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CASE REPORT

Implant-supported Fixed Rehabilitation of Partially Edentulous Maxilla and Mandible

Paresh R Kale

ABSTRACT

Partially edentulous patient has severe problems with existing fixed partial dentures. This is a case report of implant-supported fixed rehabilitation of a partially edentulous dentition with failing fixed partial dentures.

Keywords: Implant-supported FPD, Full mouth rehabilitation, Management of failing FPD.

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PATIENT EXAMINATION

History

Mr SR (patient) complained of old bridges that were failing and the lower right bridge that was mobile. He also said that hygiene maintenance was very difficult and there was food impaction in multiple places.

He had been controlled hypertensive for the last 6 years with 2.5 mg amlodipine basilate twice daily and his health is well monitored by his physician on a periodic basis. He had been taking multivitamin B-complex and vitamin C as recommended by his physician for the last 10 years.

He gave history of being allergic to penicillin but has taken amoxicillin in the recent past.

The laboratory investigations, including hemogram, blood sugar levels, bleeding time, clotting time, were within normal limits.

Clinical Examination

Mr SR had fixed partial prosthesis done in metal with facial acrylic veneer on all units except between mandibular canines where only three incisors were present. These fixed partial prostheses were at various stages of failure. The mandibular right prosthesis was mobile, attached only on the anterior abutment (canine), the distal retainer had extensive caries circumferentially and was not attached to the retainer. The maxillary right prosthesis had splinted abutments in maxillary canine and first premolor, with second premolar and first molar cantilevered.

The mandibular left prosthesis extended from the canine to the second premolar with second premolar as a pier abutment. The maxillary left missing central incisor and canine had been replaced by fixed partial prosthesis that extended from the maxillary right central incisor to the maxillary left first premolar. The missing maxillary left first molar was replaced with the use of maxillary left second premolar and second molar as abutments.

In spite of the poor marginal adaptation and contours of the fixed prosthesis, the oral hygiene was excellent, there were no hard or soft deposits on teeth.

The three incisors in the mandibular arch exhibited wear on the incisal edges, with facets in the dentin, the facial surfaces of these were restored with tooth colored restorations, which showed significant wear as well. The maxillary right lateral incisor was unrestored.

On examination, the labial mucosa, cheek and tongue appeared normal in color and texture.

Except the second premolar on the left side, all the mandibular teeth present showed periodontal probing depths of approximately 2 mm circumferentially. The mandibular left second premolar had probing depths of 3 mm on facial, lingual, mesial and 4 mm on the distal. The maxillary left second molar had probing depths of 3 mm on facial, distal and lingual and 4 mm on the mesial. The maxillary left first premolar had probing depths of 3 mm on facial, 4 mm on distal and palatal, and 6 mm on the mesial. The maxillary left lateral, right central and lateral probed to a depth of 3 mm circumferentially. The maxillary right canine had probing depths of 3 mm on mesial, facial and palatal, and 4 mm on the distal. The first premolar on the left has 4 mm on mesial and 2 mm on facial, distal and palatal. There was bleeding on probing but no suppurative exudation on probing on the maxillary right canine on the distal and on the mesial of the left first premolar in the maxillary arch.

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Mr SR showed approximately 1 mm of the incisal edges of his maxillary and mandibular anterior teeth during speech, which increased to 2 to 3 mm during a wide smile. The amount of visibility and plane of the maxillary incisors was esthetically acceptable.

The TMJs exhibited normal range of movements and produced no clicks or any other sounds. He had no parafunctional habits.

Radiographic Examination (Figs 1 and 2)

The panoramic view showed missing molars on the right side in the maxilla, there was a fixed partial prosthesis that was cantilevered off the canine and first premolar to replace these. The missing first and second premolars and molars in the mandible on right were replaced with a fixed partial prosthesis that extended from the mandibular right canine to the third molar. The cervical area of the mandibular right third molar appeared extensively damaged. There were fixed prostheses on the left side, in the mandibular arch for the missing first premolar and first molar with canine, second premolar and second molar as the abutments. In the maxillary arch on the left side, the prostheses were present to replace missing first molar, canine and central incisor that extend from the right central incisor to the second molar.

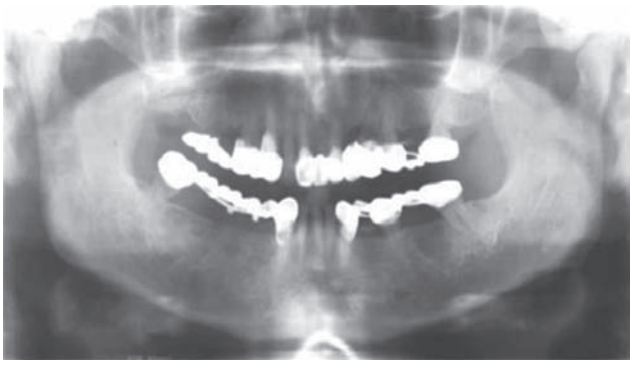

Fig. 1: Preoperative orthopantomograph

Mandibular canals and mental foramen were visible bilaterally and were regular. The bone showed normal trabecular pattern. The maxillary sinuses were not enlarged in the edentulous areas and appeared mostly clear.

The periapical radiographs made for areas of dentulous maxilla and mandible showed more details. There was extensive carious damage to the cervical area and bone loss up to the apical 1/3rd in mandibular right second molar. The maxillary left first premolar showed extensive bone loss on the mesial and angular bone loss on the distal with loss of apical lamina dura and a periapical rarefaction. The maxillary right central incisor, canine and first premolar showed deposits on the radicular surfaces with alveolar bone loss in the middle 1/3rd. Some deposits were also visible in the cervical areas of the maxillary left second premolar and second molar.

