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Case Report

Clinical management of the split tooth in a diabetic patient

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ABSTRACT

Split tooth is the type of crack or break in tooth, that has split vertically into two separate parts or in other words, with clinical features like pain, sensitivity, etc. although there are multiple causes for the split tooth but here in this case presentation, we are going to discuss about the split tooth in a diabetic patient due to carious tooth. Also, patient has many dental problems but here we are going to emphasize on the management of split tooth only and its restoration.

1. Introduction

Split tooth is the type of crack or break in tooth, that has split vertically into two separate parts or in other words, we can say that tooth crown that splits from the coronal or cuspal portion of the tooth extending sub-gingivally. Although, the main cause of the split tooth is the long-lasting cracked tooth,[1] but there are many other risk factors and causes for the same. The other causes that can lead to the split tooth are:[2]

1. Chewing hard items leading to accidental tooth split
2. Incomplete fusion of areas of calcification
3. Excessive removal of tooth structure during cavity preparation
4. Parafunctional habits such as bruxism
5. Trauma

The risk factors include for split tooth are –

1. Carious tooth
2. Dietary habits like taking so much acidic foods or beverages
3. Acid reflux

The clinical features of the split tooth either involve one or all which include –

1. Pain
2. Swelling of the gum around the affected tooth[3]
3. Mobility of the broken segment
4. Sensitivity to temperature changes on pulp exposure

There are different treatment approaches for the management of the split tooth, as like –

1. Extraction – In case when the crack is deep apically[4]
2. Conservative approach – In case when the crack in tooth extends only to the mid or cervical third of the root or minimal extension below the gingival region and in such cases smaller mobile segment can be removed and the remainder of the tooth, restored.[4]
3. Endodontic therapy – If required, as if there is infection, pain or pulp has been involved, necrotic pulp.
4. Dental implant or dental bridge after extraction.

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2. Materials and Methods

The materials that were used in the restoration & endodontic management of the affected tooth were –

1. Local anesthesia: 4% articaine with 1/1,00,000 adrenaline.
2. Extracting forceps for mobile tooth portion.
3. Hemostat liquid.
4. Betadine liquid for pre-procedural mouth rinses
5. Root canal treatment, root canals should be shaped and obturated immediately.
6. Fiber post & dual cure composite material for buildup & dual cure resin-based luting for cementation.
7. Crown cutting & cementation of the final restoration or crown.

3. Case Presentation

A 60-year-old lady came to the clinic with a chief complaint of pain and broken tooth in lower left tooth region and pain excruciates specially on biting or chewing food item. She said by herself that she is taking medication for the diabetes also. So, at that time on blood investigation for random blood sugar level it was found she had RBS value of 190mg/dL. After that careful case history was taken and she said that the tooth broken after eating some hard sweet item last day of the evening and now she was experiencing pain on chewing food, although there was sensitivity to hot or cold. She said that she had a blackish discoloration on that tooth also but since there was no pain or sensitivity, so she never visited to dentist for the same. Past dental history was found with multiple restorations and endodontic procedures and in past medical history she was diagnosed with diabetes as described earlier also. She was had never reported to any type drug allergy. On her dental examination it was found that there was splitting off tooth with respect to 34 i.e., mandibular lower left first premolar, although the loose separated buccal tooth portion of that premolar was remaining and it was mobile with crack below 2mm to sub-gingivally and there was also the exposure of pulp, but not sensitive to temperature changes so it could be concluded on the basis of clinical as well as dental case history that there was split tooth wrt 34 that was previously non-vital (necrotic) because of the caries with positive tenderness on percussion vertically, thus requiring endo therapy immediately and caries were also the risk factor for the vertical fracture of that tooth and due to the mobile remaining portion of the tooth there was acute gingival inflammation wrt 34 and it tends to bleed easily due to inflammation on little pressure. Also, on intraoral examination it was found that she has multiple tooth restoration as well as endodontic procedures. Also, there was gum recession wrt to 33, root stumps wrt 16, missing tooth wrt 17 & 46. There were stains and calculus on both upper and lower arches and so, it could be concluded that her oral health was satisfactory. And after the clinical examination of the patient; mobile remaining buccal tooth portion of the tooth was removed (Figure 1) under LA with 1.1 ml of buccal infiltration technique with 4% of articaine & immediate access and bmp was done that was prepared up to 30 number with 4% of rotary cm files with WL 18mm and the obturation was done on the same day (Figure 2) and coronally sealed with GIC. She was prescribed with metronidazole + chlorhexidine-based gel to be applied topically on the inflamed gingiva, diclofenac + Serratiopeptidases thrice a day and she was advised to do mouth rinses with betadine liquid thrice a day or after every meal and not to chew from affected side for the preservation of remaining dentin structure. The patient was called after a week so that gingival tissue wrt premolar tooth get healed from inflammation.

