

# Flapless Implant Placement Using the Pinhole Surgical Technique in a Geriatric Patient with Periodontitis Case Report

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## Abstract

**Background:** Implant prosthetic planning enhances diagnostic accuracy and guides treatment strategies for precise surgical execution. Minimally invasive approaches such as flap-less implant placement are particularly beneficial in elderly patients, reducing surgical trauma and improving recovery.

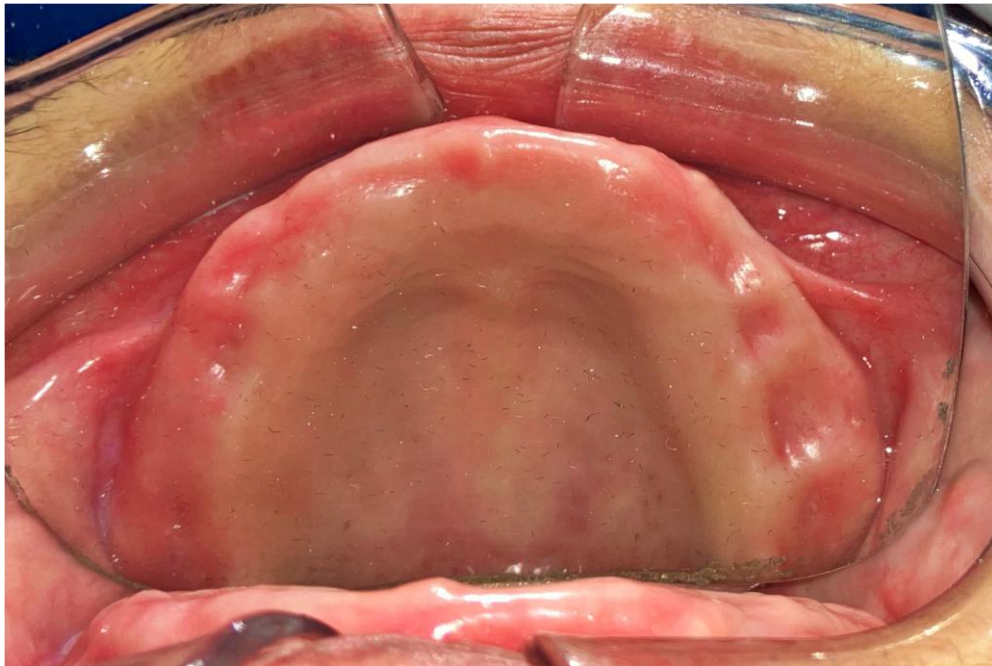
**Case Presentation:** A 78-year-old female patient with a history of chronic periodontitis presented with missing mandibular teeth requiring rehabilitation. Comprehensive prosthetic planning and cone-beam computed tomography (CBCT) were used to evaluate bone quality and guide surgical execution. A flap-less implant placement was performed using the pinhole surgical technique, minimising tissue manipulation. Healing was uneventful, and the patient reported minimal discomfort. At **6-month** and **1-year follow-up**, clinical and radiographic evaluations confirmed stable osseointegration and healthy peri-implant tissues.

**Conclusion:** This case highlights the importance of advanced prosthetic planning and minimally invasive surgical techniques in geriatric patients with compromised periodontal health. The pinhole approach facilitated precise implant placement, reduced morbidity, and demonstrated predictable long-term outcomes.

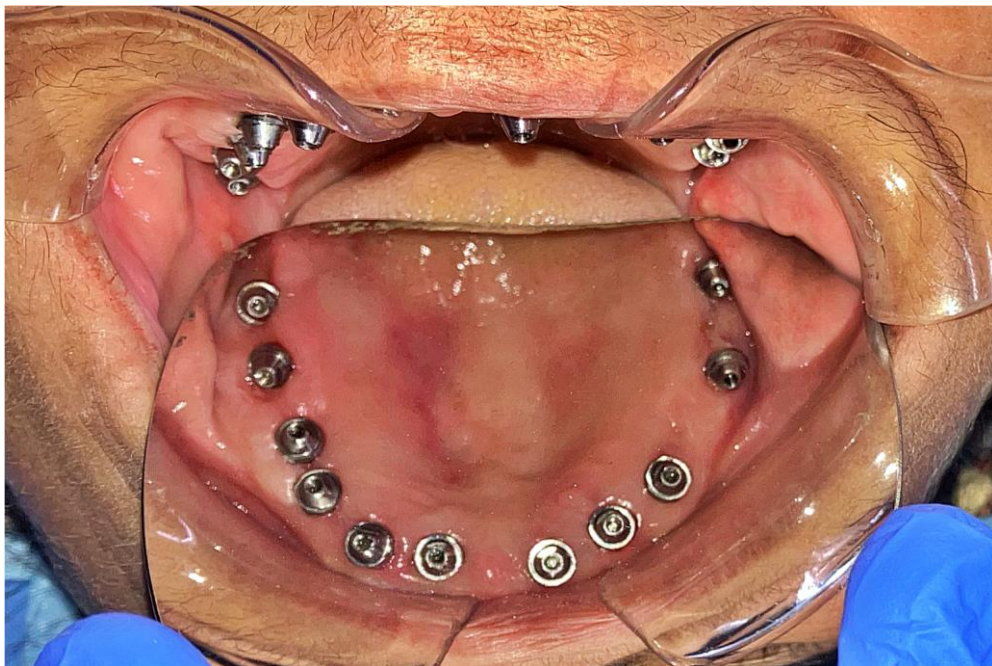
**Keywords:** Dental implant, flap-less surgery, pinhole technique, prosthetic planning, geriatric dentistry