Dentascans for maxilla and mandible were also made for SR, to help diagnose available alveolar bone, mandibular canal, maxillary sinus in the edentulous areas. These measurements were used to make a decision on the location and specifics on dimensions of individual implant sites.

Preoperative Diagnosis

Mr SR was partially edentulous. The fixed partial prostheses that were present, were failing. The mandibular right second molar had extensive caries and extensive periodontitis.

There was mild chronic periodontitis in connection with maxillary right central incisor, canine and first premolar, left maxillary second premolar and second molar. The mandibular incisors had wear involving dentin on the incisal edges and facial surfaces.

DEVELOPMENT OF TREATMENT PLAN

Treatment Goals

Mr SR wished to have his dentition treated conservatively with minimal extractions. He was sure that he did not

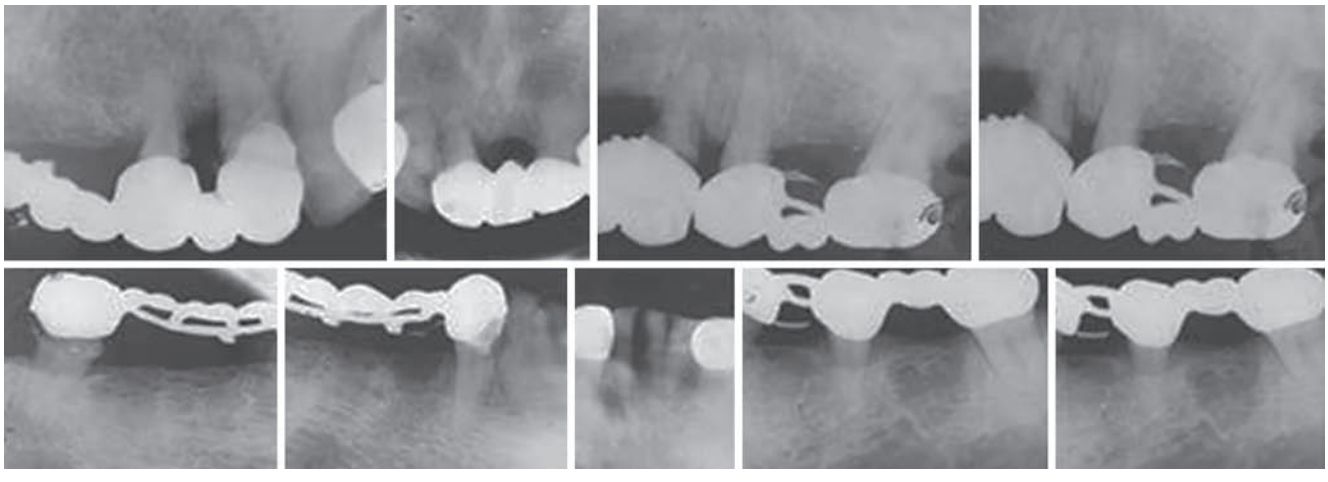

Fig. 2: Preoperative periapical radiographs

want to wear dentures, even during the transitional phase. He desires his teeth fixed essentially for mastication, esthetic improvement being secondary. The new dentition had been easy to maintain for hygiene.

Evaluation of Existing Natural Dentition

The mandibular right second molar and maxillary left first premolar had poor prognosis and required to be extracted 4 to 5 weeks before the surgical phase.

The mandibular incisors and maxillary right lateral incisor had a good prognosis due to a good crown to root ratio, the mandibular incisors; however, would need to be restored.

The remaining abutments to existing fixed prosthesis had 1:1 crown to root ratio, no carious or apical lesions. Therefore, with improvement in the periodontal status their could be good abutments to new fixed partial prosthesis simplifying restoration of a large part of the dentition. The mobility in these abutments could not be assessed in presence of the fixed prosthesis, which was done after they were removed to be treated for the periodontal disease, and then subsequently temporized. Of all these abutments, the maxillary right central incisor was the only one with less than 1:1 crown to root ratio but had no mobility on removal of the old fixed prosthesis and was decided to be retained. All these abutments responded to periodontal intervention favorably, with new temporary restorations fabricated, the periodontal health returned to stable, pocket depths were in 2 mm range and plaque maintenance was adequate confirming that the conservative plan was acceptable.

This left edentulous areas in the mandibular right two premolars and molars, right maxillary second premolar and two molars and maxillary left canine and first premolar were to be considered for placement of implants.

Interarch Relationships

Mr SR had anterior teeth with normal overbite and overjet relationship, occlusal plane was acceptable with mild curve of spee. The vertical dimension in the existing restorations was acceptable. The posteriors had flat occlusal surfaces but adequate cusp to fossa contacts. The incisal guidance was adequate to disocclude the posteriors in eccentric movements of the mandible. On clinical examination, temporomandibular joint function seemed normal.

Evaluation of Edentulous Ridge

The edentulous area showed minimal resorption in height and width of the maxillary and mandibular right posterior region. The sinus enlargement in the maxillary right second molar region could have posed a situation, where I might have need to choose between placing a shorter length implant or doing a minor indirect sinus floor lift and an augmentation.

The available edentulous ridges should be adequate in height, width and contours to receive a root form implant. The mucosa over the edentulous area appeared healthy and adequate in thickness with no deficiencies for achieving acceptable esthetic outcome in the area.

There was adequate space between the crests of edentulous ridges in the right posterior region in centric occlusion.

