Hemisection: A conservative management of an abutment mandibular molar tooth - Case report

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Abstract

Hemisection of the mandibular molars is an option for surgical treatment when a vertical coronal fracture has occurred and a root is healthy.

This article illustrates a case in which the damaged terminal abutment was part of a fixed prosthesis. The loss of a distal abutment can result in the patient wearing a removable partial denture. Hemisection and fixed prosthetic rehabilitation gave a satisfactory result. This treatment option should always be considered before tooth extraction and implant therapy.

Keywords: hemisection, mandibular molar, abutment, fixed prosthesis

INTRODUCTION

Hemisection at the level of a molar (Figure 1) is the removal of a root together with the corresponding part of the crown, and is practiced to preserve the structure of the tooth and alveolar bone, and perform the fixed prosthetic restoration. Hemisection can be considered as an alternative treatment option to extraction and implant therapy [1-5].

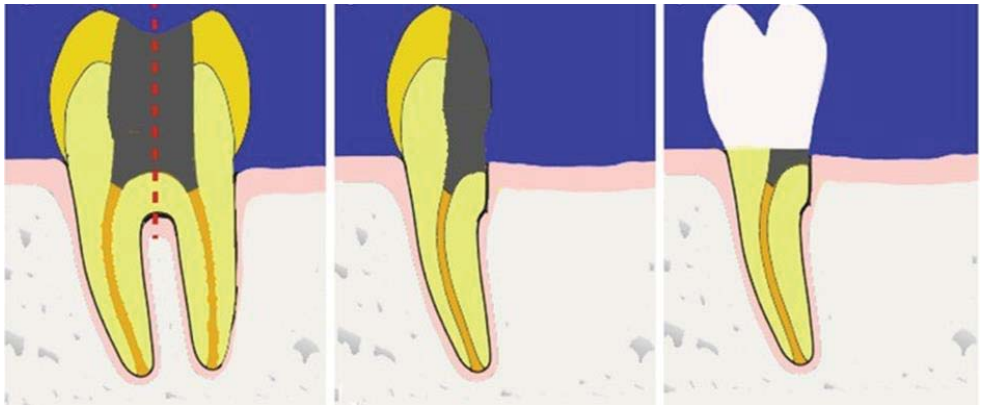

Figure 1. Hemisection of a molar

A mandibular molar may have affected the forked area or one of the roots as a result of carious lesions, periodontal disease or coronary fractures [6,7]. Efforts to save parts of the teeth date back more than 100 years [8]. Currently, endodontic and periodontal treatments provide the means to save molars with furcation problems that would otherwise be subject to extraction. After periodontal therapy adequate bone support for root stabilization should be available. Endodontic therapy should provide a long-term prognosis. After treating caries, an adequate tooth structure must remain after hemisection [9].

CASE REPORT

The 48-year-old patient presented to the dental office for pain at the level of the molar 47. The clinical examination shows that the molar 47 is one of the abutments of a fixed prosthetic reconstruction. Radiological examination shows that the molar 47 has a vertical coronal fracture that affects the forked area (Figure 2). The molar has no periapical lesions.

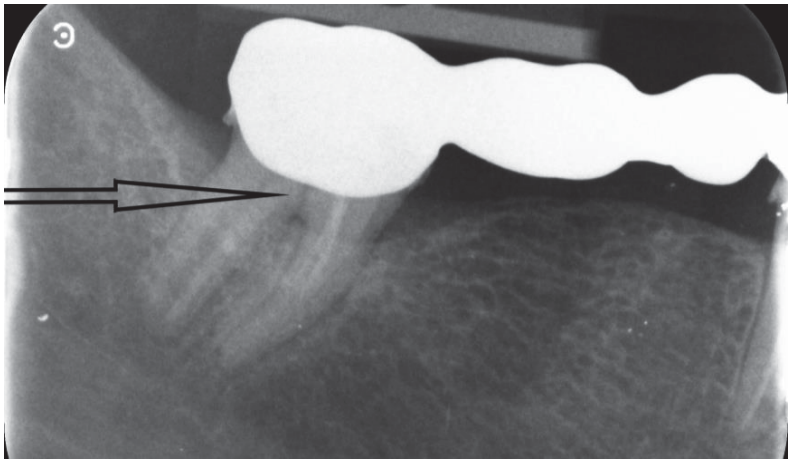

Figure 2. Radiological examination

After discussing treatment options and obtaining the patient's consent, it was decided to hemisection with preservation of the mesial roots (Figure 3) and a new fixed restoration. It was decided to keep the mesial roots due to the higher prosthetic value and in order to reduce the distance between the dental abutments.

