

# Lingual Based Four Cornered Flap for Third Molar Surgery

Anshul Rai<sup>1</sup> · Monika Rai<sup>2</sup>

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## Abstract

**Purpose** The aim of this prospective randomized clinical study was to compare the efficacy of lingual based four cornered flap with the commonly used triangular flap for impacted third molar surgery.

**Methods** Ten patients with bilateral impacted third molars were randomly treated under local anaesthesia, one side with triangular flap and single layer closure (with 3–0 silk) and other side by raising lingual based four cornered flap and double layer closure, subcutaneously with 5–0 vicryl and mucosa with 3–0 silk. All patients were operated by single surgeon (A. Rai) and suture removal was done after 7 days.

**Results** Healing by primary intension takes place when lingual flap and double layer suturing was done, also the patients had less pain, swelling and alveolar osteitis. The visibility was excellent with lingual flap and pocket formation distal to second molar was also less. The only drawback with lingual flap is that it required little less time in comparison to triangular flap.

**Conclusion** The lingual based four cornered flap is better than the triangular flap.

**Keywords** Impacted third molar surgery · Lingual based flap · Rai Modification · Double layer suturing

## Introduction

Various buccal flaps (triangular, envelope, szmyd, bayonet etc.) have been documented in the literature for performing impacted third molar (I3M) surgery [1, 2].

All these flaps when sutured back post-operatively lies on the surgical bony defect which leads to dehiscence, delayed healing by secondary intension, sometimes alveolar osteitis and pain [3]. To avoid all these complications we recommend lingually based four cornered flap (Fig. 1).

## Indications

1. Complete bony impactions
2. Buccoversion impacted 3Ms

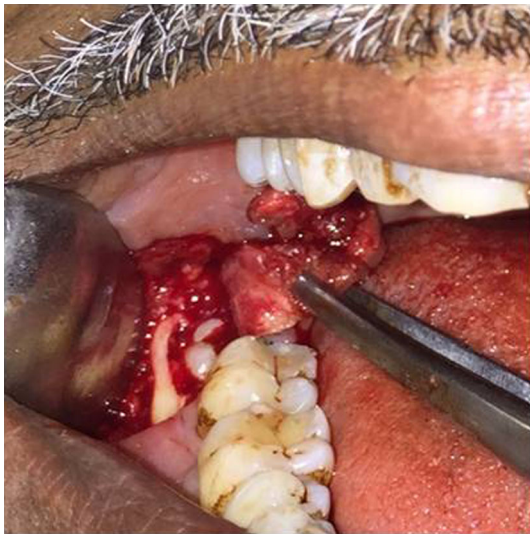


**Fig. 1** Marking of lingually based four cornered flap (RAI Modification)

✉ Anshul Rai  
anshulrai007@yahoo.co.in

<sup>1</sup> Department of Trauma and Emergency Medicine, AIIMS, Bhopal, MP, India

<sup>2</sup> Bhopal, MP, India



**Fig. 2** Flap reflection and exposure of impacted third molar

3. Lingually impacted third molars
4. Inverted impacted 3Ms
5. Partially erupted horizontally impacted 3Ms

### Incision and Flap Design

An incision starts from adjacent to the distal surface of mandibular second molar extended posteriorly towards the anterior border of mandibular ramus then turned downwards up to 3–3.5 cm then extended anteriorly up to 1.5–2 cm (which makes second and third corner of the flap) and turned upwards to the disto-buccal surface of the second molar and a full thickness mucoperiosteal flap reflected to expose the I3M (Fig. 2).

The base of the flap lies 4–5 cm anterior to the lingual cortical plate and the apex at the buccal vestibule. The base and apex have two corners each, which makes the flap a four cornered flap. Anteriorly the flap margin should not cross the disto buccal cusp of the second molar and posteriorly the anterior border of the ramus of the mandible is the limit of the flap, however it can be extended superiorly if required. The perforators from the sublingual artery supply the flap.

After ethical approval and prior informed consent, ten patients with bilateral I3M were treated one side with triangular flap and single layer closure (with 3-0 silk) where as on contralateral side with linguallly based four cornered flap and double layer closure, subcutaneously with 5-0 vicryl and mucosa with 3-0 silk. All patients were operated by single surgeon and suture removal was done after 7 days. The double layer closure results after periosteum to periosteum (by vicryl) and mucosa to mucosa (by silk) closure of the elevated full thickness mucoperiosteal flap.

**Table 1** Comparison between Buccal and the Lingual based flap

Parameters	Triangular (buccal) flap	Four cornered (lingual) flap
1. Healing	Secondary intension	Primary intension
2. Flap suturing	Single layer	Double layer
3. Time taken	Less	More
4. Pain and swelling	More	Less
5. Alveolar osteitis	Minimal	Nil
6. Chances of pocket distal to third molar	More	Less
7. Visibility	Fair	Excellent

Two sutures are sufficient enough to approximate the periosteum.

The lingual based four cornered flap is better than the triangular flap as patients had less pain, swelling and alveolar osteitis. Primary healing occurred in lingual based flap while most of the times triangular flap site healed by secondary intension. Injury to the lingual nerve becomes minimal (Table 1).

Double layer closure and lingual based flap takes few minutes extra time but helps in excellent flap healing without wound dehiscence and also decreases the chances of post operative infection. Also provides good periodontal healing distal to second mandibular molar. Korkmaz et al. [4] also advocated that good flap design provides good periodontal and surgical site results.

Yolcu and Acar [5] concluded no significant difference between the linguallly and buccally based triangular flap regarding postoperative complications after I3M surgery but with the use of linguallly based four cornered flap and double layer closure, all the post operative complications can be minimised.

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