After extraction of the maxillary left first premolar, on account of existing bone loss and periodontal pockets, there may have been a defect in the alveolar crest, which could have required augmentation for achieving optimum positioning of the implant with good prognosis.

Prosthetic Restoration Selection

The choice for prosthetic restorations on implants was between cemented and screw retained prosthesis on implants. I chose to restore these implants with cemented prosthesis for the relative simplicity in fabrication, lack of availability of soldering of copings and costs involved. The cemented prosthesis would not have access holes, which would be esthetically advantageous and would not need added costs of gold, castable abutments.

An option of restoration in porcelain fused to metal Ni, Cr or Au was presented as a choice to the patient as a definitive restoration.

Due to constraints on costs, the patient opted for standard metal abutment and a porcelain fused to metal restoration.

I planned to place restorations on the implants after a phase of healing for osseointegration at a later date possibly a few months later, when the patient could make time to visit the practice. The remaining dentition was planned to be restored 3 to 4 weeks after the surgical insertion of the implants with porcelain fused to metal crowns and bridges to restore function and esthetics in the interim period.

Hard and Soft Tissue Modifications

The maxillary left canine, first premolar region may have required a bone graft covered with a resorbable membrane for bone regeneration in the area where there was a possiblity of having a fenestration of the buccal cortical plate after the extraction of the first premolor. The maxillary right second molar region may have required an indirect lift of the sinus floor to be able to place an implant with an optimum length. The alveolar process measured 10 mm from the crest of the crige to the floor of the sinus in this region.

Implant Selection Rationale

Two-stage cylindrical threaded implants with a blasted surface with an external hex prosthetic platform—BioHorizon Maestro were selected. This would allow optimum primary healing of the mucosa covering the implants and the grafted sites, necessary for bone regeneration. Since, the patient was not going to be in town for a few months, hygiene maintenance and monitoring would not remain an issue.

These implants have a mount, which can serve as a definitive abutment saving costs.

I planned to place one implant for each missing tooth, in the best possible axial angle in the available bone, for effective transfer of the occlusal load. Since the remaining dentition was dentulous, the occlusal forces were going to be in the normal range.

SURGICAL AND PROSTHETIC REPORT

Surgical Procedures

Preoperative instructions were given to the patient informing him of the surgical procedures to be performed, premedications (2 gm augmentin an hour prior to the surgical procedure) and diet. An informed consent for the surgical procedure was obtained on the day of the surgery, i.e. November 4, 2005.

Preoperative blood pressure and pulse rate were recorded. Patient rinsed with a chlorhexidine solution (Clohex, 0.2% chlorhexidine gluconate oral rinse, Dr Reddy Laboratory, Navi Mumbai, India), the extraoral surfaces were painted with betadine. The patient was then draped with sterile drapes and was swabbed intraorally with a Betadine solution (10% povidone-iodine topical solution) with particular attention given to the surgical sites. A topical anesthetic gel (Benzo-Jel, 20% benzocaine, Henry Schein, Melville, NY 11747, USA) was applied on areas to be injected. Local anesthesia was administered with inferior alveolar nerve block for the right mandible, posterior superior alveolar and posterior palatine nerve block for the right maxilla, buccal infiltration, incisive and posterior palatine nerve block for the left maxillary sites using five carpules of 1.8 cc, 2% lidocaine HCl with 1:80,000 epinephrine; lignospan special (Septodont 58, rue du Pont de Creteil, 94197, Saint-Maur-des-Fossés Cedex, France).

On the left maxillary surgical site, the first bicuspid was extracted, after separation of the mucogingival junction; an incision was placed from the distal of the lateral incisor on the crest of the alveolar process and extended to the mesial limit of the extraction socket. Vertical incision was made from the distofacial line angle of the lateral incisor on the mesial of the flap extending mesially and apically toward the sulcus for a length of 1 cm, and a distal vertical incision was made from the distofacial line angle of the second premolor extending distally and apically for about 1.5 cm. Full thickness mucoperiosteal flaps were raised to visualize the crest of the edentulous ridge, the buccal wall of the socket and the fenestration on it and approximately 3 mm beyond the fenestration on the facial and 3 mm on the palatal of the alveolar process.

The extraction socket was thoroughly curetted with a surgical curette.

In the maxillary left canine surgical site, osteotomy was initiated 6 mm distal to the distal root surface of the lateral incisor with number 6 round bur in the center of the faciolingual width of the ridge to a depth of 2 to 3 mm. Starter drill 1.5 mm diameter was then used to make an osteotomy at 1500 rpm with saline irrigation (sodium chloride injection IP 0.9%, Nirlife Healthcare-Nirma Ltd., Sachana, Gujarat 382157, India) to a depth of 12 mm. The direction of the osteotomy was confirmed to be palatal to the axial inclination of the lateral incisor. The first premolor osteotomy was initiated 5 mm mesial to the mesial surface of the second premolar, with number 6 round bur on the palatal wall of the extraction socket parallel to the axial inclination of the second premolar. Starter drill 1.5 mm diameter was then used to make an osteotomy at 1500 rpm with saline irrigation (sodium chloride injection IP 0.9%, Nirlife Healthcare, Nirma Ltd, Sachana, Gujarat 382157, India) to a depth of 9 mm. This was then enlarged by a 2 mm twist drill. An intraoral periapical radiograph was made to confirm the accuracy of these osteotomies.

The osteotomies were increased to 15 and 12 mm depth respectively for canine and first premolar with the use of 2, 3 and 3.2 mm twist drills used in succession.

