

## Changing Smiles Through Multidisciplinary Approach with Predictable Aesthetics: A Case Report

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Received: 6 February 2012 / Accepted: 23 June 2012 / Published online: 18 July 2012  
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**Abstract** This clinical report describes a multidisciplinary approach for the rehabilitation of a young patient with mobile and missing front teeth. The objectives of the treatment were to eliminate tooth mobility and replacing missing tooth, while enhancing aesthetics and restoring masticatory function. Treatment included placement of endodontic stabilizer and rehabilitating missing tooth with fixed partial denture and gingival porcelain to satisfy the patient's aesthetic and functional expectations.

**Keywords** Endodontic stabilizer · Aesthetics ·  
Gingival porcelain

### Introduction

Restoration of endodontically treated teeth had been a challenge to dental surgeons for years. This procedure becomes especially complex when the involved teeth have previously undergone extensive bone loss leading to tooth mobility. Endodontic implant stabilizer is one such modality which can provide a sound physiologic procedure for stabilizing mobile teeth by increasing root length, altering root crown ratios, immobilizing fractured roots and periodontally compromised teeth [1, 2].

This case report describes the multidisciplinary approach to improve the prognosis of a mobile central incisor by way

of endodontic stabilizer and to utilize its restorative options by its ability to act as a successful abutment for prosthesis, to rehabilitate a partial edentulous space in the maxillary anterior region.

### Case Report

A 25 year-old female reported to this institute with the chief complaints of missing and mobile upper front teeth. Intraoral examination revealed missing 22, 23 and grade II mobility of 21 (Fig. 1). The patient was concerned about the long term prognosis of her front mobile teeth. Prior to treatment, a detailed dental, medical and social history was obtained. Past dental history revealed that 23 was impacted and had to be surgically extracted. The periodontal examination of 21 revealed compromised periodontal status and resorption of root radiologically (Fig. 2). Repeated attempts of various periodontal procedures including bone grafts previously carried out over a period of two years to enhance the bone formation around 21 had failed. But, the available bone apical to 21 was sufficient as the optimal requirement of minimal or more than 5 mm for placement of endodontic implant. The implant/titanium bicortical screw of 20 mm length and 2 mm diameter was selected. It was planned to rehabilitate her with Oral prophylaxis, followed by placement of endodontic implant in 21 to stabilize the tooth and the fabrication of three unit porcelain fused to metal bridge with gingival porcelain for additional aesthetic acceptance.

### Endodontic Procedure

21 was isolated using a rubber dam and access preparation was done in order to achieve a straight line access. The

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**Fig. 1** Intraoral view showing missing 22 and 23



**Fig. 2** Pre-operative radiograph showing bone loss in relation to 21

working length determined radiographically was 14 mm. The canal was enlarged till 80 size file. The final reamer used, was passed 6 mm past the apex i.e., the final site of endodontic stabilizer. A rubber stopper was placed at 20 mm from tip on corresponding drill, enabling the drilling of the stabilizer osteotomy to a depth of 6 mm beyond the apex. The canal was irrigated with normal saline and dried with paper points. Mineral Trioxide Aggregate cement was applied to portion of stabilizer that will be located within the canal. Modified endodontic stabilizer implant (Bicortical Screw, Stryker) was slowly seated with wrench. Post operative radiograph was taken to assess the placement of implant (Fig. 3). Permanent access filling was placed. Tooth was disoccluded so that it was kept in a state of hypofunction. Review was done after 7 days and no abnormality was detected. Also, aesthetically converting a premolar into a canine required meticulous tooth preparation and crown fabrication. So an intentional root canal treatment of the premolar was done.



**Fig. 3** Endodontic implant with corresponding drill and post operative radiograph showing implant in relation to 21



**Fig. 4** Teeth preparation in relation to 21 and 24

#### Prosthodontic Procedure

Maxillary and mandibular diagnostic impressions with irreversible hydrocolloid (Plastagin, septodont, Germany), were made and casts were obtained. Diagnostic casts were mounted on a semi-adjustable articulator (Hanau H2) using a facebow transfer and the space available for the replacement of 22 and 23 was evaluated. Due to decreased mesiodistal space, it was planned to convert 24 into a canine for better aesthetics. Teeth 21 and 24 were prepared as abutments with a deep chamfer, and margins were placed at the gingival level (Fig. 4). Retraction cords (Siltrax, 00, USA) were placed around the prepared teeth and two stage final impression was obtained with addition silicone putty and light body impression material (Aquasil, Dentsply). After the impression procedure, a three unit provisional restoration was fabricated and cemented on the prepared teeth with non eugenol-based temporary cement (META, Biomed, Korea). Impression was poured in die



**Fig. 5** Metal try in



**Fig. 6** Three unit fixed partial denture with gingival porcelain



**Fig. 7** Showing the comparative evaluation of patients comfort

stone, master cast was retrieved and individual dies were prepared. Wax patterns were made and casting was done in a centrifugal induction casting machine. The casting was retrieved, finished and tried in the patient's mouth (Fig. 5). After necessary adjustments, porcelain was applied over the metal framework. Since there was increased occluso-cervical length of missing edentulous area a layer of gingival porcelain was also given to achieve an acceptable zenith (Fig. 6). The final three unit prosthesis was cemented in the patient's mouth with Type 1 GIC cement (Fuji) under standard prosthodontic protocol. The patient was reviewed after 48 h and satisfactory function and aesthetics was noted (Fig. 7).

## Discussion

Endodontic stabilizer implants are endosteal implants, but they differ from other endosteal implants in terms of functional application. Rather than providing additional abutment support for restorative dentistry, they are used to extend the functional length of an existing tooth root with an intent to improve its prognosis and when required, its ability to support fixed prosthesis [3]. The various indications for an endodontic implant are summarised in Table 1. A sufficient volume of bone beyond the tooth apex is required for the tooth to be considered for implant placement. Modern endodontic stabilizers takes the form of a long, threaded post that passes at least 5 mm beyond the

**Table 1** Indications of endodontic implant placement [2, 10]

For maintaining crown root ratio in displaced horizontal root fracture.
To reduce mobility of tooth.
As an adjunct to periodontal therapy.
As an abutment for fixed prosthesis.
Combination of stabilizer and post and core.
As an additional root.

apex of the tooth root into available bone [4]. The endodontic endosseous implant has the advantage that it can be totally intraosseous without communication into the oral cavity and the procedure is completed in one visit, as the final step of any conventional endodontic regimen. Cranin et al. [5] stated 90 % success rate has been achieved with this modality.

It should be recalled that “the simplest treatment that will satisfy the needs of the patient is the best treatment”. Many treatment modalities were available for this patient. Extraction and subsequent replacement with osseointegrated implants should only be considered after all other means of retaining the natural tooth have been fully explored (Linkow) [6]. Because of a decreased bone support and increased tooth mobility of 21, implant placement would have been a risky procedure. Resin bonded prosthesis was earlier planned but due to chances of discoloration of 21, aesthetics would be compromised. The periodontal condition ruled out the planning for cast partial denture. Considering all these factors a three unit fixed partial denture was the simplest, most convenient and sound treatment modality [7, 8]. The addition of gingival porcelain further enhanced aesthetics [9].

## Conclusion

This clinical report emphasizes that comprehensive treatment planning, whether simple or complex requires multidisciplinary approach. Endodontic stabilizers can be used as an option to improve the prognosis of compromised teeth, and their capability to act as abutment support with predictable functional and aesthetic results.

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