



Screw Retained Implant Prosthesis: A Case Report

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ABSTRACT

Dental implant is the preferred treatment option now days. Cement retained or screw retained crowns are chosen as per the clinical situations. The main advantage of screw retained crowns is easy retrievability, retention and less chances of periimplantitis. This case report presents the placement of implant in mandibular right first molar region using screw retained crown.

Key Words: Dental Implant, Screw cement retained, Cement retained

Citations: Gaikwad R, Temburne J and Gangurde A. Screw Retained Implant Prosthesis. J Prosthodont Dent Mater 2023;4(1):.85-90.

INTRODUCTION

Patients acceptance for dental implants has been increased over the years. Due to innovations in technologies and material science, there is good prognosis in implant prosthesis.

Implant prosthesis can be retained by screw, cement or an attachment. There are various factors to be considered before selecting the mode of retention for the prosthesis. Knowledge about their mechanism and function helps the clinician to choose the right mode of retention¹

The abutment selection varies as per the implant abutment connection, material, type of retention and fabrication methods. Implant abutment interface has to be strong, passive and able to withstand screw loosening under the occlusal forces².

For the cement retained prosthesis the principles of retention depends upon taper, height of abutment, roughness, total surface area and type of cement. When clinical crown height of abutment is inadequate to

provide retention, screw retained prosthesis is preferred. Screw retained abutments are retained to implants directly via screw^{3,4}

The interocclusal space plays an important role in selection of implant abutments. A minimum 8mm interocclusal space is required for retention and aesthetic. For cement retained prosthesis at least 4mm of height of abutment is essential for retention. In case of inadequate interocclusal space and in cases having less than 4mm height of abutment, screw retained prosthesis is preferred^{1,5}

Case report

A 30-year-old male patient presented to the Department of Prosthodontics with chief complaint of missing tooth in lower right back region of jaw with history of extraction years ago. (fig,1).

Amongst the various treatment modalities explained along with their pros and cons patient opted for implant prosthesis.

Treatment Plan

Pre-operative radiograph and CBCT scan of 46 region revealed that the bone type was D2, as per the Classification given by Misch et al in 1988. Bone height- 15.8mm from crest and bone width-3.9mm at crest and 4.8 mm at 1.1 mm below the crest. Osstem dental Implant size of 3.5 x12 mm with mini head was selected.

Surgical Procedure

After intraoral mouthwash with 0.2% chlorhexidine gluconate the surgical site was anesthetized by inferior alveolar and lingual nerve block with 2% lignocaine hydrochloride with 1:80000 adrenaline. After a mid-crestal incision mucoperiosteal flap was reflected (fig .2). 1mm of crestal bone reduction was carried out to achieve desired width of 4.8mm. After the first lance drill an intra-oral radiograph was taken to evaluate parallelism with parallel pin. Sequential drilling was done till 3.2 x12 mm and osteotomy was complete (fig.3). The implant was placed. An implant fixture (Osstem TS 3.5*12) was placed with an adequate torque of 30 Ncm. Position of implant checked immediately after the placement (fig.4), and cover screw was placed (fig.5). Flap closure done with the help of silk sutures and instructions given to avoid any undue stresses on the operated site. After 3 months Osseo integration was checked with Radiograph for

confirmative trabecular formation. Second stage surgery performed to expose cover screw and healing abutment placement (fig .6).

10 days after the second stage healthy gingival tissue cuff was formed around the healing abutment. An open tray impression was made with an open tray impression coping (Osstem mini) in place (fig.7). A pattern resin jig try in (fig,8) was evaluated by IOPA radiograph for fabrication of custom-made castable Co Cr abutment. Fit of the abutment was evaluated with radiograph at metal trial and Bisque Trial (fig.9). A screw retained castable metal ceramic prosthesis was fabricated according to the selected shade. The final restoration fit was checked with IOPA radiograph and prosthesis was screwed intraorally with torque of 35 Ncm. Access hole was filled with Teflon tape to cover screw and blocked with composite resin. Implant Protective Occlusion was given to reduce lateral forces. (fig.10 a,b).



Fig.1: Pre-Operative Site



Fig.2: Incision Made



Fig.3: Osteotomy Prepared



Fig.4: Radiograph Taken After Implant Placement



Fig.5: Cover Screw



Fig.6: Healing abutment



Fig.7: Final Impression



Fig.8: Jig Trial



Fig.9: Metal Try-In



Fig.10: Final Restoration

DISCUSSION

The case report highlights the benefits of using a screw-retained implant prosthesis for the replacement of the missing 36. The patient experienced improved chewing function and reported no difficulties in eating. The screw-retained implant prosthesis provided stable fixation and eliminated any concerns of prosthesis loosening or detachment. Additionally, the aesthetic outcome of the screw-retained implant prosthesis was

satisfactory, as the screw access hole was strategically placed to minimize visibility. The conservative treatment approach chosen for this patient, was an effective solution.

The screw-retained dental implant represents a widely accepted and effective solution for the replacement of a missing tooth. It offers an aesthetically pleasing solution that closely mimics the appearance and feel of a natural tooth. The absence of visible clasps or connectors and preservation of adjacent abutment teeth, contributes to a seamless integration with the patient's dentition⁶.

With functional restoration and bone preservation being a goal, this choice also offers distinct advantages in terms of retrievability, ease of maintenance, and potential for minimal prosthetic complications. However, careful treatment planning and execution are crucial to overcome challenges associated with occlusion, soft tissue management, and implant integration⁷.

The screw-retained prosthesis ensures a reliable and stable restoration by securely fastening the prosthesis to the implant fixture. The choice of screw retention offers the advantage of simplicity in maintenance and ease of repair if necessary. Moreover, it allows for retrievability, facilitating future adjustments and addressing potential complications⁸.

Achieving optimal aesthetics is a key consideration in prosthodontic interventions. The screw-retained design, when executed with precision, can offer natural-looking results, enhancing the patient's satisfaction with the restoration. This is particularly relevant in the mandibular region, where aesthetics play a critical role in the patient's perception of the final outcome⁹.

Proper occlusion is crucial for the long-term success of any dental prosthesis. The occlusal scheme for a single screw-retained prosthesis requires careful planning to distribute forces evenly across the restoration and underlying implant. Addressing occlusal factors such as load distribution and centric occlusion is crucial to prevent complications such as screw loosening or prosthesis fracture¹⁰

CONCLUSION

The utilization of a single screw-retained prosthesis for the replacement of a missing tooth involves a multifaceted approach. While offering distinct advantages, careful consideration of occlusal factors, soft tissue management, and patient-specific variables is paramount.

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