

Salvation of the Undelying Tooth Structures by Removing of Unaesthetic Fixed Partial Denture with Unusual Techniques: A Case Series

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ABSTRACT

Introduction: The objectives of the removal of any prosthesis by using of techniques are the possibility of reusing it, avoid harming the underlying tooth structures and supporting tissues. The aim of this case series is to demonstrate the different steps for removal of multi-joined crown and unaesthetic bridges from anterior teeth resulting in saving of the underling abutments.

Case report: Three male patients attended to the clinics complained of unaesthetic, unhygienic prosthesis, chipped ceramic, joined metal ceramic maxillary and mandibular anterior teeth.

Conclusions: The crowns/bridges were removed with techniques hereby are described with minimum effect on the abutment teeth and the surrounding oral structures.

Keywords: removal of bridges, destructive techniques, abutment tooth, repair

INTRODUCTION

Metal ceramic (MC) restorations have represented the most widely used restorative technique in fixed partial dentures (FPDs). This popularity may have attributed to high strength properties of the metal, the esthetics of ceramic and their clinical longevity.^{1,2} They have disadvantages such as soft tissue pigmentation and an opaque-to-darkish appearance in the cervical area of the crowned teeth.³

Removal of the cemented prosthesis due to esthetic or biological failures can be challenging, since it may results to harm the surrounding gingival, periodontal tissues, abutment teeth structures.⁴ It becomes more difficult in the presence of multiunit joined crowns/ bridge with unknown path of removal. Factors affect the sectional of cemented crowns/ FPDs are the taper of the preparation, restoration design, cement used, and the selected removal systems.⁵

Since the repair of these prosthesis with any repairing materials or techniques might fail.^{6,7} Such unaesthetic and unpleasant FPDs/crowns need to be removed.

Many techniques and systems have been mentioned in the literature for the safe removal of FPDs.^{5,8-11} These techniques were classified into three categories; conservative, semi-conservative and destructive technique. The destructive technique by mean of sectioning the FPDs with diamond or carbide burs and crown splitters. A combination of more than one technique is useful to remove multiunit crowns and some unusual FPDs. The aims of this case series are to demonstrate the removal of multi-joined, unaesthetic crowns/ bridges from maxillary and mandibular anterior teeth without harming the supporting tooth and the periodontal tissue structures.

CASE SERIES

The patients were informed about the procedures needed for removal of the crowns/ FPDs. After patients a agreements, gross scaling and root planning were done. Then, without local anesthesia, the steps of the removal of the FPDs/joined crowns were started by maxillary arch, which was done in two parts. The steps of removal was started with sectioning of the retainers by making a vertical cut in the middle of the buccal surface of each abutments, started from the crest of free gingival margin to the center or bucco-incisal line angle of the crown. Then extended to the palatal surface using coarse diamond burs (Meisinger, Germany). The sectioning was done as recommended by Rosenstiel et al, 2006.¹² Due to difficulty of removing of the crowns/ bridges by manual back action or spring loaded automatic crown removal, sectioning were extended to involved the connectors between each retainer/ pontics. At the same appointment, the sectioning of the mandibular joined crown was done in the same procedures. A provisional restorations had been constructed with Success SD, Promedica Neumunster, Germany) from the rubber index taken before sectioning of the FPDs. Then cemented with temporary cement (Temp-BondNT, Italy). Chlorhexidine mouthwash 0.20% (INTERMED CHLORHEXIL, Greece) was prescribed as mouth rinse, three times a day for 2 weeks

CASE REPORT # 1

A 59-year old male patient attended to the clinic. His request was to remove old anterior bridges due to unaesthetic problem resulted from composite discoloration after repair of fractured PFM retainer. Furthermore, he complained from gray discoloration appeared at the free gingival margin of the same retainers (Figure-1a). Intraoral examinations showed multiunit joined PFM crowns, extending from tooth # 13 - 23 and from tooth # 33 to 43. Mild gingivitis in the interproximal and embrasure areas with gray pigmentation at the free gingiva of the crowned teeth was obvious. Generalized attrition of occlusal

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surface of all teeth was noticed. The radiographic examination showed multiunit joined MC crowns in the anterior teeth of maxillary and mandibular arch with per- apical pathosis (Figure-1b).