## Introduction

Dental implant therapy is widely recognised as the gold standard for tooth replacement. In elderly patients with a history of periodontal disease, minimally invasive techniques are particularly valuable to reduce surgical trauma and enhance recovery. Flap-less implant placement using the pinhole surgical technique is a novel approach that allows precise implant positioning with minimal disruption of soft tissues (1,2). This case report presents the management of a 78-year-old female patient, emphasising the role of prosthetic planning and structured long-term follow-up in achieving successful outcomes.



### Case Presentation



**Figure 1**

### Patient Information:

- Age: 78 years
- Gender: Female
- Medical History: Medically stable
- Dental History: Chronic periodontitis with multiple tooth loss

### Preoperative Assessment

- **Clinical evaluation:** Full periodontal charting, probing depths, mobility assessment.
- **Radiographic evaluation:** CBCT to assess bone density, ridge morphology, and proximity to vital structures.
- **Blood work:** CBC, fasting blood sugar, HbA1c (if diabetic).
- **Oral hygiene phase:** Scaling and root planing performed 2 weeks prior to surgery.

### Materials

- **Implant system:** bees m.u. Simpladent (r) corticobasal implant system
- **Surgical instruments:**
  - Pinhole surgical kit (specialised micro-instruments: periosteal elevators, tunnelling tools).
  - Pilot drill and 2 mm osteotomy drill.
- **Grafting material (if needed):** no graft material was used neither for soft tissue nor for hard tissue grafting
- **Sutures:** Not required (flap-less approach).
- **Adjuncts:** Chlorhexidine mouth rinse, local anaesthesia (2% lidocaine with epinephrine).

### Surgical Technique

- **Step 1: Anaesthesia** – Local infiltration at surgical site.
- **Step 2: Pinhole Access** – A small pinhole incision (1.5–2 mm) made in the gingiva using a specialised punch.
- **Step 3: Osteotomy Preparation** – pilot drill was used to create the path, 2 mm twist drill short (21 mm) and long(25 mm) to perforate the second cortex
- **Step 4: Implant Placement** – Titanium implant inserted into prepared osteotomy site without raising a flap.
- **Step 5: Postoperative Care** – No sutures required; patient instructed on chlorhexidine rinses, soft diet, and analgesics.

### Postoperative Protocol

- **Medications:** Amoxicillin with Clavulinic acid 625 mg was given twice a day for 5 days. Analgesics (NSAIDs), Chlorhexidine rinse twice daily for 2 weeks.
- **Follow-up:** after 3 months 6 months and 1 year was done with radiographic evaluation.
- **Evaluation:** Implant stability (ISQ values), peri-implant probing, radiographic bone levels.
- **Prosthetic phase:** prosthesis was screwed in with 15 to 20 N.c.m torque within 72 hours with sfk m.u. screws of Simpladent (r) company.

