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CASE REPORT

Functional Crown Lengthening on a Fractured Tooth in a Medically Compromised Patient: a Case Report

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ABSTRACT

A fractured tooth is one of the most challenging cases in a dental office; more so when the tooth is fractured at the level of the gums. Treatment options in such cases are extremely limited. More often than not, extraction of the tooth is preferred. However in medically compromised patients extraction is not feasible and hence other treatment options have to be explored. Functional crown lengthening is one such procedure that allows a dentist to preserve the fractured tooth as well as restore it to its aesthetic and functional stability. Described below is a case involving a tooth fractured at the gum level. The patient was medically compromised, thus ruling out extraction. Functional crown lengthening was the preferred treatment.

Key words: Functional Crown Lengthening, Dental, Fractured tooth.

Case Analysis

A medically compromised patient, who was suffering from labile hypertension and asthmatic bronchitis, who presented with a fractured lower right first premolar (tooth no 34), was treated by this procedure.(Table/Fig 1).



Table/Fig.1 First premolar fractured at gum margin.

The gingiva and the bone followed a definite pattern inter-proximally, facially, and palatally or lingually. In the given case, the patient came to us with a horizontal fracture of the right lower 1st premolar tooth crown, at the gum margin. On clinical examination, it was found that the remaining part of the tooth was non-vital. An X-ray to assess the underlying bone patterns and support, was taken. After a thorough assessment of the radiograph, it was decided to save the remaining part of the tooth.

Procedure

An intra-alveolar nerve block was first administered along with a sulcular block. Thereafter, a circumferential incision for gingivectomy was made around the neck of the root.(Table/Fig 2) Then a circumferential bone gutter was made using a round bur in the gingival sulcus(Table/Fig 3). The available root length was calculated from an RVG X-ray (Table/Fig 4). It was found to be 14 mm, which is quite adequate for the purpose.

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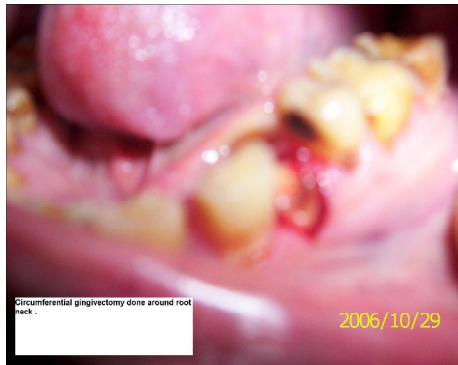


Fig. 2 Circumferential gingivectomy done around root neck.



Fig. 5 Post is placed intraradically.



Fig 3. Circumferential bone gutter is made around root neck.



Fig. 6 Final X-ray: 10 mm root canal filled; 4 mm post intraradicular and 4 mm post extraradicular

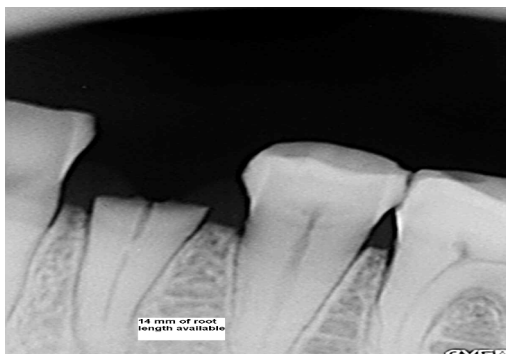


Fig. 4 Diagnostic X-ray: 14 mm of root length available.



Fig. 7 Composite is built around post.

We filled 10 mm of the root canal with gutta percha and selected an 8 mm post for the root. We put 4 mm of the post inside the root, and 4 mm of post was left outside the root (Table/Fig 5)(Table/Fig 6). Then, using posterior composite material, we built a core for the crown. It was ready for impression making (Table/Fig 7)(Table/Fig 8).

Final Crown Placement

There are two important points which are normally taken care of:

- Ferrule effect is taken care of
- The PFM crown must rest on the finishing line made at the root part – prepared after guttering inside gingival sulcus around the

fractured root part of the tooth. The Crown must not rest on the post or composite alone [Table/Fig 9].



Fig. 8. Composite is finished over post.



Fig.9 Final PFM crown is placed. Two important points: (i) ferrule effect is taken care; (ii) PFM crown rests on finishing line made at root part - prepared after guttering inside gingival sulcus around fractured root part. Crown must not rest on post or composite alone.

A medically compromised patient presented with a fractured lower first premolar at the gum margin, he would have been a problematic case for extraction, but has been successfully managed by the Functional Crown Lengthening procedure with good results.

Discussion

The Functional crown Lengthening procedure is a means of facilitating restorative procedures and preventing extraction of those teeth that can be theoretically be spared. There is extensive literature to back the feasibility of this procedure in cases like the one mentioned above.

A few of the indications for crown lengthening are - caries beneath the gingival

margin, fractured teeth with insufficient clinical crown exposure, and teeth with excessive occlusal or incisal wear [1].

In recent times, crown-lengthening procedures have been necessitated more by aesthetic than biologic requirements [2]. Basically the crown lengthening procedure allows the dentist to recreate the dento-gingival junction at a more apical level on the root, so that the junctional epithelium and the connective tissue attachment can be safely relocated.

There are many instances of using functional crown lengthening as a means to save a tooth cited in dental literature. In a survey conducted in 2004, Wyatt G, Grey N, and Deery C found that specialists in periodontics were more likely to perform crown lengthening procedures as opposed to other specialties [3].

Conclusion

Functional crown lengthening is a viable procedure that enables dentists to restore teeth having a short clinical crown, extensive sub-gingival caries, sub gingival tooth fractures as well as fractures at the dento-gingival junction. When performed in ideal clinical settings, functional crown lengthening gives satisfactory results both from a functional as well as an aesthetic point of view.

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