BioHorizons external hex implant 4 × 15 mm D3 thread form implant was placed at 15 rpm and 35 Ncm with a 4/5/ 6 mm handpiece adapter for the canine site. 4 × 12 mm D3 thread form fixture was placed in the first premolar site with 4/5/6 handpiece adapter. The implant mounts (3 in 1 abutment) were then removed by unscrewing the fastening screw. Cover screws were then placed over with 0.5 mm handpiece adapter.

An incision was made in the periosteum at the apical extension of the mucoperiosteal flap, from the mesial to the distal extent, to mobilize the flap, so that it would cover the implant, and the edges of the facial and palatal flap would approximate easily.

Bio-Oss spongious bone substitute large granules 1 mm to 2 mm (Geistlich Biomaterials, Geistlich Pharma AG CH-6110 Wolhusen, Switzerland) mixed with saline was used to cover the fenestration over the first premolar implant and was covered with Bio-Guide (Geistlich Biomaterials, Geistlich Pharma AG CH-6110 Wolhusen,

Switzerland) appropriately shaped to cover 2 mm beyond the defect in the apical direction and extending over the crest of the ridge 2 mm palatal to the implant.

The mucoperiosteal flaps were then sutured with 5-0 Vicryl interrupted sutures NW 2442-absorbable surgical suture USP (synthetic), coated polyglactin 910 violet (Ethicon, Johnson and Johnson Ltd., Aurangabad 431136, India) over the implant and the Bio-Guide to achieve a complete closure.

For the maxillary right surgical site, an incision was made on the crest of the ridge from the distal of the first bicuspid and extended to the maxillary tuberosity. Full thickness mucoperiosteal flaps were raised to visualize the crest of the edentulous ridge and approximately 3 mm beyond, on the facial and lingual of the alveolar process.

In the maxillary right second premolar surgical site, osteotomy was initiated 8 mm distal to the distal root surface of the first premolar with 6 round bur in the center of the faciolingual width of the ridge to a depth of 2 to 3 mm. Starter drill of 1.5 mm diameter was then used to make an osteotomy at 1500 rpm with saline irrigation to a depth of 15 mm. The direction of the osteotomy was confirmed to be parallel to the buccal cortical plate. For the first molar site, osteotomy was initiated 7 mm distal to the second premolar site and for the second molar 8 mm distal to the first molar site with number 6 round bur in the center of the faciolingual width of the ridge to a depth of 2 to 3 mm. Both the molar osteotomies were limited to 10 mm depth, where they encountered resistance. The direction of the osteotomy was confirmed to be parallel to the buccal cortical plate and to that of the second premolar site where a guide pin was already in place. All these osteotomies were enlarged with 2 and 3 mm twist drills used in succession to full depth. The distal osteotomies in the molar locations were enlarged to 3.2 mm diameter. A 3.2 mm diameter Summers' osteotome was then placed in each of the molar sites in succession and with light taps, the floor of the maxillary sinus was upfractured by 1 to 2 mm. The patient was asked to breathe in small bursts, in and out to confirm that there was no escape of air through the osteotomies confirming lack of breach of the snyderian membrane at the floor of the sinus. A few large granules, 1 to 2 mm, of Bio-Oss spongious bone substitute were then placed apically in these osteotomies with the osteotomes gently. This process was carried out 2 to 3 times. It was confirmed once again that no air escaped.

BioHorizons external hex implant 4 × 12 mm D3 thread form implants were placed at 15 rpm and 35 Ncm with a 4/5/6 mm handpiece adapter for both the molar locations and BioHorizons external hex implant 3.5 × 15 mm D3 thread form implant was placed at 15 rpm and 35 Ncm with a 3.5 mm handpiece adapter for the second premolar site to full depth. The implant mounts (3 in 1 abutment) were then removed by unscrewing the fastening screw. Cover screws were then placed over with 0.5 mm handpiece adapter.

The mucoperiosteal flaps were then sutured with 5-0 Vicryl interrupted sutures NW 2442—absorbable surgical suture USP (synthetic), coated polyglactin 910 violet (Ethicon, Johnson and Johnson Ltd., Aurangabad 431136, India) over the implant.

For the right mandibular sites, an incision was made on the crest of the edentulous ridge starting from the distal of the first bicuspid and extended to retromolar pad.

In the mandibular right, first premolar site osteotomy was initiated 8 mm distal to the distal root surface of the canine with number 6 round bur in the center of the faciolingual width of the ridge to a depth of 2 to 3 mm. Starter drill 1.5 mm diameter was then used to make an osteotomy at 1500 rpm with saline irrigation to a depth of 9 mm. The direction of the osteotomy was confirmed to be parallel to the axial inclination of the canine. The second premolar osteotomy was initiated 10 mm distal to the first premolar, the first molar site osteotomy was initiated 10 mm distal to the second premolar site and second molar site osteotomy 10 mm distal to the first molar site were prepared with number 6 round bur in the center of the faciolingual width of the ridge to a depth of 2 to 3 mm. Starter drill 1.5 mm diameter was then used to make an osteotomy at 1500 rpm with saline irrigation to a depth of 9 mm to each one of them. The osteotomies were increased to 12 mm depth for the first premolar and to 15 mm for second premolar and first molar with the use of 2 mm, 3 mm and 3.2 mm twist drills used in succession. The molar site osteotomies were then increased to 3.7 and 4.2 mm diameter subsequently.

