

# Full Mouth Rehabilitation with Implant-Supported Cement-Retained Prosthesis in Severely Resorbed Ridges - A Case Report

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## ABSTRACT

Restorative services for the elderly have been a growing demand through the ages of dental profession. The patients affected by edentulousness feel handicapped and under confident due to reduced chewing efficiency, difficulty in speech and poor facial esthetics. The main objective of dental implant is to replace the tooth, to restore its function, esthetics, and speech. Implant-supported prosthesis gives a good amount of scope to live a healthy life. Implants are the most preferred option to retain removable and fixed prosthesis. Implants have overcome the challenges of the anatomic, psychological and esthetic consequences of edentulousness.

Full arch implant-supported prosthesis is a good treatment option for edentulous patients. Many studies have shown that this type of rehabilitation can be a long-term option as their success rates are high.

The aim is to present a case report on full mouth rehabilitation with implant-supported cement-retained prosthesis for edentulous maxillary and mandibular arches.

**Keywords:** Dental implants, Cement retained prosthesis, edentulous

## INTRODUCTION

Edentulism is associated with compromised esthetic, functional and psychological complications. Rehabilitation of a completely edentulous patient offerings a challenge to the dentist. Earlier Conventional complete denture was the only treatment option for edentulous patients. They come with a variety of pitfalls, they can feel bulky, particularly upper dentures

which cover the entire palate, and lower dentures are sometimes unstable because of various muscles including the tongue which all collectively dislodge the denture, as the patient ages the jaw size changes and needs to be relined periodically. So, the evolution of implant-supported removable and fixed prosthesis has become an integral part of prosthetic rehabilitation.

A dental implant can be defined as a prosthetic device made of alloplastic material implanted into the oral tissues beneath the mucosal and/or periosteal layer and on or within the bone to provide retention for a removable or fixed dental prosthesis.<sup>1</sup>

Newer standards in implantology intend to provide prosthetic restorations with the finest esthetic and functional results. Several parameters have been suggested to achieve benchmark results: adequate bone height, width, and sagittal projection, adequate soft-tissue quantity and quality, preservation of buccal sulcus, and adequate papillae and gingival contour.<sup>2</sup>

Dental implantation is a well-documented treatment of partial or full edentulism. Success rates of total rehabilitation with dental implants are high, postoperative complications are low, and directly depend on preoperative planning and maintenance by the patient.<sup>12</sup>

## CASE REPORT

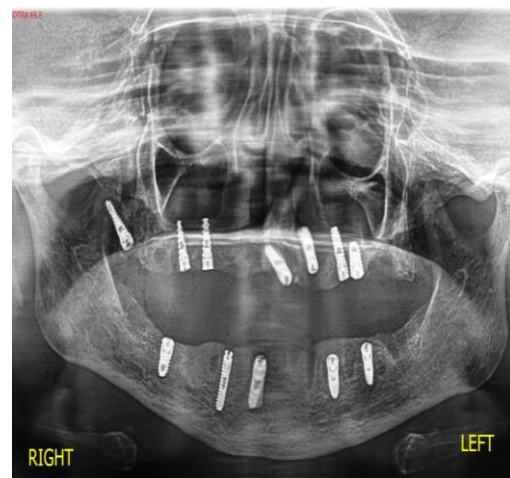
### First stage surgery

Patient consent was taken before the surgical procedure. All sterilization and disinfection protocols were followed before surgery.

During the first phase of surgery, Local anesthesia 2% lignocaine with 1:100,000 adrenaline was administered at the surgical site. Mid-crestal incision was given from 36 to 46. The flap was reflected. A pilot drill followed by sequential drills were made for osteotomy site in 36 regions. An implant measuring 4.0\*8 was placed in the osteotomy site. Wrenched with the help of a wrench. Primary stability was verified and the cover screw was placed. The remaining implants were placed in 34 region, 41 region, 43 region, and 46 regions. Continuous interrupted sutures were placed. (Fig. no.-1) Similar procedures were done in Maxilla, a pterygoid implant measuring 3.75\*16 was placed on the right side, apart from that 6 other implants were placed in the maxilla, 17, 15, 21, 23, 25, and 26 regions. (Fig. no.-2)



(Fig No.- 1- Implants placed in the Mandibular arch).