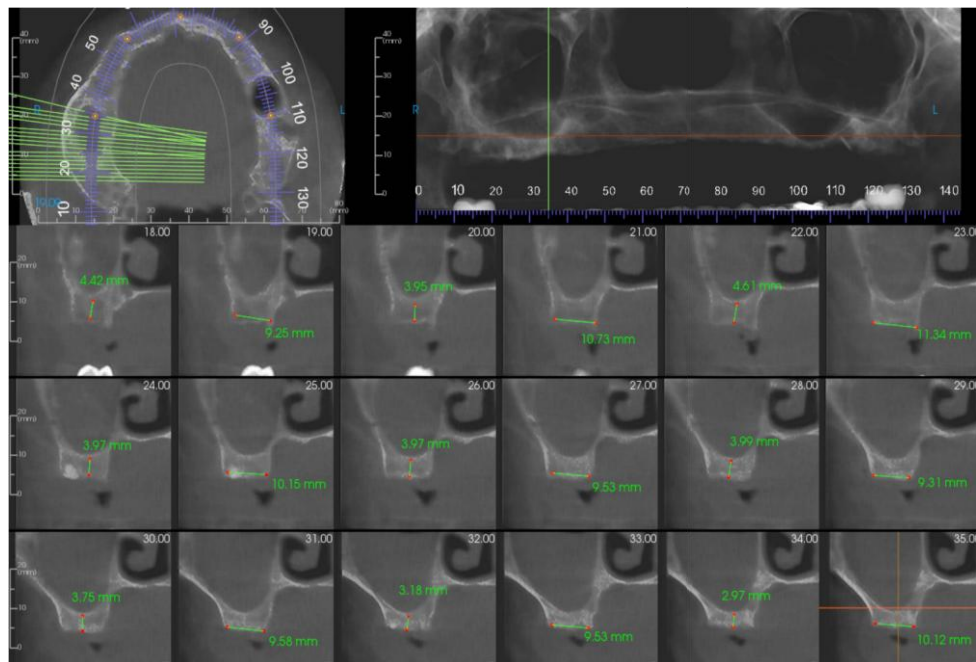
### Clinical Findings:

- Missing maxillary teeth and mandibular molars
- Adequate keratinised gingiva
- Reduced alveolar bone height due to periodontal disease



**Diagnostic Assessment**

- CBCT imaging revealed sufficient bone width and density for implant placement (3)
- Digital prosthetic planning determined optimal implant position and angulation.



**Figure 3**

**Therapeutic Intervention**

- Local anaesthesia administered
- Pinhole surgical technique employed to create a small entry point without raising a flap (4,5)
- Immediate postoperative radiographs confirmed correct positioning

### Follow-up and Outcomes

- Healing was uneventful with minimal swelling and discomfort
- At **6-month follow-up**, clinical and radiographic evaluation confirmed satisfactory
- At **1-year follow-up**, the implant remained functional with no signs of peri implantitis, bone loss, or prosthetic complications (6)
- Patient reported high satisfaction with comfort, aesthetics, and chewing efficiency

### Discussion

This case demonstrates the effectiveness of flap-less implant placement using the pinhole technique in an elderly patient with periodontal compromise. Compared to conventional flap surgery, this approach reduces surgical trauma, preserves vascular supply, and accelerates healing (2,4). Prosthetic planning with CBCT was critical in ensuring accurate implant positioning (3). Long-term follow-up confirmed the stability of peri-implant tissues and highlighted the importance of structured monitoring in geriatric patients (6). Literature supports minimally invasive techniques as they improve patient compliance, reduce complications, and enhance long-term implant survival (1,5).

### Conclusion

Flap-less implant placement using the pinhole surgical technique, combined with thorough prosthetic planning and structured follow-up, offers a predictable and patient-friendly approach for implant rehabilitation in elderly individuals with periodontal disease.

### Declarations

- **Ethics approval and consent to participate:** Patient consent taken for a single case report.
- **Consent for publication:** Written informed consent was obtained from the patient.
- **Availability of data and materials:** Available from the clinic database.
- **Competing interests:** The authors declare no competing interests.
- **Funding:** No external funding was received.

### Authors' contributions: ◦ **Dr. Dhaval V Shah (MDS, PG Diploma in Implantology, Jaipur, India):**

Performed the clinical treatment, supervised prosthetic planning, and prepared the manuscript.

◦ **Dr. Riddhi D Shah:** Co-owner of RS Oral Care, contributed to patient management, prosthetic planning, and manuscript review.

◦ **Dr. Amruta R Sheth:** Assisted in clinical documentation, literature review, and editing of the manuscript.

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**Dr. Dhaval Shah** has owned and managed **RS Oral Care, India** for nearly 10 years together with his wife, **Dr. Riddhi Shah**. Their clinic specialises in dental implants and comprehensive oral care treatments. Dr. Shah also conducts professional training programs and online courses to help fellow

dentists gain experience in Implantology and advanced dental procedures. He holds a **Master of Dental Surgery (MDS)** and a **Postgraduate Diploma in Implantology** from Jaipur, India.

He is one of the reputed IF TEACER in India ,conducting courses at various national and international places spreading the science of immediate functional loading Implantology.

**Dr. Riddhi Shah** is the co-owner of RS Oral Care and has been actively involved in clinical practice for nearly a decade. She specialises in implant dentistry and restorative treatments, with a strong focus on patient-centered care. Dr. Riddhi contributes to prosthetic planning and clinical execution, and plays a key role in mentoring and supporting continuing education initiatives at the clinic.

**Dr. Amruta Sheth** collaborates with RS Oral Care on clinical research and academic writing. She has contributed to case documentation, literature review, and manuscript preparation, supporting the dissemination of advanced Implantology techniques to the wider dental community.

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