BioHorizons external hex implant D3 thread form implants 4 × 12 mm for first premolar, 4 × 15 mm for second premolar, 5 × 15 mm for first molar, and 5 × 12 mm for second molar were placed at 15 rpm and 35 Ncm with a 4/5/6 mm handpiece adapter. The implant mounts (3 in 1 abutment) was then removed by unscrewing the fastening screw. Cover screws were then placed over with 0.5 mm handpiece adapter. The mucoperiosteal flaps were then sutured with 5-0 Vicryl interrupted sutures over the implant.

The patient was then given a frozen cold pack (Nexcare Reusable Cold Hot Pack, 3M St Paul, MN, USA) to apply with interruptions for the following 2 hours on lateral side of the face under the orbit.

The sutures were removed on 8th postoperative day, i.e. on November 12, 2005.

The second stage surgery for implants uncovering was performed on November 4, 2006. This was performed under local anesthesia using three carpules of 1.8 cc, 2% lidocaine HCl with 1:80,000 epinephrine; Lignospan

special (Septodont 58, rue du Pont de Creteil, 94197, Saint-Maur-des-Fosses Cedex, France). A crestal incision was made, conservative mucoperiosteal flap was raised to expose the cover screws. The cover screw on the implant in the maxillary left premolar region was covered with some regenerated bone. This was removed using 4 mm diameter trephine with saline irrigation, adequate to expose the cover screw. All the coverscrews were removed using 0.5 mm handpiece adapter in reverse and healing screws of 5 mm height for the maxillary left canine and first bicuspid and 3 mm height for the rest with appropriate diameter were placed. The mucoperiosteal flaps were then sutured with 5-0 Vicryl around the healing screws for good adaptation. These sutures were removed on the 7th postoperative day.

Prosthetic Procedures

Impression of the implants by indirect transfer was made using the 3 in 1 abutments and a ball top screw placed on the implant after removal of the healing abutments. The impression was made using a stock tray with polyvinyl silloxane (Express STD putty and light body, 3M ESPE, St Paul, USA). On removal of the impression from the mouth, the ball top and abutments were removed from the implants, appropriate size laboratory analogs were attached and this assembly was carefully placed back into the impression in appropriate places with accurate orientation of the flat surface of the abutment matching in the impression. The healing abutments were placed back on the implants after irrigating the implant head and screw holes with water in a syringe. The impression was poured using type IV improved dental stone (KalRock, Kalabhai Dental, Mumbai, India) by the laboratory.

Three in one abutment was placed on the mandibular right distal implant, a jaw relation record was made in maximum intercuspation with Remitec polyether bite registration material (3M ESPE, AG D-82229, Seefeld, Germany).

A facebow transfer was recorded using Denar slidematic facebow. The records were sent to the laboratory along with a laboratory prescription.

The metal framework received from the laboratory was examined for the marginal adaptation tissue contours and passivity of fit on the model.

At the metal framework try in appointment, the healing abutments were removed, laboratory prepared abutments were placed on the implants using an acrylic jig to assist intraoral seating of the abutments. Metal tryin was then performed looking for the adaptation at the margins, passivity of the fit. Fit Checker (GC America Inc.) was used to confirm the passive fit of the framework. Remitec polyether bite registration material (3M ESPE, AG D-82229, Seefeld, Germany) was used to record the bite registration in complete intercuspation and all the records were then sent back to the laboratory along with a shade prescription. The healing abutments were placed back on the implants after irrigating the implant head and screw holes with water in a syringe.

The PFM restorations were placed on the implants with the exact steps as the metal tryin. Bausch occlu-check duo BK 120 (60 microns) articulating paper was used to confirm lack of premature contacts in centric occlusion and in eccentric movements of the mandible. The porcelain surfaces were then finished, polished and readied for cementation.

The PFM restorations were then cemented with RelyX-Temp NE (3M ESPE, AG D-82229 Seefeld, Germany) November 20, 2006. The excess cement was completely removed and the patient was given instructions for hygiene maintenance using brush and floss. A radiograph was made to confirm lack of any cement left to be removed.

The Bausch occlu-check duo BK 120 (60 microns) articulating paper was used once again to confirm lack of premature contacts in centric occlusion and in eccentric movements of the mandible.

Three months later, the PFM restorations were removed. The restorations and the abutments were cleaned of temporary cement. The abutment screws were torqued to 30 Ncm. The abutment screwholes were blocked with Cavit-G temporary filling material (3M ESPE, AG D-82229, Seefeld, Germany). The crown was definitively cemented with RelyX Luting Cement (3M ESPE, AG D-82229, Seefeld, Germany). After cleanup of the excess cement, lack of excess cement around the abutment was confimed with intraoral periapical radiograph (Figs 3 and 4).

CLINICAL RESUME

Comparison of Preoperative and Postoperative Diagnoses

Approach of using maximum number of existing natural abutments resulted in simpler implant options and prosthetic treatment. That also eliminated the need for possible complex transitional prosthesis for the total duration of the treatment.

Mr SR finds improvement in function, esthetics and the new dentition easy to maintain.

Maxillary right fixed prosthesis on natural abutments was done prior to implant prosthesis opposing that. Adequate attention was not paid to the occlusal surface.

