

Research Paper

Full mouth rehabilitation using magnetic mallet to place implants

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ABSTRACT: The magnetic mallet is a totally innovative instrument for dental and implant surgery, the main applications of which are in maxillary sinus lift, in protocols of vertical and horizontal bone compaction and expansion and, more generally in all cases where surgical hammer is normally used.

The device makes a use of electromagnetic implant, which allows a high-intensity and brief impact force such as to obtain plastic deformation of the bone, but without spreading throughout the skull, as usually occurs with the blows of the surgical hammer. In this way the use of the magnetic mallet prevents the so called benign paroxysmal vertigo syndrome, that is the post-operative symptom of vertiginous nature.¹

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I. INTRODUCTION:

Primary stability has been identified as an important prerequisite in achieving osseointegration, as it may be a useful predictor for osseointegration.² Quality of bone represents an important factor for implant stability because dental implants placed in dense bone (type 1 and type 2) usually show better initial strength than those in poor quality bone (type 3 and type 4).

Bone is a biological tissue that can be moulded and compacted towards the desired location and shape by use of osteotomes,³ but this procedure requires a practitioner to be extremely aware of bone quality. Type 3 and type 4 bone are best suited for trabecular compaction.⁴ When adequate bone is available, removing the bone by drill is not a problem, but when the bone is soft or when the ridge has been resorbed enough to compromise implant placement, the ability to preserve and improve existing bone, it becomes mandatory.⁵

II. CASE REPORT:

The patient reported to the Department of Prosthodontics, D.Y. Patil University, School of Dentistry, Nerul, Navi Mumbai, with a complaint of missing teeth in maxillary and mandibular arch. (Fig. 1 and Fig. 2)



Fig. 1: Pre-operative maxillary view



Fig. 2: Pre-operative mandibular view

On examination, the patient was observed to have a single lateral incisor in the left side of the maxillary arch and multiple root pieces in 23, 25, 26 and 27. The mandibular arch had a canine and one premolar in the fourth quadrant. A full mouth rehabilitation with implants was planned for the patient. In the lower arch due to inadequate bone, All- on- four concept was used.⁶ (Fig. 3)

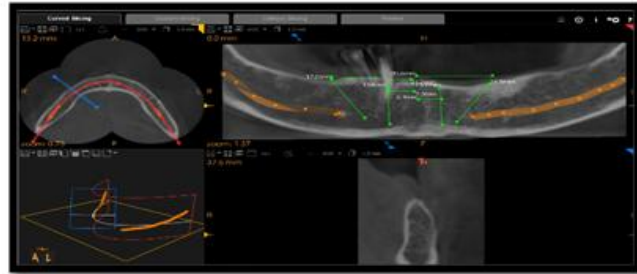


Fig. 3: CBCT planning for mandibular implants

Extraction of the premolar and canine are done prior to commencement of the implant surgery. Implants were placed with the help a stent for desired angulation for All- On – Four prosthesis. (Fig. 4 and Fig. 5)

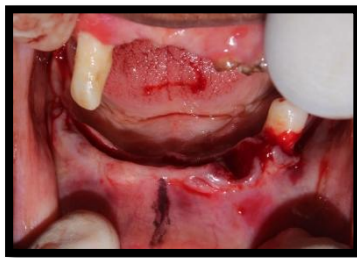


Fig. 4: Midline marked for All on Four guide.

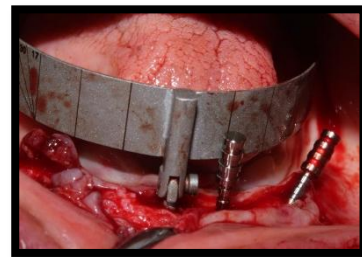


Fig. 5: Implants placed straight and at a desired angulation.

