AN UNUSUAL CASE OF COMPLICATED CROWN AND ROOT FRACTURE OF MAXILLARY INCISORS – A CASE REPORT

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An unusual case of complicated crown and root fracture of right and left maxillary central incisors consequet to motorcycle accident has been reported. Interesting feature of the case is intactness of all the fragments maintaining complete morphology and outline of crowns of both the affected incisor teeth. This feature merit the reporting of the case. Description of the case on clinical and radiographical finding fits well into the description of WHO classification mentioned in its International classification of diseases : Application to dentistry and stomatology.

The need for steps at government and other levels to bring awareness in masses and preventing measures need no over emphasis.

Key Words: trauma injury, fracture of teeth, Crown and Root Fracture

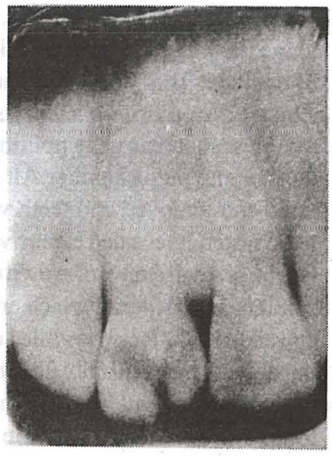
Scientific advances, industrialisation and urbanization during past few decades have significantly changed the life style of the people. Consequently use of fast moving locomotives are becoming more and more popular. Youth are often noticed speeding up the two wheelers across the roads not caring for road sense or traffic rules concurrently interest in outdoor games and sports is also on increase. This sporadic change is bound to increase in incidence of accidental injuries including that of face and teeth. Contrarily the awareness and facilities for prevention and management of trauma injuries is much lacking.

Incidence of injuries to teeth is at a maximum just before and during schooling. Numerous views have been put forward for description and classification of injuries to the teeth and supporting structures[1,2,3,4,5,6,7,8,9]. The most widely accepted till recently have been the Ellis classification while Andreasen recommended adopting the system of World Health Organisation in its international classification of diseases, application to Dentistry and stomatology. This system based on anatomic and therapeutic consideration may be utilised with both permanent and deciduous dentition. It includes injuries to the tooth, supporting structures, gingiva and oral mucosa.

In this case presentation, system of WHO classification has been adopted as it fits well into observations and description of the affected teeth and supporting structures well.

CASE REPORT

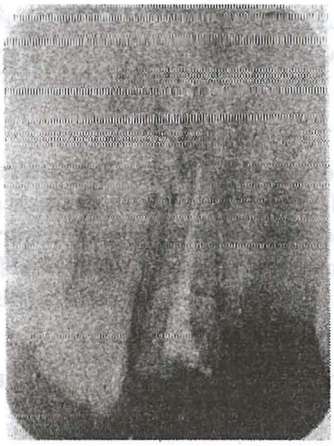
A young man aged 27 years working in ITDC reported for Dental consultation. He looked quite healthy and smart. He gave history of motorcycle accident at village Mandu about 90 Km. from Indore. He complained of pain in upper anterior segment and swelling in the upper lip. He told that his bike slipped on road, and he fell injuring his face and front teeth. Clinical examination revealed an interesting picture showing the crowns of both maxillary central incisors severely



(Fig. 1)

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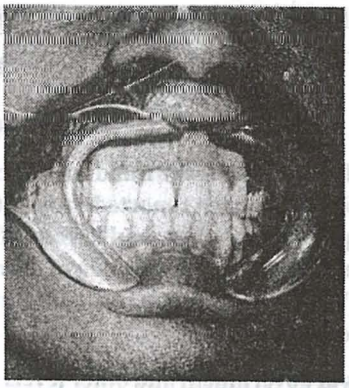
fractured into pieces. Surprisingly all the fragments were absolutely intact retaining complete tooth morphology and outline of crowns of both affected teeth even after 3 days of accident. Close examination showed multiple (compound) fractures of crowns of both maxillary central incisors running in a crisscross fashion.



(Fig. 2)

A periapical x-ray showed an interesting picture of radiolucent areas in the coronal position of both incisors extending in all directions from centre of the crowns. Looking at x-ray (Fig. 1), a notch like appearance is seen in the incisal edge more marked on right side. In the centre of crowns within the radiolucent area are seen dense radio opaque zones of irregular out line giving a trench like effect of a bifid crown or a look of a fluorosed tooth.