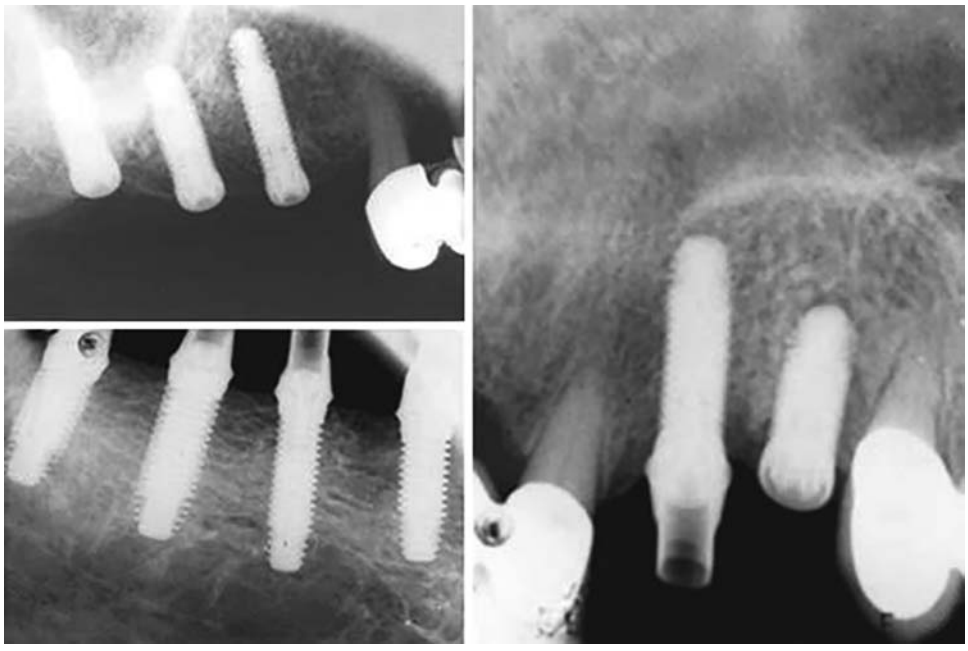

Fig. 3: Postsurgical periapical radiographs

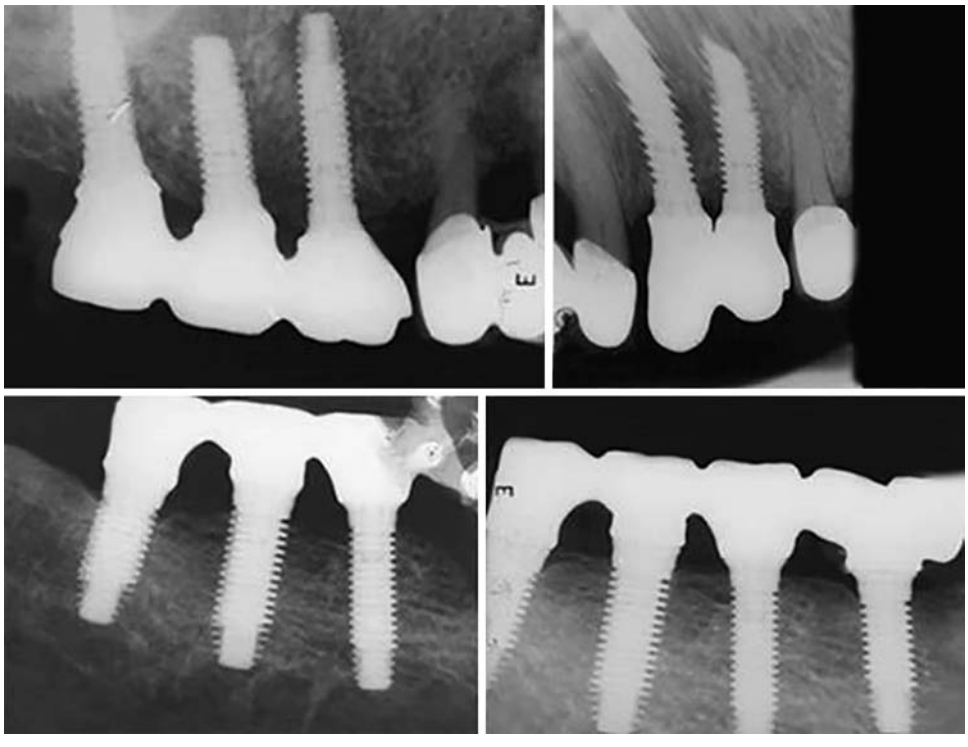

Fig. 4: Postprosthetic periapical radiographs

Therefore, the space available for the implant restorations has resulted in a step formation between mandibular right canine and the posterior occlusal plane. This could have been avoided.

Type of Patient Instructions

Type of patient instructions includes: preoperative, postoperative, diet, temporization, prosthetic.

Preoperative instructions included plaque maintenance, use of a chlorhexidine gluconate 0.2% mouthwash.

The patient was asked to apply a cold pack for 2 hours externally, intermittently on the external surfaces and was instructed to avoid consumption of any food/liquids for the duration of the effect of the anesthetic. He was asked to have semisolid or liquid diet for 2 days postoperative. He was instructed not to brush at the surgical site for 2 days and use of chlorhexidine gluconate (0.2%) mouthwash after every meal for 10 days postoperative.