(Fig. No- 2 – Orthopantomogram of post-operative 3 months to review the osseointegration)

Implant sizes were as follows-

Region	Size
17	3.3*11.5
15	3.3*11.5
21	3.6*11.5
23	3.6*11.5
25	3.6*11.5
26	4.5*10
36	4*8
34	4*8
41	4*11.5
43	3.5*13
46	4*8

The patient was given post-operative medication and advised to maintain good oral hygiene. The patient was recalled after 3 months and OPG was instructed to check on Osseo integration. (Fig. no.-3) CBCT Maxilla was advised to check the position of the pterygoid implant.

Based on the radiograph second-stage surgery was planned.



(Fig. No.- 3- Implants placed in the Maxillary arch),

### Second stage surgery

During the second stage of surgery implant site was checked by placing a probe over the ridge and by taking radiographs so to ensure the proper site of the implant. An additional silicon impression was made, and study models were cast. A rigid custom tray was made with a window cut through over implants.

Cover screws were removed after that, and healing abutments were placed and kept for 2 weeks.

After 2 weeks patient reported back, healing abutments were removed and multiunit abutments were placed. Titanium cylinders were placed over multiunit abutments as cement cement-retained prosthesis was planned. (Fig. no.-4)



(Fig.No.-4 Titanium cylinders placed in both maxillary and mandibular arch).

The vertical dimension for rest and occlusion was checked with wax occlusal rims placed in the mouth. A divider was used to measure the vertical dimension (VDO) and vertical dimension at rest. Centric relation was recorded, teeth arranged in the rim, and try-in was done.

Maintaining the same VDO metal framework was fabricated, the Metal trial was performed interocclusal records were made, and later final prosthesis was given. (Fig. no.-5)



(Fig.No.-5- Final prosthesis delivered to the patient).

### DISCUSSION

While using retention systems, many dentists prefer cement-retained prosthesis, and some prefer it to be screw retained. The main advantages of cement-retained prostheses are a passive fit, good biomechanical stability, the absence of screw-access holes, better occlusal design, and adaptation for implant prosthetic malposition. Moreover, the cement layer can compensate for dimensional discrepancies between the restoration and abutment and work as a shock absorber. transferring occlusal loads to implant-restoration-bone complex<sup>9,10,11</sup> However, a cement excess that is not removed may increase the risk of peri-implantitis,<sup>5,6</sup> peri-implant mucositis,<sup>5</sup> and marginal bone loss<sup>7,8</sup>. On the other hand, screw-retained prostheses allow for easier retrievability and are preferable for limited interocclusal space, but they are prone to technical complications such as

components/restoration fractures and screws loosening.

The original work of Branemark *et al.*<sup>4</sup> was carried out in 1977, whereby they utilized 4–6 vertical implants placed within the anterior segment of the edentulous maxilla and mandible cantilevered to accommodate a full-arch fixed prosthesis. Their 10-year study (78.3%–80.3% for the maxilla and 88.4%–93.2% for the mandible) showed a success rate.

In one of the studies conducted,<sup>3</sup> the clinical performance of cement-retained implant-supported restorations was analysed. The authors concluded that such restorative solutions offer the passive fit of crowns, the absence of screw-access holes, easier control of occlusion, and compensation for possible prosthetic implant malposition.

## CONCLUSION

Dental implant positioning accuracy is an important factor in full-arch implant-supported rehabilitation, appropriate diagnosis and treatment planning is the key to a successful full-mouth rehabilitation. However, implant-supported prosthesis needs good skill from the clinician and a high degree of commitment from the patient for regular follow-ups and maintaining good oral hygiene. Implant retained cement-retained full mouth prosthesis provide a stable and durable solution for patients requiring extensive dental restoration. They can pose challenges in terms of maintenance and potential complications such as cement wash out or peri implant inflammation. However, when accurately planned and maintained, these prostheses can significantly improve oral function, esthetics and quality of life for patients.

### Declaration by Authors

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