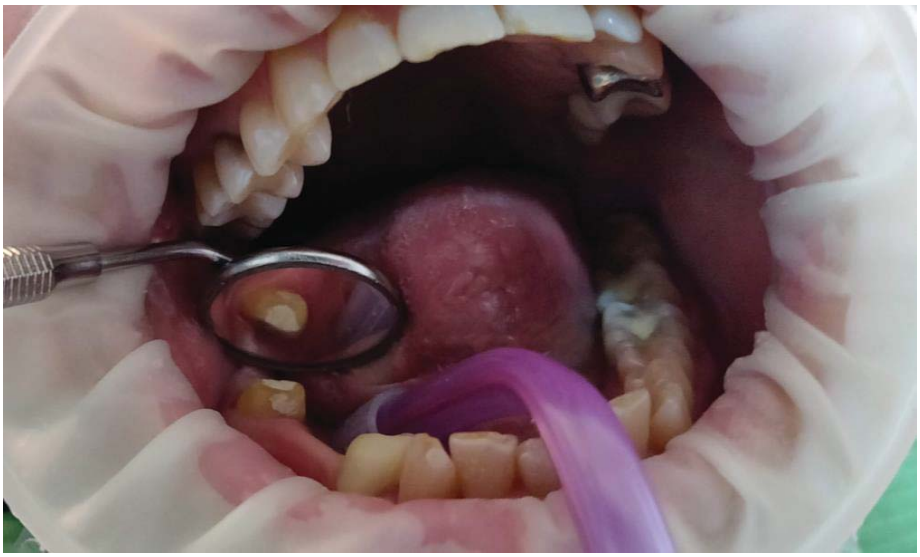

Figure 3. Removal by hemisection of the distal root

Until the alveolar bone heals a temporary fixed partial denture is made. Four months after the hemisection, a new radiological examination is performed (Figure 4) showing bone healing at the alveolar and cervical level, and the absence of any periapical reaction.

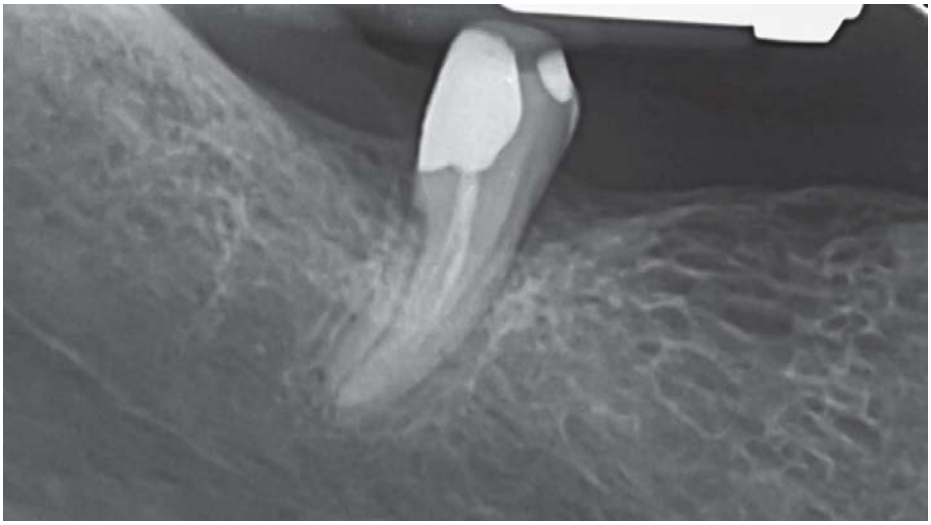

Figure 4. Radiological examination four months after hemisection

The final prosthetic restoration of zirconium is decided. The prosthesis was made using CAD-CAM technology (Figures 5-7).

The patient was monitored and a clinical examination was performed at three and six months. After one year, the final restoration is functional, with no detectable mobility or visible bone loss.

