



TREAT THE TOOTH EVEN IF IT IS PLANNED FOR EXTRACTION: A CASE REPORT

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ABSTRACT It important to keep the normal dentition healthy and preserve the integrity of the teeth that plays a very critical role in mastication, phonetics and aesthetics. This case report presents a condition of a first lower molar with a distal root definitely prone for extraction and a mesial root with a questionable durability. Despite that, periodontal inflammation around these two roots was controlled by rinsing the distal root canal and irrigating gingival pockets with Sodium Hypochlorite 5.25%. This was supplemented by intense oral hygiene by motivating the patient at periodic visits. The inflammation started to diminish gradually and bone at areas of rarefaction started to increase in density and level. Eventually, the distal root was extracted and the mesial one was restored with a temporary crown and was planned to be re-treated once the case had settled down.

KEYWORDS : Endo-periodontal lesions, bone density, irrigation, compromised teeth

INTRODUCTION

Periodontal and pulpal lesions come together to destruct the tooth-holding tissues and particularly the dentoalveolar bone¹. Periodontal lesions can cause pulpitis through the curettage of periodontal pockets which would expose dentinal tubules to the oral cavity which in turns facilitates the invasion of bacteria into the pulp^[2]. On the other side, pulpal lesions extend towards the ligament targeting the surrounding bone.^[3,4]

The root may be involved in both lesions but they may remain separated and this case is called pulpal-periodontal lesions.^[5-7] Once they are connected or unified, it would be difficult to treat the tooth.^[8] From the clinical experience, it has not been observed that a deep gingival pocket even if it reaches the apical region would cause a pulpal inflammation.^[8] Recent studies have proved the presence of Spriochaeta in the inflamed pulp in similar quantities of those observed in gingival pockets.^[9,10]

Therefore, it is may be justifiable to use Sodium Hypochlorite 5.25% to irrigate periodontal pocket inflammation as to irrigate the pulpal inflammation or mortification. Therefore, this irrigation may promote bone healing by getting rid of the infection. Maybe it would be more logic to preserve the available bone quantities instead of their removal by ordinary excavation. This case is presented to illustrate this assumption.

Case History

A patient F.N. presented at the Department of Prosthodontics at University of Damascus wondering about the future of her right first lower molar. On clinical examination, there was a gingival pocket of 8-mm depth between the second molar and the distal root of the first molar. This was accompanied with pus formation emerging from the pocket. Gingival inflammation and bleeding was observed particularly around the distal root. On the radiographic examination, there was an extended breakdown of the lower molar as well as bone destruction on the distal root which appeared almost separated from the mesial one (Figure 1). This distal root was then easily separated from the mesial one by using a probe.



Figure 1: The case before the beginning of treatment showing the severe bone destruction around the lower first molar.

Treatment Plan

If a decision was made to refer this patient to the Oral and Maxillofacial Department, the distal root would have been extracted and the alveolar bone subjected to curettage until sound bony tissues were achieved. Therefore, it was decided to give a treatment to this tooth.

The treatment plan was explained to this patient as follows: (1) preservation the mesial root and a construction of a temporary crown based on this preserved root; (2) cleaning and disinfecting the distal root from inflammation before being extracted in the hope that this procedure would let us gain some additional bone that would improve the prognosis of the second molar. No guarantee was given to the patient. She was asked to use her tooth brush at least twice daily with ten-minute duration for each brushing session. She was asked to visit the treating doctor (.....) every two days in the early days of treatment and then every 3-4 days. The patient agreed on this treatment plan. The following steps were accomplished:

- 1- Endodontic fillings were removed from the pulpal canals for both roots. The procedure was successfully done on the distal root but not on the mesial root due the complete blockage of that canal.
- 2- Rinsing of Sodium Hypochlorite 5.25% was employed in the radicular canal of the distal root as well as the mesial pocket of the lower second molar and the molar bifurcation without performing any specific periodontal treatment such as gingival curettage or gingivectomy (Figure 2).
- 3- Restoration of the mesial root using an amalgam filling supported by a screw and covered by a temporary crown until a re-treatment is done once the case has settled down.

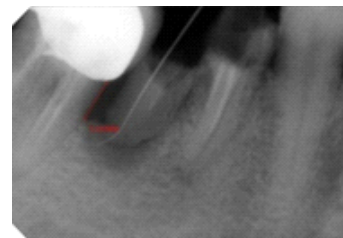


Figure 2: Removal of the canal filling of the distal root and penetration towards the apical region.

Treatment outcome

After two months of rinsing and cleansing and heavy use of tooth brushing, the inflammation started to regress. The 'accused' distal root

started to tip and its apex started to move upward and distally (Figure 3). Afterwards, the distal root was extracted without any curettage and the mesial root was restored with porcelain fused-to-metal crown without any distal extension of the prosthesis.

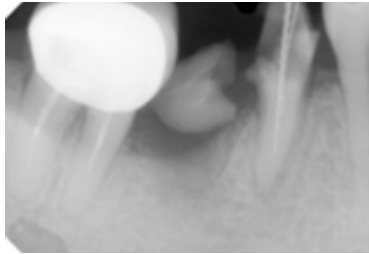


Figure 3: Change in the position of the distal root.

