

## Screw Retained Implant Prosthesis: A Case Report

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### **Abstract:**

**Introduction:** Advancing surgical reconstructive methods and demanding prosthetics need accurate and precise implant placement. Screw retained prosthesis to replace mandibular teeth is popular and effective option in a distal extension case. The process involves several steps including implant placement, abutment attachment and prosthesis fabrication with proper care as a long lasting and functional solution for missing teeth. For many edentulous patients, implant remains as a more reliable, functional alternative compared to other prosthetic modalities. The definition of a successful implant has been refined from just achieving effective osseointegration to a precise positioning and prosthetic outcome.

**Conclusion:** Implant is a long-term solution for fixed restoration in edentulous patients, especially in a distal extension case. This case report describes the replacement of missing mandibular posterior teeth with a screw retained implant prosthesis.

**Key Word:** Implant, occlusion, screw retained implant (SCRIP), mandibular posterior missing teeth.

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### **I. Introduction**

Restoring a distal extension partially edentulous arch can be quite challenging in terms of the form and function of mandibular molars, which are the most commonly missing teeth due to various reasons. Failure to replace these teeth can cause difficulties in mastication and lead to supra-eruption of opposing teeth, resulting in subsequent occlusal disharmony<sup>1</sup>.

Dental implants are widely accepted as a treatment modality for restoring missing teeth. Alternative treatment options include removable partial dentures or dental implants<sup>2</sup>. Fixed partial dentures have several disadvantages, such as compromising adjacent teeth and making them susceptible to future treatment needs, such as root canal treatment or extraction.

Replacing mandibular molars with implants requires special consideration for the anatomy of the region and biomechanics. Implants in this region provide good occlusal support, preserve adjacent teeth, and avoid the use of removable partial dentures<sup>3</sup>.

Screw-retained prosthesis (SCRIP) has several advantages compared to cement-retained prosthesis. They have easier maintenance, more predictable retrievability, require a minimal amount of interocclusal space and are easy to remove when hygiene maintenance, repair or surgical interventions are required<sup>4-6</sup>. This case report describes the replacement of mandibular molars with implants restored with SCRIP.

### **II. Case Report**

A 45-year-old female patient reported to the Department of Prosthodontics with the chief complaint of missing teeth causing inability to chew. Patient had a history of extraction of mandibular posterior teeth two year back due to grossly carious teeth. Since then, patient did not have any replacement of teeth. There was no other relevant dental and medical history.

Intraoral evaluation revealed missing mandibular right first and second molar, adjacent abutment was intact, and the patient had a healthy gingival and periodontal condition. The patient was informed about all the possible treatment modalities such as implant prostheses, fixed partial dentures, and removable partial dentures along with the benefits and drawbacks of each. An implant-supported fixed prosthetic rehabilitation was selected.

Diagnostic casts were made with alginate and poured in dental stone. The cast were mounted on an articulator in centric relation. CBCT was carried out for mandibular arch. The width of the bone in 46 region was 3.61mm and in 47 region was 4.74 mm and the available vertical height in 46 region was 14.06 mm and in 47 region was 13.48 mm., bone quality was D2 type. As available bone height was more than adequate hence 4.5x10mm implant size was selected to be submerged 2 mm below the crestal bone. Before starting the surgical phase, written consent of the patient was obtained.

### **III. Surgical Procedure**

Local anesthesia was administered using 2% lignocaine hydrochloride with 1:80,000 adrenaline (XICAINE, ICPA) prior to performing a standard mid-crestal incision at the edentulous space. The patient's subjective and objective anesthesia was monitored before the incision was made. The mucoperiosteal flap was then reflected. Initial drilling was carried out by the lance drill using an Osstem taper kit. To assess the parallelism of the implant, an intraoral periapical radiograph was taken with a paralleling pin inserted into the drilled socket. Osteotomy was achieved after sequentially drilling to a depth of 4.5 \* 10 mm. An implant fixture (Osstem TS4.5\*10) was then placed with a torque of 30 N. Postoperative medication was advised. For the first 15 days, the patient was instructed to gargle with warm saline solution to speed up wound healing.

