

# SERVICEABLE FIXED PARTIAL DENTURES: A CASE REPORT

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### ABSTRACT

It is said that nothing mechanical lasts forever. This is especially true in an environment of saliva. Over the years, many cementing materials have been introduced. But regardless of their advancement some amount of dissolution of cement is inevitable leading to microleakage. This would further lead to secondary caries necessitating endodontic therapy. Using the Metalift system, we have been able to fabricate a retrievable fixed prosthesis that can be easily removed so as to access and assess the abutment teeth underneath. This makes it possible for us to conveniently remove the fixed prosthesis without damaging it. Any endodontic procedure that may be necessary can be carried out with ease.

Moreover, the same prosthesis can be refitted without any extra cost incurred to the patient. If a new prosthesis is to be fabricated the same prosthesis can be used as a provisional restoration. Fabricating a serviceable FPD serves as an adjunct to restorative care.

**Key Words:** Fixed Partial Denture, Serviceable

### INTRODUCTION

Duane Michals said “What I cannot see is interestingly more important than what I can see”.

For decades together, fixed partial dentures have been the popular choice for replacement of missing teeth. And since then only we have been committing the perineal crime of grinding healthy teeth for no fault of theirs. Moreover, after this assault can we ensure an impenetrable seal? For sometime maybe, but regardless of the advancements introduced in luting cements some amount of dissolution does take place.

Thus, these teeth are left to the mercy of microleakage along with bacterial invasion. This leads to gradual death of abutment without any hint of what is happening inside the prosthesis until the tooth shows some clinical symptoms.

Walten et al in 1986 conducted a survey of crown and fixed partial denture failures, length of service and reasons for replacement. They observed that 34.7% of failures occurred due to damage to abutment teeth.<sup>1</sup>

On follow-up appointments, how can we know the story beneath the FPD? Even if the patient comes for a 6 monthly dental check-up (which happens only in probably

one out of 10000 cases in India) we, as dentists have no way to identify the degree of damage/ microleakage that might have occurred inside the FPD.

The best we can do is just probe the margins of the restoration which hardly indicates anything, unless extensive caries have weakened the cement-enamel junction. There is no way to identify the disease process in the tooth until it becomes clinically symptomatic or a radiograph reveals any periapical radiolucency.

Therefore, a healthy tooth once prepared for an abutment goes into the life of uncertainty.<sup>2</sup>

Now the only option we have left is to remove the prosthesis and check the condition of the abutments. Either we can cut and remove the bridge and in the process destroy it altogether or we can try a pneumatic crown remover. Using a pneumatic crown remover has its own disadvantages like crown fracture, tooth root fracture, chipping of ceramic margins, or damage to soft margins of gold crowns.

Figures (1) shows the horrifying condition of teeth under bridges that were cemented about 2 years back. The patients came in with a chief complaint of pain in these previously healthy teeth. On removal of the fixed partial denture destruction due to microleakage was evident.

Therefore, a retrievable fixed prosthesis using the Metalift™ system was planned.

The system makes it possible for us to conveniently remove the fixed prosthesis without damaging it. Any endodontic procedure that may be necessary can be carried out with ease.

Moreover, the same prosthesis can be refitted without any extra cost incurred to the patient. If a new prosthesis is to be fabricated the crown can be used as a provisional restoration.

Here is a case report of one such serviceable FPD with the fabrication procedure in detail.

### **CASE REPORT:**

A 24 yr old male patient came to the OPD of the Department of Prosthodontics of SGT Dental College, Gurgaon.

The chief complaint of the patient was a missing tooth in the right lower back tooth region since 1 year and subsequent difficulty in eating. He wanted it to be replaced with a fixed partial denture.

### **Examination:**

General examination showed no significant medical history, dental history or oral habits. In extra-oral examination, lymph nodes in head and neck region were not palpable. There was no crepitus or clicking in TM joint and no deviation was seen in opening or closing of mandible. Intra-oral examination revealed a missing 46. The ridge was even with a well healed socket, well keratinized mucosa and adequate attached gingiva. There was sufficient interarch space in the edentulous region. Abutment teeth showed no evidence of caries, fractures or mobility. Both the abutments were vital. Radiographic examination showed adequate root length and no periapical radiolucency or periodontal ligament widening.

**The fabrication procedure was as follows:**

The crown preparation was conventionally done as for regular porcelain fused to metal bridge. No modifications or extra features were necessary [Fig (2)].

The impression was taken with Dentsply Aquasil soft putty and Aquasil Ultra LV in a two step impression procedure. It was poured in Type IV gypsum. Conventional Die cutting and ditching procedures were carried out.

Wax pattern was fabricated in blue inlay wax. The coping was cast in Ni-Cr alloy, finished and checked in the patient's mouth [Fig (3)].

Using the Metalift™ System [Fig (4)] we drilled a hole in the centre of the metal coping on both molar and premolar teeth. Once the holes were of sufficient diameter - same as the keys provided with the system – precision channels were created to hold these keys using tap drills [Fig (5)]. The porcelain firing was done and the keys were checked inside the bridge [Fig (6)].

The bridge was cemented with glass ionomer luting cement. The keys were placed in the prosthesis using a wrench [Fig (7)].

The final finishing was done with composite to ensure patient did not compromise on esthetics. [Fig (8)]

The patient was recalled after 6 months and the prosthesis was removed for servicing.

#### **Procedure for Removal of this Prosthesis:**

The key was removed from the molar and premolar crowns using the wrench. The Metalift™ Crown Removal instrument was engaged in the prosthesis and the

channel was turned in a clockwise direction with mild to moderate finger pressure.

In the process the bridge was lifted away from the abutment teeth with ease as the instrument pushed against the dentin layer cracking the cement layer [Fig (9)]. The condition of the teeth was evaluated and prophylactic procedures were carried out. After that the insides of the prosthesis was cleaned and recemented onto the abutment teeth with luting cement. The restoration was finished with composite.

#### **DISCUSSION:**

It is said that nothing mechanical lasts forever. This is especially true in an environment of saliva. For decades, FPD's have been the treatment of choice for replacement of missing teeth.

The success of this mechanical device that we call a fixed partial denture depends upon various factors. A few known causes of failure are caries of abutment teeth, periodontal breakdown of abutment or subpontic inflammation. Moreover, irrespective of the advancements of cements some amount of microleakage always occurs. This may even necessitate endodontic therapy of abutment teeth in a short span of time. Then, an idea clicked. What if we can service these fixed partial dentures on a regular basis. At the same time we came across the "Metalift system" for crown and bridge removal. This system also had a provision for fabricating a prosthesis which is easily retrievable. This made it easier for us to access and assess the abutment teeth underneath the partial denture. Any carious involvement which would otherwise go undetected in an intra oral periapical or bitewing radiograph was

now evident. Any periodontal or restorative procedure that was necessary was carried out since no damage was caused to the prosthesis on removal, after which we could simply re-cement it. If ever there was a need for replacement of the prosthesis this could be used as a provisional restoration. The chances of failure were reduced multi fold, as we caught hold of the problem before it spread. The only matter of concern was patient motivation so that he follows his recall schedule.<sup>3-8</sup>

A retrievable prosthesis is therefore a convenient way for the maintenance of

abutment teeth and the subsequent success of fixed partial denture.

### CONCLUSION:

It is strongly proposed that the standard of care for all FPDs should be such that they are serviceable. Even if it takes time for people to absorb & understand the advantage of this system, we should begin to use it for patients with poor neuromuscular control, patients with high caries index and handicapped patients.

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**Fig 9:** Bridge Removed Using the Metalift™ Removal Instrument