The treatment begun with scaling of teeth including the crowned teeth, also rubber base indexes for maxillary and mandibular crowned teeth were done. Then the steps of removal and sections were done in both arches as seen in (Figure-1c and d). At the same appointment, the sectioning of the mandibular joined crown was done in the same procedures (Figure-1e and f). The removed bridges were collected as small pieces as shown in (Figure-1g). Provisional restorations had been constructed then cemented (Figure-1h).

CASE REPORT # 2

A 49years male patient attended to the clinic complaining of bade esthetic of maxillary anterior teeth. The clinical examination showed broken buccal veneers in relation to tooth # 21 in a

badly design bridge. A generalized gingival inflammation with calculus around the abutment teeth was obvious (Figure-2a). The radiographic examination showed sharp bridge extended from teeth # 13 to 21 as an abutments with teeth # 12 and 11 as pontics (Figure-2b). At this appointment proper scaling and root planning for maxillary anterior teeth was done. Next appointment composite build-up for the broken veneer with good contour was performed until symmetrical anterior teeth was reached (Figure-2c). An index for the anterior teeth and bridge area was done using rubber base (Figure-1d). Sectioning of teeth # 13 and 21, followed by removal of the bridge were done (Figure-2e, f and g). Provisional bridge was cemented (Figure-2h).

CASE REPORT # 3

A 65 years male patient attended to the clinic seeking to replace an existing unaesthetic maxillary sharp bridge. The clinical examination showed over contoured maxillary bridge