Radiographic assessment

The case was evaluated radiographically at three assessment times: before the commencement of treatment (T1); after three months of treatment (T2); and after one month of extraction the distal root of the lower first molar (T3). The assessment of lesion level was made using SOPRO® program V1.40.130 (Acteon, Cedex, France). The line drawn on the panoramic view denoted to the visual level of the lesion and it represented the demarcation line between the low-density lesion area and the high-density intact area (Figure 4).

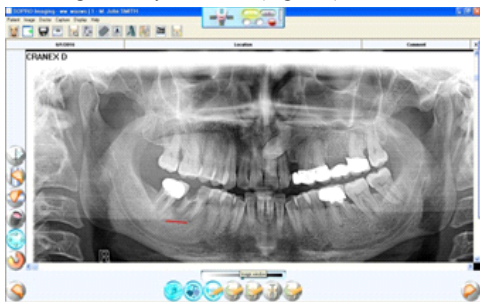


Figure 4: Pre-treatment image showing the level of the lesion (in red).

The sequential images showed that the demarcation line was moving upward. That is, the level of the lesion was gradually moving upward combined with a complete healing with re-mineralization and increased density of the bone tissues (Figures 5 and 6).



Figure 5: After three months of treatment. The level of the lesion is shown by the red line.

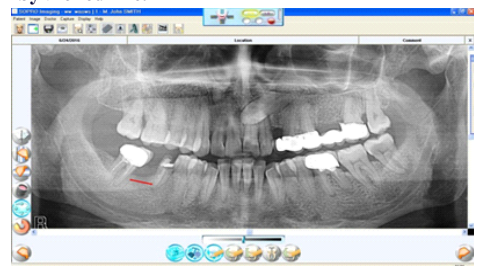


Figure 6: One month following the extraction of the distal root.

Bone density was measured on the panoramic views using the grey levels scale (which indicated bone density) in the region extending from the mesial root of the first molar to the mesial root of the second lower molar using Diagora® program version 2.7 (Soredex, Tuusula,

Finland). It was noted that there was a clearly increased bone density at the studied region (i.e. mean values of 141.49, 151.32, and 162.87 grayscale unites at T1, T2 and T3 respectively; Figures 7-9). The final outcome after 13 months of observation is shown in Figure 10.

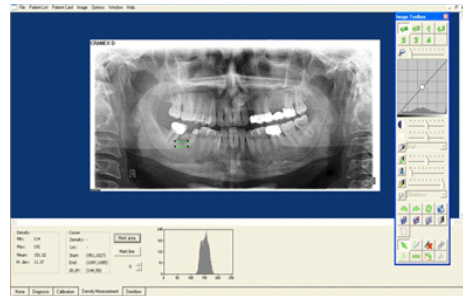


Figure 7: Mean bone density of the evaluated region before treatment commencement.

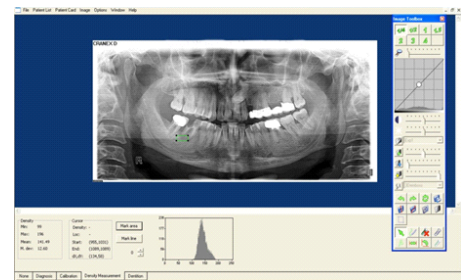


Figure 8: Mean bone density of the evaluated region at three months following the onset of treatment.

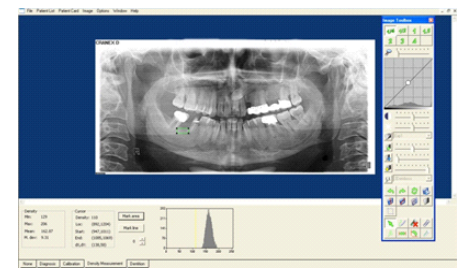


Figure 9: Mean bone density at one month following the extraction of the distal root of the molar.

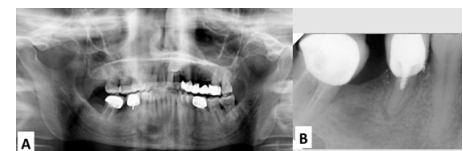


Figure 10: A radiographic image of the case after 13 months of treatment. A: Panoramic view; B: a periapical view.

DISCUSSION

If a decision was made to extract the roots of this molar without any treatment trial, a great amount of low-density and inflamed bone would have been lost. This is because the surgeon would excavate the inflamed bone till intact bone was achieved. Therefore, excavation of non-sound bone would lead to bone loss in addition the resorption of the remaining bone in the process of healing. Therefore, the prosthodontist would be obliged to compensate by employing a long bridge extending from the second premolar and the second molar. This option would require the removal of the current crown, retreatment in addition to the use of a metallic core and this would pose a big financial burden on the patient.

The alternative option is to use an implant in an area with deficient bone and this would be accompanied with using a short implant and long crown which in turn would make the prosthesis more prone to failure under the high masticatory forces in this region. Furthermore, such an option would be expensive for the patient.

The given treatment in this case report has the following advantages: (1) good oral hygiene education and the commitment of the patient to continue with high level of oral hygiene which may improve the

prognosis of the preserved mesial root. (2) Postponement of use of an implant in the missing root area or a bridge when there would be a need to extract the mesial root. (3) Bone gain, or at least, preservation of the low-density bone and increasing its density to a level very similar to that observed in the healthy bone.

CONCLUSION

It can be inferred from the current case report that treatment of roots or teeth planned for extraction and their retention for a period of time provides a great benefit in terms of reserving the current bone level and increasing bone density in the affected area.

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