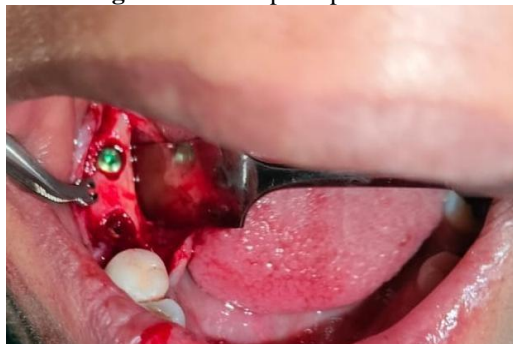
### **IV. Prosthodontic phase**

After a three-month healing time, and an IOPA radiograph was taken of the surgical site. Osseointegration were visible on the radiograph. the second step of surgery was performed. A 5mm by 5mm two Osstem healing abutment was attached, followed by a healing interval. During the second stage of surgery, the peri implant tissue recovery was observed to be in great condition, and healthy gingival tissue had grown around it. Using open tray impression technique putty and a light body impression (Avue gum by Avue) was made with impression copings (Osstem). The impression was poured, jig was created, and it's fit on the implant was verified intraorally using an IOPA. Following visits, a castable abutment was used to fabricate a metal ceramic crown. A bisque trial was done. Occlusion was assessed by using articulating paper of 40 microns for heavy contact and 12 microns for light contact used. Thus, two metal ceramic implant prosthesis with screw retention was fabricated and delivered. Postoperative instructions were given to the patient for oral hygiene maintenance.

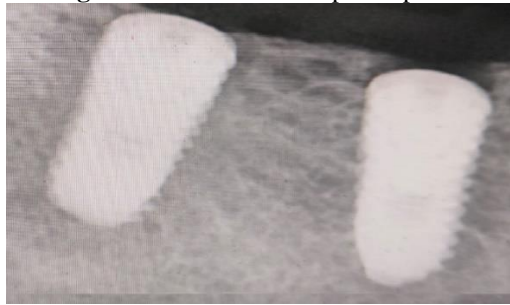
**Figure no 1: Incision and Flap**



**Figure no. 2: Implant placement**



**Figure no 3: IOPA Of Implants placed**



**Figure no 4: Suture Placed**



**Figure no 5: Impression**



**Figure no 6: Jig Trial**



**Figure no 7: Final Restoration**



**Figure no 8: IOPA of Final Restoration**



## **V. Discussion**

When placing implants in the mandibular right first and second molar region, it is crucial to assess the bone quality and nerve presence before planning a prosthodontically driven implant placement<sup>7</sup>. The CBCT revealed that the cross-sectional images of the mandibular right posterior region showed a rounded edentulous ridge at the alveolar crest, with thick buccal and lingual cortical plates having numerous fine bony trabeculae. The approximate dimensions of the edentulous area of teeth 46 and 47 were 3.6 mm and 4.7 mm in bucco-lingual width, respectively. A screw-retained prosthesis was chosen for the restoration of the edentulous arch with the mandibular right first and second molars. The standard protocol for implant insertion was followed to achieve an insertion torque of 30N cm before the final seating of the implant<sup>8</sup>. After the implants integrated with the bone, abutments were used to connect prosthetic teeth that were fabricated and customized to fit in the edentulous area. Screw-retained prostheses were used, which have many advantages over other types of prostheses. They are easy to maintain, provide excellent retention, and offer stability<sup>9</sup>.

## **VI. Conclusion**

The modernization of dental equipment and the digitalization of radiographs have completely changed the treatment choices available to patients today. Patients did not have many options ten years ago when the clinician asked them whether they wanted to extract or keep the problematic teeth. Today, however, things are different because dental implants are by far one of the best alternatives to natural teeth. For elderly and challenged individuals, implants have nearly replaced regeneration and augmentation treatments.

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