In the maxilla, since the bone was soft and compressive and would be preferred, the magnetic mallet was used to prepare the osteotomy. (Fig. 6 and Fig. 7)

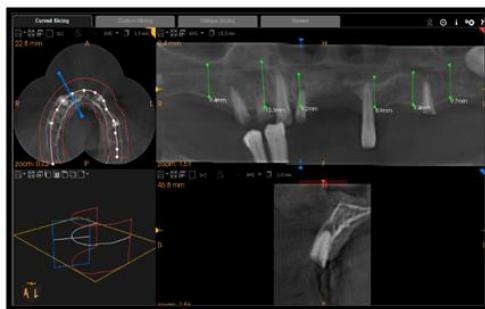


Fig. 6: CBCT for Maxillary implants



Fig. 7: Osteotomy preparation using magnetic mallet

Once placed and after osseointegration, the impression posts were placed and connected with floss and reinforced with pattern resin.⁷(Fig. 8) Open tray impressions were made. (Fig. 9) A jig trial was done to verify the impression. (Fig. 10)



Fig. 8: Impression post stabilized using floss and pattern resin

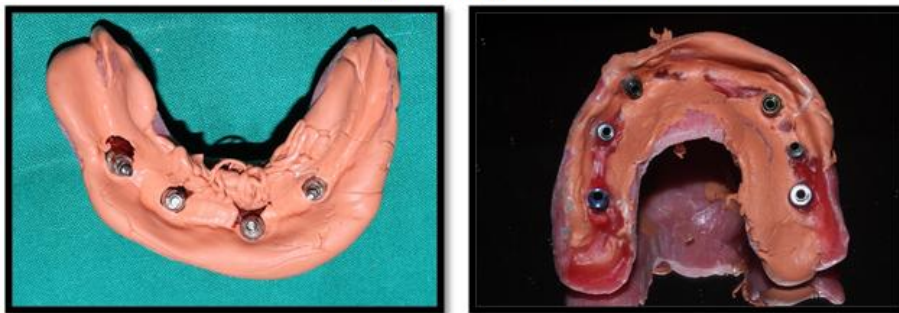


Fig. 9: Final Open tray impression.

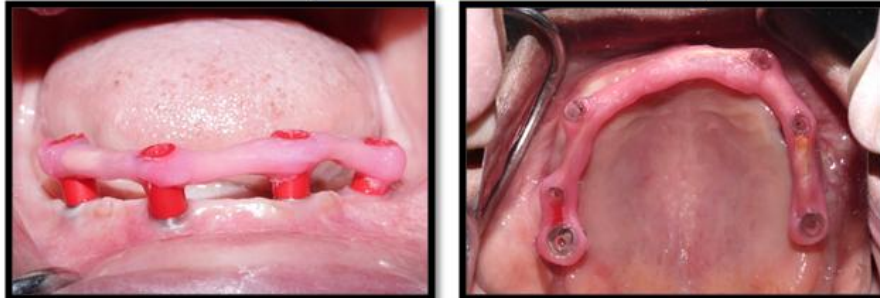


Fig. 10: Verification jig on castable abutment.

Jaw Relation was done (Fig. 11) and the teeth were arranged with their central fossas lying on top of the implant as much as possible. (Fig. 12)

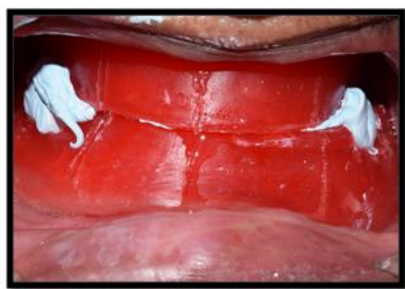


Fig. 11: Jaw relation done



Fig. 12: Teeth arrangement-
frontal view

This was tried in the patient's mouth and processed.

The Hybrid denture was then delivered to the patient. The prosthesis was torqued through the access holes and the holes were covered with composite. (Fig. 13, Fig. 14 and Fig. 15)



Fig. 13: Final Hybrid denture



Fig. 14: Final Hybrid denture-
Frontal view



Fig. 15: After – Extra oral view

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