On cementation of the prosthesis, he was given plaque maintenance instructions with toothbrush, dentifrice

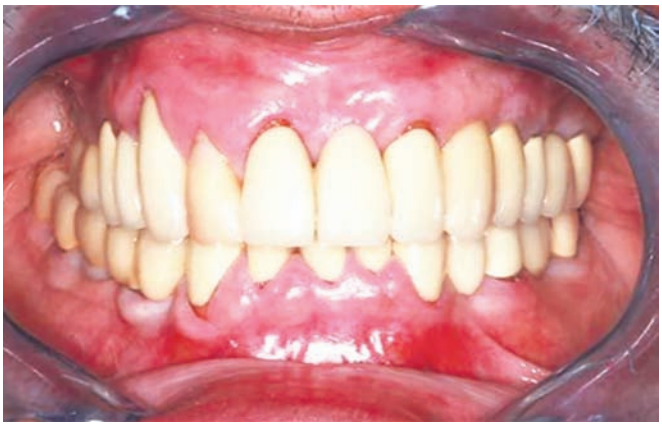

Fig. 5: Final prosthetic result (frontal view)

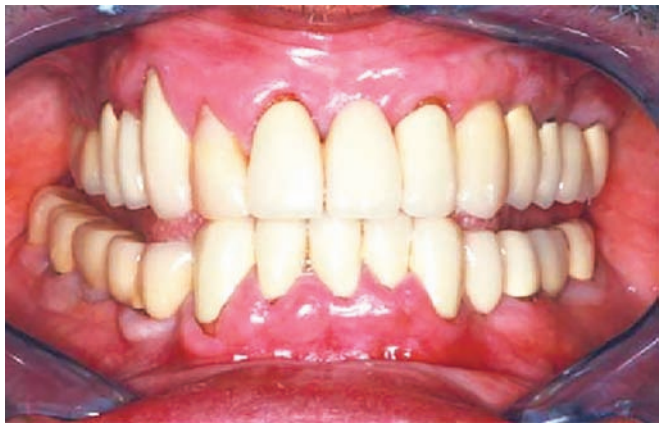

Fig. 6: Protrusive view

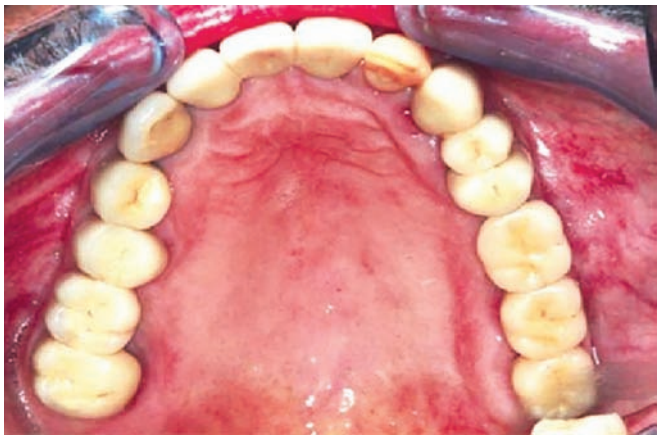

Fig. 7: Occlusal maxillary view

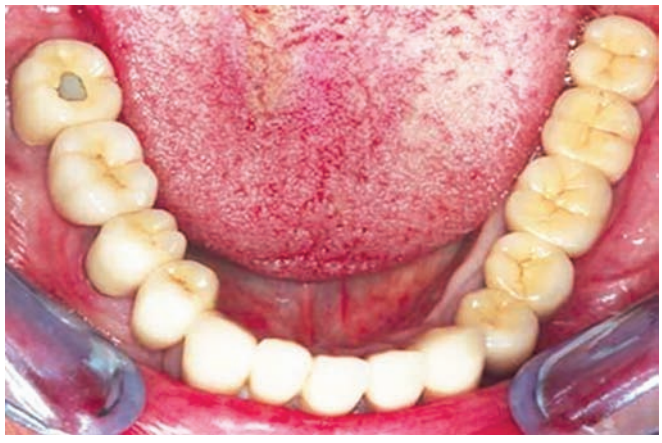

Fig. 8: Occlusal mandibular view

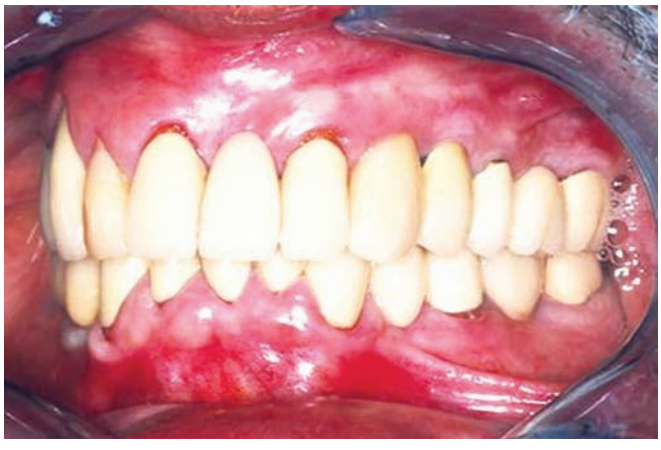

Fig. 9: Lateral view in centric occlusion (left)

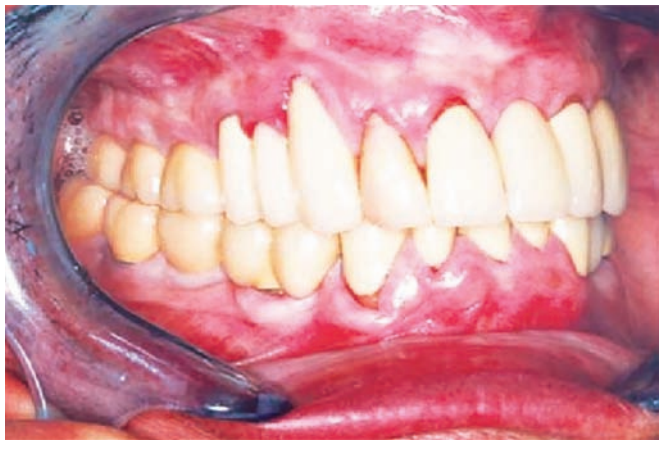

Fig. 10: Lateral view in centric occlusion (right)