In view of extensive fracture of crown into very small fragments though intact, it was decided to dislodge the fragments to clinically evaluate the extent of damage. This was done under local anaesthesia. The radioopaque shadows in the centre of radioluscent areas were nothing but tooth fragments pushed into pulp chamber All fragments were separated and removed and teeth were flushed with distilled water. It revealed extensive fracture of both teeth leaving a small stump of crown of right central incisor. The left central incisor which prior to defragmentation appeared less affected revealed crown fracture extending oblique mesiodistally into the root reaching much below the gingival line into the alveolar socket. No tooth structure was available above gingival line. Inadvertently no photograph could be taken at this stage missing clinical picture of left over root stumps and socket for which authors feel sorry



(Fig. 3)

On consideration of clinical and radiographic findings with history of lapse of3 days time after accident the available choice of treatment modalities were discussed with patient giving prose and cones including feasibility of one sitting implant in the socket of left maxillary incisor to which patient refused, it was decided to extract severely damaged 21. 11 was taken for root canal therapy. Root canal filling was done with gutta percha (Fig. 2) and in due course a dowel crown was fitted. An immediate removable partial denture was given to restore 21. Patient refrained to agree for a fixed partial denture, keeping an option for a single tooth implant for 21 in future. (Fig. 3)

The follow up was uneventful and patient was happy even after 2 years when he left Mandu on a transfer.

DISCUSSION

Traumatic injuries are no doubt common but often present a challenge to the dentist to restore aesthetic and function of the affected teeth. These injuries usually involve both the periodontium and pulp. The specialised cells in these areas many a times may show an astonishing recuperative capacity. But if incorrect treatment is instituted inflammation, necrosis or tissue metaplasia can be the outcome. Therefore while planning the treatment design it is of utmost importance to choose the procedure which is known and proved to assist the inherent healing capability of pulp and the periodontium.

It is not within the scope of this case report to present and discuss the different treatment modalities of different types of traumatic injuries of teeth and

supporting periodontium. The presentation therefore is limited to the case, indeed an unusual and isolated case of complicated massive fracture of crown and root of maxillary central incisors. Interesting feature being the complete intactness of all fragments of compound fracture of crowns of both maxillary incisors even after 3 days of accident.

Though the fractures of anterior teeth have been widely covered in the literature and several classifications have been suggested to describe the type and extent of fractures. But the reports of such type of massive or compound fractured incisor have been quite rare. WHO classification based upon system adopted in its international classification of diseases: Application to Dentistry and stomatology[2], places such fracture under classification as complicated crown root fractures, defining it as fracture involving enamel, dentine and cementum and says that the complicated crown root fractures in the anterior regions are usually caused by direct traumas and the direction of the impacting force determines the type of fracture. A frontal blow provokes the typical fracture line. The fracture starts a few millimetres incisal to the marginal gingiva on the vestibular aspect of the crown, taking an oblique course below the gingival crevice on lingual side. Displacement of coronal fragments is sometimes minimal. The reported case fits exactly into this description and the rarity of occurrence justifies the report.

It may be noted that in a crown root fracture the only radiographic examination seldom contribute to the clinical diagnosis as in this case because the oblique fracture line is almost perpendicular to the central beam. Appropriate diagnosis and therapy in such case is determined by exact information on the site and type of fracture clinically. Consequently it is necessary to remove the coronal fragments for direct inspection of the fractured surfaces and the extent of damage. If a complicated crown and root fracture extends less than four to five millimetres below the gingival crevices it may be possible to preserve the tooth with a post crown. If necessary a gingivectomy could be performed to expose the fracture margin. At times an osteotomy may be necessary to expose the level of fracture. After endodontic treatment a conventional cast core and porcelain jacket crown could be given.

An alternate indicated in some cases is Orthodontic extrusion of root stump to a level where the fracture surface is brought 2 mm above the level of bone. Such extruded tooth should be retained in its new position for at least six months before a final restoration is made usually a cast core and porcelain jacket crown is the choice.

CONCLUSION

An unusual case of complicated crown and root fracture of right and left maxillary central incisors consequet to motorcycle accident has been reported. Interesting feature of the case is intactness of all the fragments maintaining complete morphology and outline of crowns of both the affected incisor teeth. This feature merit the reporting of the case. Description of the case on clinical and radiographical finding fits well into the description of WHO classification mentioned in its International classification of diseases : application to dentistry and stomatology.

With the industrialisation and urbanisation and economical uplift the incidence of traumatic injuries are likely to increase. The need for steps at government and other levels to bring awareness in masses and preventing measures need no over emphasis.

It is also important in treatment of such cases to adopt procedures which are known and proved to assist the inherent healing capability of pulp and periodontium and help in restoration of function and asthetics to the best.

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CORREGENDUM

Please read following correction in June 2008 issue Page 53.

1. Title: Read- In Vitro Study istead of Vitro Study.
2. Authors footnote read *Associate Professor, Deptt of Pedodontics & Preventive Dentistry, **PG Student, Deptt of Prosthodontics Crown & Bridge, Modern Dental College & Research Centre, Indore.