techniques with splints when treating fractures in the deciduous and mixed dentition.

Goals for Treatment

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 mono-cortical plate at inferior border can be placed.

Extended periods of maxilla mandibular fixation can lead to alkalosis in children and should be avoided. In cases of condylar fractures, non-operative management is overwhelmingly popular, because minimal complications occur and the outcomes are good in both adults and children. Moreover, in older children, the bone has less capacity to adapt and remodel, and the ramus height may not be regained.

These characteristics prove particularly ideal for the pediatric population, in which bone growth and turnover creates potential problems for non-resorbable, permanent plates. In all cases, restoring facial symmetry is a very difficult challenge in these patients, and may require additional interventions that may range from fat grafting, to orthodontics to combined orthodontic-orthographic surgery approaches. This invagination induces cellular proliferation in the ectomesenchyme, which subsequently forms the dental papilla. These developing ectomesenchymal cells are contained in a sac known as the dental follicle.

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.

Fractures in Children

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. The rare occurrence of jaw-area fractures in children is due to the anatomical advantages such as mandibular flexibility. The diagnosis of mandibular fractures in children can be difficult compared to adult patients due to lack of coordination.

Firstly, complete anamnesis taken from relatives of the patient, and if possible, from the patient, can guide an examiner in terms of accompanying pathologies, life-threatening conditions and treatment management. Although lower jaw fractures in the pediatric population are uncommon relatively to the adult age range, mandibular fractures are the most frequently seen in pediatric maxillofacial trauma.

For this reason, anamnesis and physical examination are very important during the approach to the fractured mandible. Previous research has shown the use of arch-bar fixation restricts normal dietary intake in children, resulting in significant weight and protein loss. Here in the present case series, maxilla mandibular fixation was performed using light-training elastics so that an active exercise program could be started as soon as the child could cooperate.

Before inserting the arch bar, occlusion was checked to confirm full interdigitation of the teeth with regular contact.

Titanium plates demonstrate good long-term biocompatibility, have favorable physical properties, can be easily manipulated intraoperative to treat the fracture, and have the benefit of several decades of predictable use in facial fracture fixation. Complications such as malunion and nonunion usually occur due to factors such as inadequate reduction during surgery, failure to achieve stabilization or failure to apply a healthy fixation.

In case of significant malocclusion or non-union open reduction and internal fixation should be performed by secondary surgical operation. Patients who exhibit persistent malocclusion after unilateral or bilateral condylar fractures that have been treated with MMF can often further be treated nonsurgically; however, some type of functional therapy is recommended to address the abnormal occlusal relationship. Maintaining appropriate range of motion at the TMJ is important in maintaining proper mandibular growth, as well as avoiding alkalosis and TMJ dysfunction. As mandibular growth and complication parameters are similar in both groups, resorbable

plates are favored due to avoidance of potential odontogenic injury, elimination of long-term foreign body retention and provision of adequate stability for rapid bone healing.

Eventually, the overlying dental lamina forms the ameloblasts (which produce the outer tooth enamel), the dental papilla forms the dental pulp and the odontoblasts (which produce dentin), and the follicle forms the cementum as well as the periodontal ligament (which anchors the tooth to the underlying alveolar bone). Simplified, the overlying ectoderm, or dental lamina, invaginates into the underlying ectomesenchyme.

Minimally displaced fractures can be treated by soft diet, analgesic use and antibiotic prophylaxis. However, in very young children, healing might be prolonged because of insufficient cooperation in following postoperative instructions. In such cases, fabrication of a splint and cementing onto the arch can be used to overcome these hindrances.