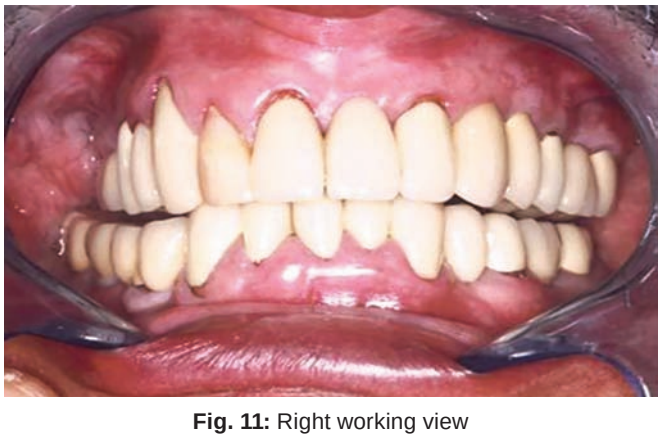

Fig. 11: Right working view

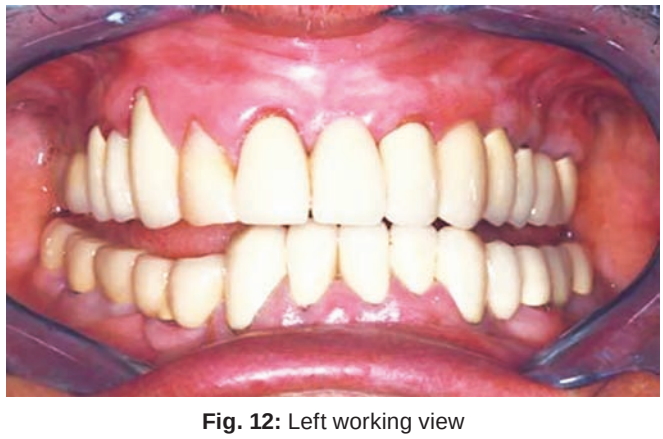

Fig. 12: Left working view

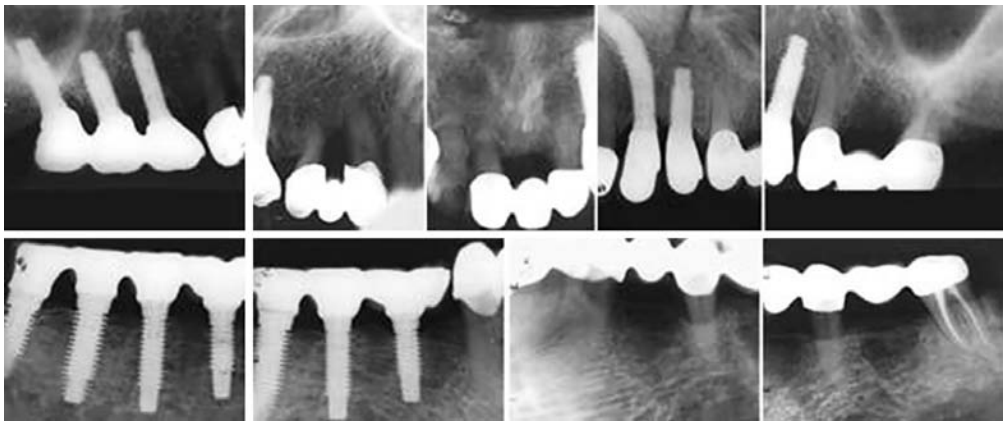

Fig. 13: Completed case periapical radiographs follow-up

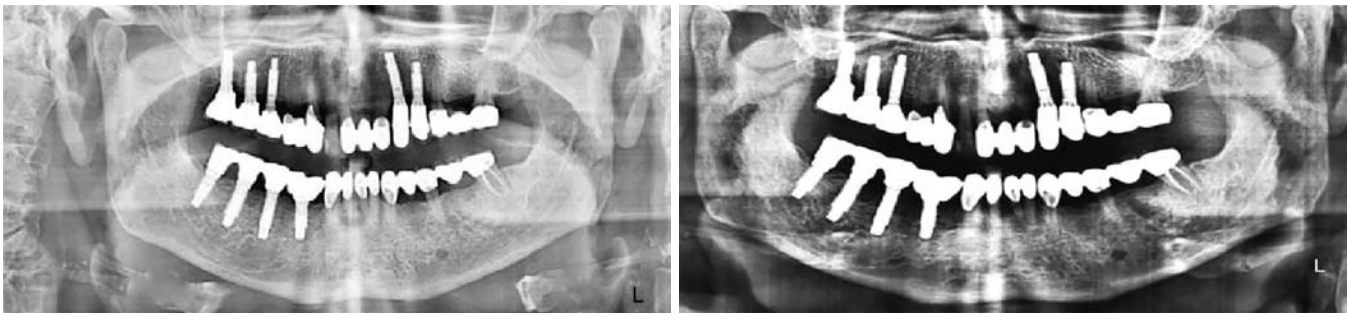

Fig. 14: Completed case panoramic view follow-up

and interdental brushes. He was recalled at 3 months, 6 months and 1 year. He was asked to report immediately if the prosthesis felt loose.

Complications

There were no complications during or after the surgery besides minor edema on the left infraorbital area. The healing period was uneventful. The definitive restorative phase was uneventful.

Patient Acceptance and Prognosis

The patient is satisfied with the outcome of the treatment. He is very pleased to be able to function as normal. The prognosis of the rehabilitation is excellent (Figs 5 to 14).