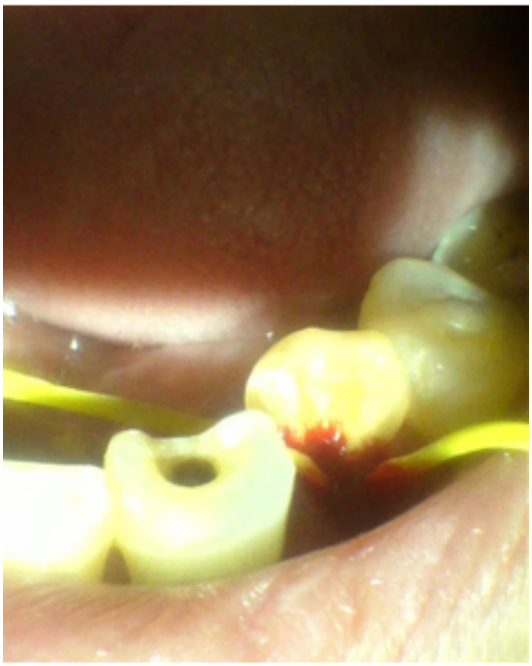

Fig. 1:

After a week, the post & core buildup was done using dual cure composite and after that the crown cutting was done for PFM to 34 without raising the flap because of diabetic condition of the patient and the crown buildup was done just by slightly displacing the fee gingiva and hemostat liquid was applied to prevent bleeding. The shade of the tooth was selected by the vita classic and the shade was A2 for PFM (Figure 3).

Patient was called after 3 days for the crown cementation, and the crown the was cemented with dual cure resin based luting cement (Figures 4 and 5) and thereafter patient has been called for oral prophylaxis and management of other dental problems.

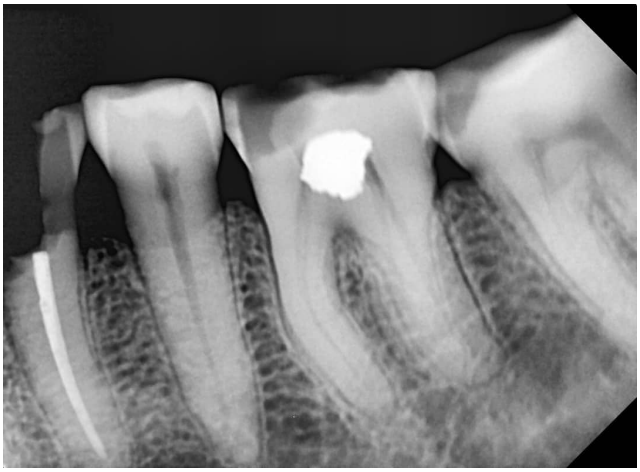

Fig. 2:

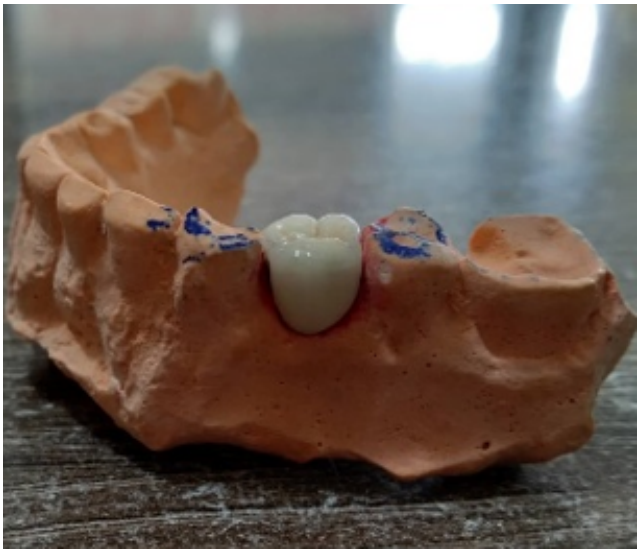

Fig. 3:

4. Results

The patient was free from pain and was satisfied by her prosthesis, there was no discomfort to her either on chewing nor for the lingual arm approach to her tongue. Even the gingival inflammation was reduced after medicated gel, although she was not comfortable with that gel because she reported that she had experienced high salivary flow after the application of the CHX-metronidazole-lignocaine based gel, and she had to spit repeatedly for the same after application.

5. Conclusion

Though, there are multiple reasons for the split tooth, but here in this case the oral hygiene was compromised in this patient with carelessness about the carious condition of her

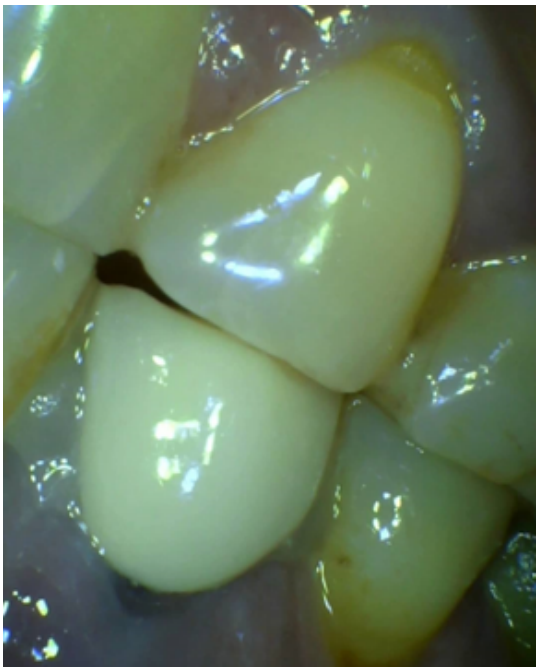

Fig. 4:

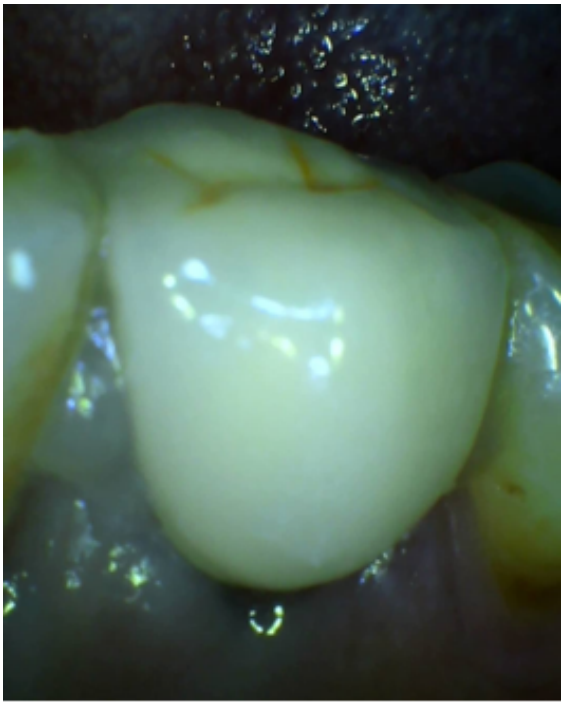

Fig. 5:

tooth, and that was the major risk factor for the breakage of the tooth portion. Also, it was seen intraorally that patient had stains and calculus plus her diabetic condition contributes to much for the cause to caries as poor oral hygiene contributes to tooth decay and diabetes further decreases immune response of the person, thus contributing as co-risk factor along with poor oral hygiene. Also, lack of awareness about oral health or carelessness about her dental health contributes to many oral health problems like tooth decay, abscess, periodontitis, split tooth etc. as well as systemic health problems because diabetes and oral health are linked to each other. In short better, proper oral hygiene and visit to local dentist in necessary for timely management of the dental or oral problems.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that there is no conflict of interest.

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