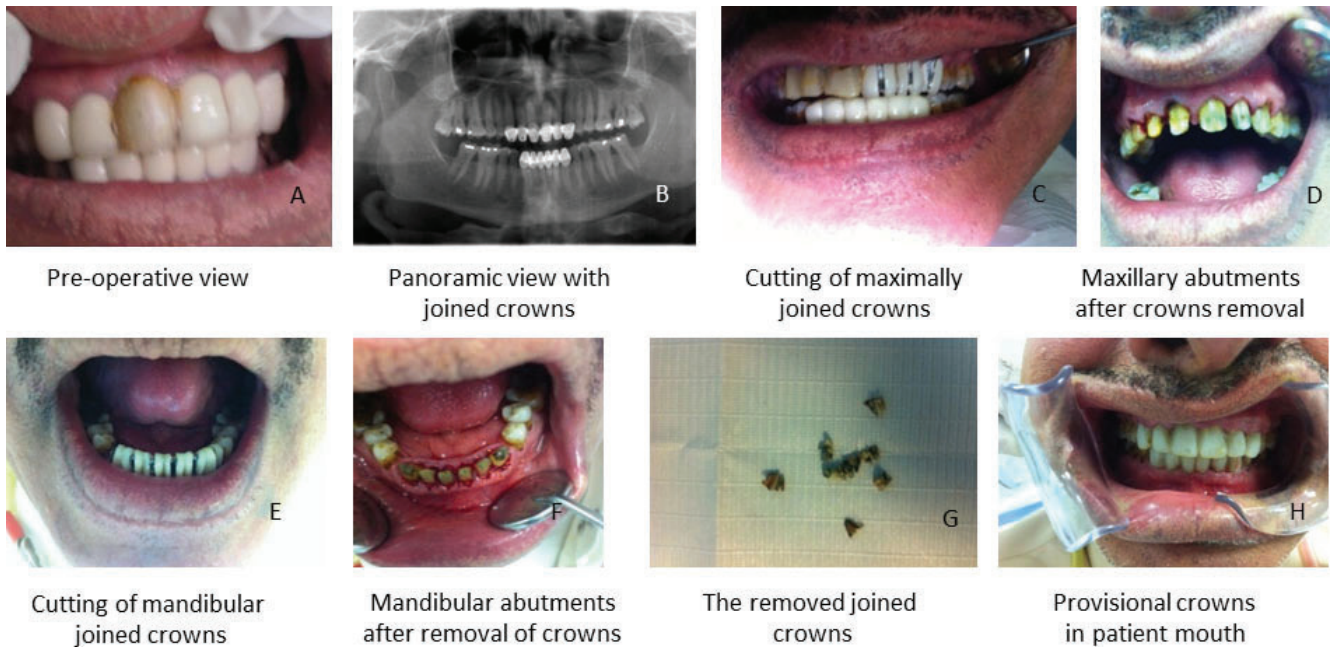


Figure-1: Removal of multi unites joined anterior crowns

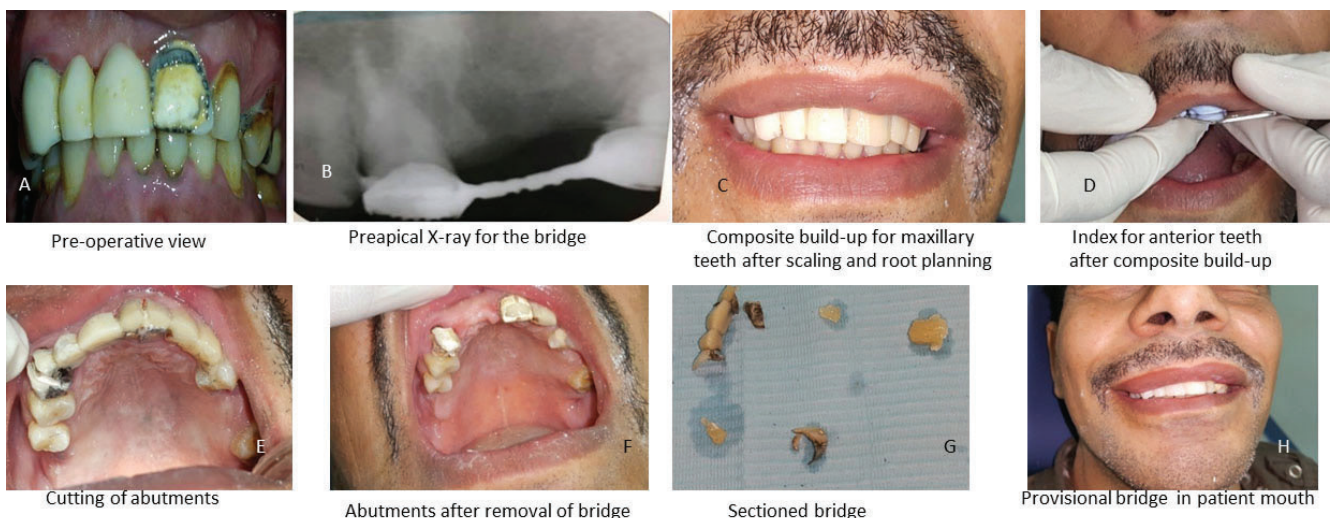


Figure-2: Removal of chipped maxillary anterior teeth

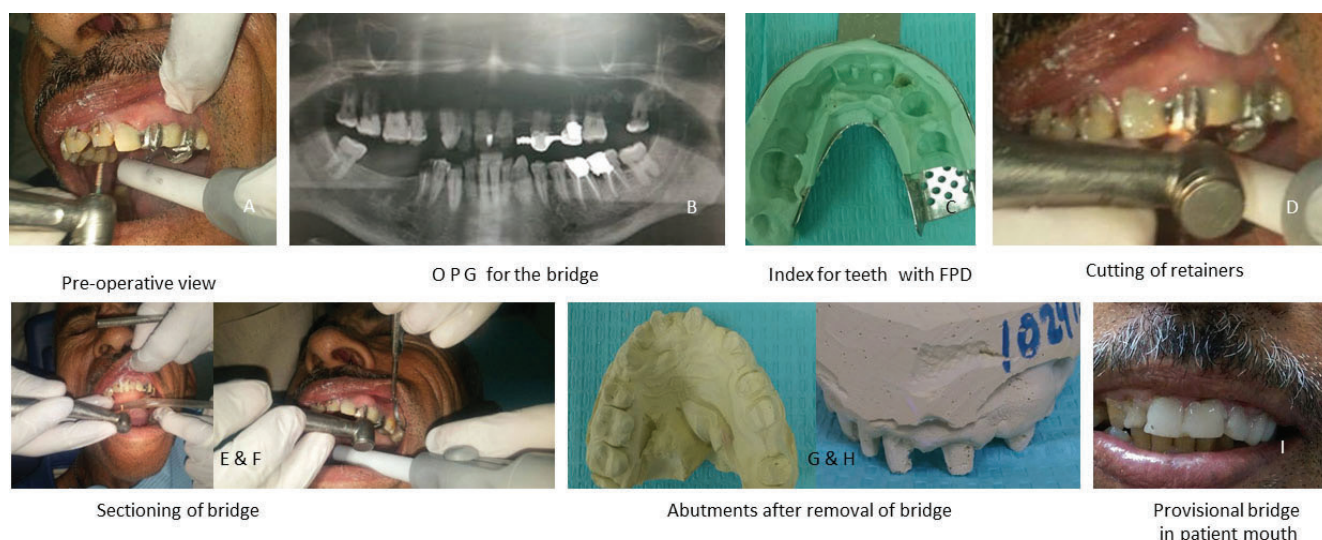


Figure-3: Removal of maxillary unhygienic sharp bridge

extended from teeth # 11, 21, to 24. The gingiva was bleeding upon slight propping and calculus deposits was obvious around all abutments (Figure-3a). The OPG showed bridge extended from tooth # 11to tooth # 24 with teeth #11,21,22 and 24 as an abutments (Figure-3c). Next appointments an index for the anterior teeth and bridge area was done using rubber base (Figure-3c). Sectioning of the abutment teeth, followed by the removal of the pontics were done (Figure-3d- h). Provisional bridge was cemented (Figure-3i).

DISCUSSION

MC restorations have the potential for fracture of the ceramic veneer, which results in a serious cosmetic and clinical problems. It may be desirable to repair broken retainers of a FPDs rather than removing it and the possibility of destroying an entire underneath restorations or/and damaging the abutment teeth.¹³ The fracture of porcelain crowns, particularly on anterior teeth (aesthetic zone), requires a rapid intra-oral repairing with composite which can increase the clinical longevity of failed restorations and offers both dentist and patient a cost-effective alternative to replacements.¹⁴

The failures of FPD can be classified into biological, mechanical, esthetic, functional, iatrogenic, and psychological.^{5,8,10} The unaesthetic and darkness of free gingival color associated with the cemented crowns are the main reasons that lead the patient to remove the prosthesis to avoid the biological effect on the periodontium and abutment teeth.³ Even though the removal of existing FPDs can be traumatic for the patient and stressful for dentists.⁸⁻¹⁰ Also removing of a FPDs without knowing its path of removal and cemented used is a challenging and difficult steps.

