

## A NOVEL APPROACH TO SURGICAL OBTURATOR RETENTION : TRANS-ACRYLIC MINISCREW FIXATION - A TECHNICAL NOTE

### Oral & Maxillofacial Surgery

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### ABSTRACT

Maxillectomy results in an oroantral or oronasal communication that significantly compromises speech, swallowing, and overall quality of life. Immediate obturator placement is essential; however, maintaining adequate stability of a temporary obturator remains challenging in extensive defects. This technical note describes a simple and reliable method for intraoperative stabilization of a temporary obturator using trans-acrylic fixation with a titanium miniscrew following maxillectomy for chronic osteomyelitis. The described technique provides immediate prosthetic stability, reduces intraoperative time, facilitates early oral function, and allows easy removal during definitive rehabilitation.

### KEYWORDS

Maxillectomy, Temporary Obturator, Miniscrew Fixation, Chronic Osteomyelitis, Trans-acrylic Fixation

### INTRODUCTION

Maxillectomy performed for invasive infections such as mucormycosis and osteomyelitis frequently results in large maxillary defects with loss of palatal continuity. Immediate prosthetic obturation is crucial to restore oral-nasal separation, improve speech intelligibility, prevent nasal regurgitation, and support facial soft tissues. Significant improvement in quality of life (QoL) is achieved after prosthetic rehabilitation, as it restores the partition between the nasal and oral cavities and improves mastication, swallowing, speech, dental aesthetics, and facial support<sup>[1]</sup>.

Conventional methods of obturator stabilization—including wiring, suturing, or reliance on residual dentition—may be inadequate in extensive resections or edentulous patients. This technical note presents a straightforward method of securing a temporary obturator using trans-acrylic fixation with a titanium miniscrew, offering enhanced intraoperative stability and ease of postoperative management.

### Case Description

A 55-year-old female patient presented with a provisional diagnosis of chronic osteomyelitis of the right maxilla. Surgical debridement in the form of maxillectomy was planned to achieve disease clearance and prevent further spread.

### Surgical Technique

#### Surgical Access and Resection

Under general anesthesia, a Weber–Ferguson incision was employed to gain adequate exposure. Osteotomy cuts were made:

- Through the midline of the palate
- Lateral to the nasal aperture
- Approximately 1 cm inferior to the infraorbital rim
- Extending posteriorly to the body of the zygoma

The involved right maxilla, along with the contents of the right maxillary sinus, was resected en bloc, ensuring complete removal of diseased tissue.

### Temporary Obturator Fabrication

Following resection, an impression compound material was molded and adapted into the surgical defect, and a temporary obturator was fabricated and placed. The obturator was refined to achieve intimate adaptation to the defect margins. It also serves as a matrix for the surgical dressing and provides psychological support to the patient<sup>[2]</sup>.

### Trans-Acrylic Miniplate Fixation

To stabilize the temporary obturator, a 2.0 mm titanium miniscrew about the length of 12mm was used. The miniscrew was inserted through the acrylic obturator into the adjacent residual maxillary bone, thereby securing the prosthesis firmly in position. Adequate stability was confirmed manually before wound closure.

### Closure

The surgical site was irrigated, hemostasis was achieved, and soft tissues were closed in layers. The obturator remained stable both intraoperatively and postoperatively.

### Postoperative Outcome

The temporary obturator demonstrated satisfactory stability immediately following surgery. The patient was able to maintain oral-nasal separation, facilitating early oral intake and improving speech. No immediate complications related to the fixation technique were observed.

### Advantages of the Technique

- Provides immediate and reliable obturator stability
- Eliminates the need for wiring or suturing
- Utilizes readily available miniscrew systems
- Simple, quick, and cost-effective, reduces intra-operative time.
- Allows easy removal during definitive prosthetic rehabilitation
- Offers advantages over material-based and clasp-based fixation techniques by being more stable and surgeon-friendly<sup>[3]</sup>

### Limitations

- Requires adequate residual bone for miniscrew placement
- Not suitable in severely compromised or irradiated bone
- Possibility of screw loosening (rare)

### CONCLUSION

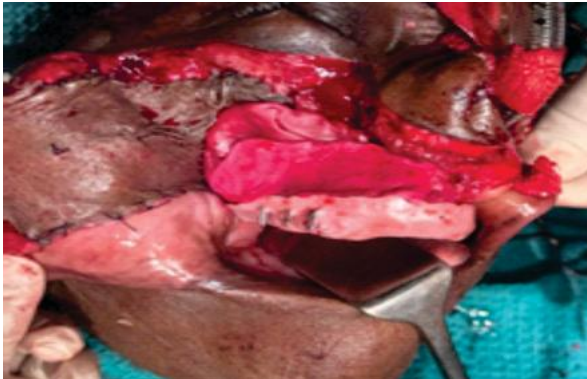
Ideally, patients should undergo surgical reconstruction. However, this may not be appropriate for all patients, such as those with significant medical comorbidities or those lacking suitable donor sites, wherein the provision of an obturator becomes essential<sup>[4]</sup>. Trans-acrylic fixation of a temporary obturator using a titanium miniscrew is a simple and effective technique following maxillectomy. This method ensures immediate prosthetic stability, reduces intraoperative time, enhances postoperative function, and can be easily adopted in routine maxillofacial surgical practice.



FIG 1-Marking for right maxillary osteotomy



**FIG 2-Osteotomy cut made in right maxilla**



**FIG 3- Impression compound moulded & packed in right maxilla**



**FIG 4–Transacrylic fixation of obturator with miniscrew**

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