Simplified Model Surgery Technique for Segmental Maxillary Surgeries

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ABSTRACT

Model surgery is the dental cast version of cephalometric prediction of surgical results. Patients having vertical maxillary excess with prognathism invariably require LeFort I osteotomy with maxillary segmentation and maxillary first premolar extractions during surgery. Traditionally, model surgeries in these cases have been done by sawing the model through the first premolar interproximal area and removing that segment. This clinical innovation employed the use of X-ray film strips as separators in maxillary first premolar interproximal area. The method advocated is a time-saving procedure where no special clinical or laboratory tools, such as plaster saw (with accompanying plaster dust), were required and reusable separators were made from old and discarded X-ray films.

Keywords: LeFort I osteotomy, X-ray film strips, Separators.


INTRODUCTION

Model surgery is the dental cast version of cephalometric prediction of surgical results. Typically, model surgery is done just prior to the actual surgery, after orthodontic preparation have been completed, so there is no need to reposition the teeth on the casts, but a simulation of final occlusion can be seen prior to any treatment if diagnostic has been done.1

Patients depicting vertical maxillary excess with prognathism invariably require LeFort I osteotomy with maxillary segmentation and maxillary first premolar extractions during surgery. Traditionally, model surgeries in these cases have been done by sawing the model through the first premolar interproximal area and removing that segment. The premaxillary segment is then repositioned as desired and sealed in place with sticky wax for surgical splint fabrication. This is a technique-sensitive and time-consuming procedure.

The devised method simplifies this technique by using X-ray film strips as separators in maxillary first premolar interproximal area.

PROCEDURES

1. Alginate impressions with maximum sulcular depth were made (Fig. 1).

Fig. 1: Alginate impressions with maximum sulcular depth

Fig. 2: X-ray film in first premolar interproximal area

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Received on: 12/10/11
Accepted after Revision: 27/10/11
2. Maxillary first premolar interproximal area was carved with zknife and X-ray film separators were inserted till the cervical margin using Howe pliers. This divides the impression area into anterior, middle and posterior components (Fig. 2).

3. Dental stone was poured in the anterior and posterior components. Inserting film separators till the cervical margins allowed the stone to flow from the anterior and posterior components to the middle one making it a single unit. Dental plaster was later poured in the middle component. The model was retrieved after setting (Fig. 3).

4. Modelling wax was added on the premaxillary segment to facilitate its easy movement in desired directions and base was formed (Figs 4A and B).

5. As the LeFort I osteotomy with superior repositioning was also planned, a modelling wax layer was added on the maxillary base to facilitate easy removal from articulated models (Figs 5A and B).
6. Maxillary models were articulated on semiadjustable articulator after face bow transfer (Fig. 6)
7. LeFort I model surgery was performed on the articulated models. X-ray films were removed along with model segment containing first premolars (Figs 7A to C).
8. Premaxillary segment was moved in the desired position and sealed using sticky wax and surgical splint was fabricated (Figs 8A and B).

**DISCUSSION**

Using X-ray films as separators was advocated by various authors\(^2\)-\(^4\) in diagnostic wax set-up technique but any such technique was not devised for model surgeries.

This technique has been devised to simplify the model surgery, especially for segmental maxillary surgeries, thus eliminating unwieldy sawing of dental models.

**Advantages**

- No special clinical or laboratory tools, such as plaster saw (with accompanying plaster dust), were required.
- Reusable separators were made from old and discarded X-ray films.
- Time-saving procedure.

**REFERENCES**