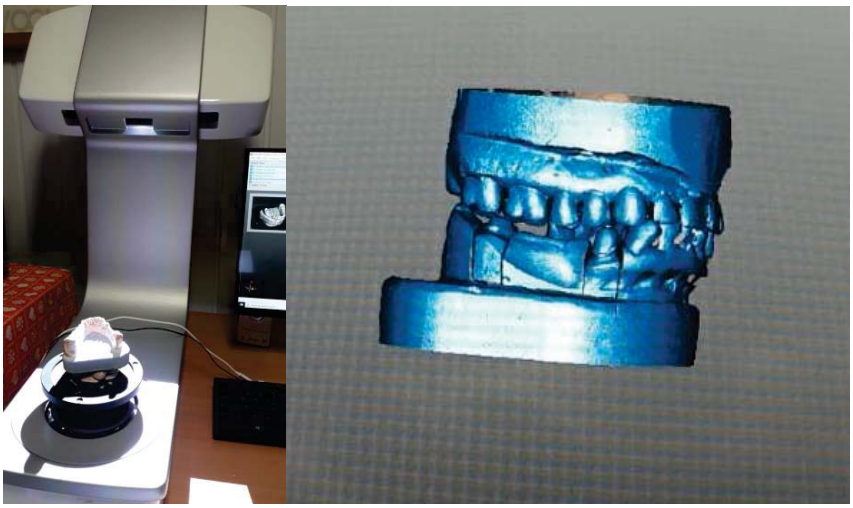

Figure 5. Scanning the model

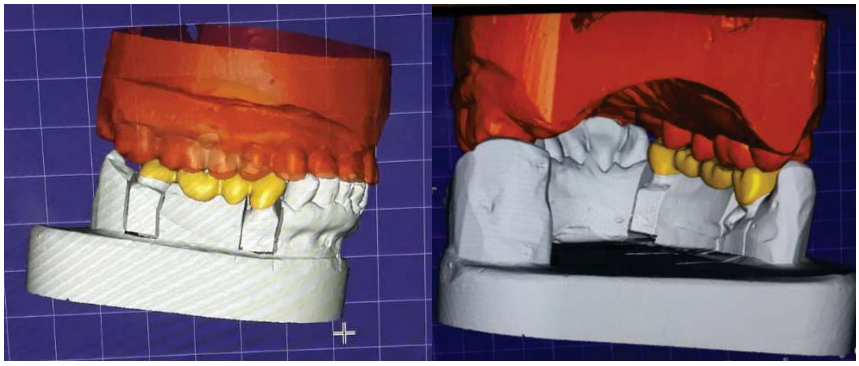

Figure 6. Computer-aided design of the final prosthetic rehabilitation

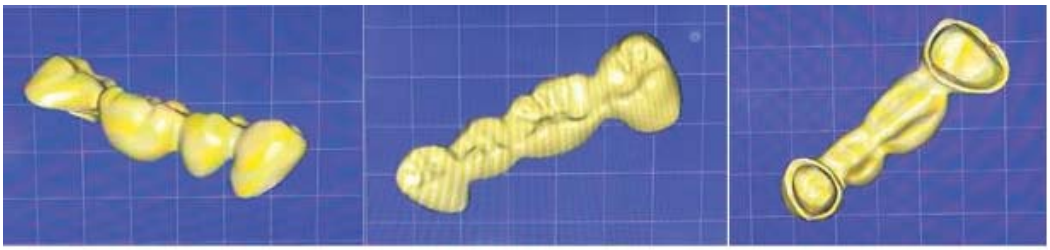

Figure 7. Computer-aided design of fixed prosthesis (vestibular, occlusal-lingual, mucosal view)

DISCUSSIONS

For mandibular molars affected at the forked area, the decision to perform a hemisection or to remove it and place an implant is often complicated. There are retrospective studies of patients who have received treatment by hemisection, molar resection or implant therapy. The highest degree of failure is when there are single terminal abutments [10]. In patients with periodontitis, hemisect mandibular molars are more prone to complications than implants [11].

A molar with forked area involvement often involves an interdisciplinary approach (endodontics, periodontics, prosthetics) to diagnose and plan treatment [9]. By hemisection it is no longer necessary to lose a molar with forked area problems [5,12].

There are few long-term studies on the success of hemisection treatment in trying to preserve molars that are distal abutments. The average failure rate is 13.1%, often compared to the results of implant studies [13].

CONCLUSIONS

When faced with a molar with damage to the forked area, the dentist must decide between a number of treatment options: hemisection, root resection, extraction and placement of the implant. Hemisection and prosthetic rehabilitation of this case gave a satisfactory result.

Hemisection is a relatively simple, inexpensive treatment with a high chance of success in a proper selection of the case.

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