Rehabilitation of a partially edentulous arch with implant-supported and tooth-supported fixed prostheses: A case report

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ABSTRACT
Rehabilitation and restoration of partially edentulous/completely edentulous dentitions with loss of vertical dimension are essential to maintain a harmonious relationship in the stomatognathic system esthetically and functionally. With an array of prosthetic options available to restore edentulism, implant therapy occupies the first place, followed by fixed partial denture therapy. A 55-year-old female patient reported to the dental op with a chief complaint of multiple caries and multiple missing teeth. The patient was evaluated clinically and radiographically, and implants were placed in 14, 15, and 36 regions and were rehabilitated with a fixed partial denture in relation to 18–14, 13–11, and 45–47, implant supported crowns in 24, 25, and 36, and individual crowns in 21, 22, 23, and 26. A single arch restoration was done along with lower posterior rehabilitation to restore form function and esthetics.

KEY WORDS: Full mouth rehabilitation, Implant-supported crowns, Implant-supported fixed partial dentures

INTRODUCTION
Rehabilitation of a partially edentulous arch with associated loss in vertical dimension requires meticulous examination and comprehensive treatment planning. This will further reinforce restoration of the health of stomatognathic system in harmony with the condylar position, tone of the masticatory muscles, and tooth form.\[1-3\]

With dentitions requiring rehabilitation ranging in degrees from mild wear without loss of vertical dimension to severe tooth surface wear with loss of vertical dimension and temporomandibular joint symptoms, the first step in any therapeutic planning should include history, examination, investigation, and treatment planning. With an increased dental awareness and an improved acceptance in dental implant as a fixed replacement, implants are now considered as first-line therapy to treat tooth loss and prevent residual ridge resorption. With lack of good quality and quantity of bone for implant placement, the therapeutic remedy shifts to a fixed partial denture. With posterior edentulous space where a fixed partial denture therapy may not be instituted, replacement may be done by a cast partial denture, precision attachment prosthesis, or a removable partial denture.

In this case, rehabilitation of partially edentulous arches with multiple carious teeth has been performed with implant-supported crowns, fixed partial denture, and individual crowns.

CASE REPORT
A 55-year-old moderately built female patient reported to the dental op with the chief complaint of multiple caries and multiple missing teeth. The patient gave a history of root canal treatment done in front tooth region 2 months ago.

Extra Oral Examination
On extraoral examination, lips were found to be competent, and unesthetic smile with obliterated buccal corridor space was observed. Occlusal cant was also evident [Figure 1].

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**Intraoral Examination**

On intraoral examination, restored 14, 22, and 46 and root canal treated 12 were evident. The patient was partially edentulous in relation to 15, 16, 17, 24, 25, 26, 36, 45, and 47. There was a mild loss of vertical dimension (2 mm) [Figures 2-4].

A treatment plan was developed with the following aims:
- To reduce the effect of loss of teeth and function
- To improve the esthetics
- To restore masticatory function.

Treatment plan was carried out in three phases:

**Pre-prosthetic phase:**
- Extraction of 12
- Root canal treatment of 13, 14, 11, 21, 22, 23, 27, and 46
- Implant placement in relation to 24, 25, and 36 (NobelReplace Select - RP 4.3 × 10 mm).

**Prosthetic Phase:**
The teeth to be restored with fixed partial dentures and crowns were prepared, and the impression coping with

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**Figure 1:** Pre-operative frontal

**Figure 2:** Intraoral frontal

**Figure 3:** Occlusal - maxilla

**Figure 4:** Occlusal - mandible

**Figure 5:** Tooth preparation

**Figure 6:** Cord packing
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snappy was placed for making the master impression [Figures 5 and 6].

Master impressions of the maxillary and mandibular arches were made using Aquasil Putty and Light Body. The laboratory analogs were transferred along with impression copings fitted to the snappy. [Figure 7a and b].

Master Face Bow Transfer [Figure 8]
Facebow transfer of the prepared maxillary arch was performed using UTS Transferbow (Ivoclar Vivadent).

Metal Try-In
The metal copings were checked for marginal fit and clearance intraorally [Figure 9a and b].

Cementation
The crowns were luted with Type 1 GIC (luting), and the excess cement was cleared using interdental floss [Figures 10 and 11a & b].

Maintenance Phase
The patient was instructed to maintain good oral hygiene (brushing and flossing) and was asked to come for review once in 3 months.

DISCUSSION
Rehabilitation of diseased dentition should be done at an acceptable vertical dimension with good form, function, and esthetics to establish a harmonious working of the stomatognathic system. Tooth contact with the condyles at the superior most position not only establishes tooth form and function but also creates a harmonious working of the masticatory apparatus with the muscle at tonicity. [4-6]

Tooth wear at its initial stage can be restored with a more conservative approach. However, with loss of posterior teeth and a compromise in the bite, patients tend to use their anterior teeth for mastication. The anterior teeth, being designed for incising and tearing surfaces, are not suitable for loading. With the loss of posterior teeth, the masticatory loading shifts to the anterior teeth, and hence, an accelerated wear and a reduction in vertical dimension are encountered. [7-11]

With a variety of concepts regarding occlusion in full mouth rehabilitation cases ranging from bilateral balanced, unilateral balanced, linguualized, canine-guided, and group function occlusion available in the literature, we resorted to reestablish the pre-existing scheme of occlusion. [12-17] Canine-guided occlusion was resorted in this case and implant protected occlusion was established at the sites restored with implants.

With a vast range of options available to rehabilitate edentulism, it is ideal to customize the scheme of occlusion for each patient based on the pre-existing
scheme, amount of tooth wear, underlying cause of tooth wear, level of periodontal support, and force factors.

**CONCLUSION**

Full mouth rehabilitation improves not only form, function, and esthetics but also the quality of life. A comprehensive treatment plan, meticulous treatment, maintenance protocol, and follow-up improve the prognosis and the quality of life exponentially.

**REFERENCES**


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