The most available systems for FPDs removal in most of dental clinics are, manual back action or spring loaded automatic crown removal. These systems may cause fracture of the cores and extraction of periodontally involved teeth.^{5,8-11} So a modified destructive technique was followed in the removal of these cases, in which a course diamond burs cutes the retainers from the buccal to the lingual passing through the occlusal/insical and in some cases extended to cut the connectors between each adjacent tooth and retainers.

The clinical significant of this cases are, removing of the unaesthetic/ joined multiunit crowns/ FPDs without any effects on the underlying abutments and the supporting periodontium, Since no anesthesia were used, the need of abutment teeth for RCT was diagnosed in an indirect way. Enough time was spent to separate the joined crowns minimizing the trauma to tooth structure and biological tissue in the crowned area. All destroyed prosthesis was replaced by new provisional crowns at the same appointment for aesthetic issue.

CONCLUSION

The destructive technique with its modifications used in these cases was a traumatic, reliable and slight comfort to the patient. It resulted in the removal of all unaesthetic and unhygienic crowns/bridges with minimum trauma to the underlying abutments and gingival or periodontal tissues. Even though it was not easy and time consuming for the clinician, this technique does not require any special, expensive or complex instrument. It is highly recommended to be used in the presence of joined crowns irrespective to the thickness of the connector. In addition to that all patients leaved the clinics with provisional hygienic and esthetic prosthesis in their mouth for aesthetic reasons.

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