

Management of Traumatic Injuries to the Teeth of Children

Fracture anterior teeth is a common accident in children which has great psychological effect on both parents and children especially if the fracture is in the permanent dentition and this situation present a real problem to the dental practitioners who deal with children. The prevalence of fracture anterior teeth varies greatly in different studies according to age and gender.

The fracture varies from a simple condition to severe cases, which demand specific dental treatment. If the condition left untreated, it will result in a malformation, degeneration, necrosis, abscess formation and finally tooth loss from the arch.

Trauma to a tooth followed by Pulpal hyperemia which cannot be determined by diagnostic methods, congestion and alteration in blood flow in the pulp may be sufficient to initiate irreversible degenerative changes, which over a period of time can cause pulpal necrosis. In addition, the apical vessels may have been severed or damaged enough to interfere with the normal reparative process.

The dentist may prefer to delay the restoration because of a questionable prognosis for the pulp, often a malocclusion can develop within a matter of days as a result of a break in the normal proximal contact with adjacent teeth. Adjacent teeth may tip into the area created by the loss of tooth structure. This loss of space will create a problem when the final restoration is contemplated.

Success often depends on the rapidity with which the tooth is treated after the injury whether the procedure involves protecting a large area of exposed dentin or treating a vital



pulp exposure.

History of the injury

Many patients do not seek professional advice and treatment immediately after an injury. If the accident is so severe that dental treatment cannot be started immediately because other injuries have higher priority. If the force strong enough to fracture, intrude, or avulse a tooth is also strong enough to result in cervical spine or intracranial injury. The dentist must be particularly alert to such potential problems, be prepared ahead of time to make a neurologic assessment and make appropriate medical referral when indicated without delay.

The patient should be assessed for nausea, vomiting, drowsiness or possible spinal fluid leakage from the nose and ears, which would indicate a skull fracture the patient should be evaluated for lacerations and facial bone fractures.

Obtaining a baseline temperature, pulse, blood pressure, and respiratory rate should be considered as information to be gathered before addressing the dental needs of the patient.

A quick cranial nerve evaluation involving the following four areas:

1. Extraocular muscles are intact and functioning appropriately; that is, the patient can track a finger moving vertically and horizontally through the visual field with the eyes remaining in tandem.
2. Pupils are equal, round, and reactive to light with accommodation.
3. Sensory function is normal as measured through light touch to various areas of the face.
4. Symmetry of motor function is present, as assessed by having the patient frown, smile, move the tongue, and perform several voluntary muscular movements.

For any fracture case, an accurate medical and dental history should be taken with record information about the condition involves that could be related to the:

1. Cause of the fracture
2. Place of fracture which could be dirty, contaminated, or clean place,
3. The Time of fracture for the treatment plane (To determine the vitality of the tooth). If the fracture before one year, there is high probability that the tooth is non-vital. The time is important in pulp exposure for which pulp capping or pulpotomy would be the procedure of choice. Repeated trauma will lead to less favorable prognosis
4. Pain is very important in determining the extent of the injury. Pain caused by thermal change indicate significant pulp inflammation.

Pain during bringing the teeth in occlusion indicate the tooth has been displaced such pain indicate injury to p.d.l. and supporting tissue.

The loss of vitality of some injured teeth occurred as early as 3 months and as late as 24 months after the injury, which justifies a long follow-up period after injury.

Taking a complete dental history can help the dentist learn of previous injuries to the teeth in the area. Repeated injuries to the teeth are common in children with protruding anterior teeth and in those who are active in athletics. In these patients the prognosis may be less favorable. The dentist must rule out the possibility of a degenerative pulp or adverse reaction of the supporting tissues as a result of previous trauma.

Trauma to the supporting tissues may cause sufficient inflammation to initiate external root resorption. In some instances the tooth can be lost as a result of pathological root resorption and pulpal degeneration.

Clinical Examination

Visual Examination:

Examination of any bruising or laceration of the soft tissue. The clinical examination should be conducted after the teeth in the area of injury have been carefully cleaned of debris. A piece of cotton moistened with saline or hydrogen peroxide can be used to clean the teeth and surrounded area. When the injury has resulted in a fracture of the crown, the dentist should observe the amount of tooth structure that has been lost and should look for evidence of pulp exposure. With the aid of a good light, the dentist should carefully examine the clinical crown for cracks and craze lines, the presence of which could influence the type of permanent restoration used for the tooth. With light transmitted through the teeth in the area, the color of the injured tooth should be carefully compared with that of adjacent uninjured teeth. Severely traumatized teeth often appear darker and reddish, although not actually discolored, which indicates pulpal hyperemia. This appearance suggests that at some later time the pulp may undergo degenerative change, terminating in pulpal necrosis. Examination of Oral hygiene and Occlusion should be done.

Digital Examination:

Tenderness of the tooth by gentle percussion

Mobility of the tooth

vitality test of the injured tooth should be performed, and the teeth in the immediate area, as well as those in the opposing arch, should be tested. The best prediction of continued vitality of the pulp of a damaged or traumatized tooth is the vital response to electric pulp testing at the time of the initial examination. A negative response, however, is not a reliable evidence of pulp death because some teeth that give such a

response soon after the injury may recover vitality after a time because the tooth is in shock. Reexamination in the next visit after 6 weeks, if the child doesn't give a response mean the tooth is non vital.

In children the electric pulp tester is controversy because it needs cooperation and a relaxed child. When the child come from the first time because of anxiety the child will give false response.

RADIOGRAPHIC EXAMINATION

The examination of traumatized teeth cannot be considered complete without a radiograph of the injured tooth, the adjacent teeth, and sometimes the teeth in the opposing arch to search for fractured tooth fragment, it may be necessary to obtain a radiograph of the soft tissue surrounding the injury site.

The relative sizes of the pulp chamber and canal should be carefully examined. Irregularities or an inconsistency in the size of the chamber or canal compared with that of adjacent teeth may be evidence of a previous injury. This observation is important in determining the immediate course of treatment.

In young patients, the stage of apical development often indicates the type of treatment, just as the size of the coronal pulp and its proximity to the area of fracture influence the type of restoration that can be used.

A root fracture as a result of the injury or one previously sustained can be detected by a careful examination of the radiograph. However, the presence of a root fracture may not influence the course of treatment, particularly if the fracture line is in the region of the apical third. Teeth with root fractures in this area rarely need stabilization, and a fibrous or calcified union usually results.

If teeth have been discernibly dislocated, with or without root fracture, two or three radiographs of the area at different angles may be needed to clearly define the defect and aid the dentist in deciding on a course of treatment.

Another value of the radiograph is that it provides a record of



the tooth immediately after the injury.

After a period of time an inconsistency in the true size or contour of the pulp chamber or canal compared with that of adjacent teeth may indicate a developing pathologic condition.

When more complex facial injuries have occurred or jaw fractures are suspected, extraoral films may also be necessary to identify the extent and location of all injury sequelae.

Oblique lateral jaw radiographs and panoramic films are often useful adjuncts to this diagnostic process.