To Compare Standard Incision and Comma Shaped Incision and Its Influence on Post–Operative Complications in Surgical Removal of Impacted Third Molars

ABSTRACT

Objectives: To compare standard incision and comma shaped incision and its influence on post operative complications in surgical removal of impacted third molar.

Methods: This was a cross–over trial. Twenty subjects with bilateral impacted mandibular third molars were recruited for the study. A standard incision was made on one side of the lower jaw and a comma incision was made on the other side to reflect the mucoperiosteal flap, after which the common steps for removal of impacted third molars were followed. The post–operative parameters were recorded immediately on the post–operative days 1, 3 and 7 respectively.

Results: The pain scores which were recorded on days 1, 3 and 7 in the surgical area with comma incisions were found to be significantly lower as compared to the pain scores in the area where standard incisions were made. Similarly, swelling was lesser with comma incisions than with standard incisions. There was a significant difference in mouth opening between the two incisions on day 1, but no significance was seen on days 3 and 7. All these findings showed significant statistical differences.

Conclusion: The results of the study showed that the new incision design was preferable over the conventional method, considering the lesser degree of post–operative complications. The cross–over design of the study greatly enhanced its statistical power and validity.

Key words: Comma incision, Flap designs, Standard incisions, Impaction

INTRODUCTION

Third molars are present in 90% of the population with 33% having at least one impacted third molar. Thus, surgical removal of impacted third molar is the most frequently performed procedure [1]. Impacted lower third molar extraction produces a series of side effects, which include pain, inflammation, and trismus [2]. Flap design is one important factor which influences the severity of these complications [3]. Flap design is important, not only for allowing optimal visibility and access to the impacted tooth, but also for subsequent healing of the surgically created defect. With so many objectives, the actual design of a flap sometimes becomes a compromise between peri- and post–operative considerations [4].

The aim of this study was to compare two different flap designs in extraction of impacted mandibular third molars, by assessing their post–operative complications. In this study, pain, swelling, mouth opening and pocket depth were selected as parameters for comparing the two flap designs.

MATERIAL AND METHODS

This study was a hospital based, experimental study with a “cross–over” design, which was done on thirty patients. Patients with bilateral, completely impacted, mandibular third molars or partially erupted third molars, without any symptoms of pain or swelling, who had good oral hygiene, were included in the study. Patients who were on any medications, lady patients who were pregnant, patients with severe pericoronitis, patients with soft tissue impaction and patients who were medically compromised were excluded from study.

Thirty patients who satisfied the inclusion criteria were enrolled in the study after getting their consents. Assessment of the position, class and depth of the impacted teeth was done by using OPG. Pre–operative measurements of pain, swelling, mouth opening and pocket depth were recorded. Surgical removal of one side impacted mandibular third molar was done under local anaesthesia. Standard flap incisions were made on one side of the lower jaw in randomly chosen patients.

Post–operative measurements of pain, swelling and mouth opening were measured on days 1, 3 and 7 respectively. A wash out period of at least 10 days after the 7th day of surgery was given and the patient was recalled on the 25th day. The extraction of the impacted teeth on the opposite side of the lower jaw was done, with the alternate flap design—a comma incision. The follow up and post–operative complications of patients on days 1, 3 and 7 were recorded for the parameters which were studied. The pocket depth was measured for both sides at the end of first month and the second month. The criteria which were standardized by Dr. Nageshwar (Nageshwar 2002) were followed for measuring these parameters.
Flap Designs:

Standard Incision:

Ward’s Incision [Table/Fig-1]:
Anterior incision curves forward from the distobuccal corner of the crown of the lower second molar and it ends alongside the mesiobuccal cusp of that tooth. Incision is then extended distally level with the buccal side of the tooth to the external oblique ridge. If the anterior part of the flap is elevated from the bone, one blade of a pair of scissors may be inserted onto the surfaces of the bone and the incision may be completed by closing the blades. Posterior part of the incision must slope outwards as well as backwards, as the ascending ramus lies on the lateral side of the body of the mandible.

Modified Ward’s Incision [Table/Fig-2]:
Anterior incision curves forward from the distobuccal corner of the crown of the lower first molar and it ends alongside the mesiobuccal cusp of that tooth. A vertical or crevicular incision should be made through the buccal gingival crevice of the second molar. Incision is then extended distally level with the buccal side of the tooth to the external oblique ridge. If the anterior part of the flap is elevated from the bone, one blade of a pair of scissors may be inserted onto the surfaces of the bone and the incision may be completed by closing the blades. Posterior part of the incision must slope outwards as well as backwards, as the ascending ramus lies on the lateral side of the body of the mandible [Table/Fig-3].

Comma Incision [Table/Fig-4]
Starting from a point which is at the depth of stretched vestibular reflection which is posterior to the distal aspect of the preceding second molar, the incision is made in an anterior direction. Incision is made to a point below the second molar, from where it is smoothly curved up to meet the gingival crest at the distobuccal line angle of the second molar. The incision is continued as a crevicular incision around the distal aspect of the second molar (a distolingually based flap) [Table/Fig-5]. After reflection of the flap, common steps for removal of impacted third mandibular molars are followed, that is retraction of the buccal mucosa (Austin’s retractor) and lingual mucosa. The lingual nerve is protected along with the lingual mucoperiosteum by Rugieme end of Howarths elevator and it is held by chain of Meckessons mouth prop. After exposing the bone around the tooth by using a straight Shank surgical 703 bur, punch holes are made around the tooth and bone is guttered by the bur, with adequate saline irrigation.

DATA MANAGEMENT AND ANALYSIS
The sample size in this study was 27 and after considering drop outs, 30 patients with bilateral impaction were included in the study, but ten patients were lost to follow up after they underwent extractions on one side. Statistical analyses were done by using the data which was collected from twenty patients only. Wilcoxon Signed Ranks was used to compare the post–operative complications, pain, swelling and mouth opening between the standard and comma incisions.

Paired ‘t’–test was used to compare the mean pockets depth between the standard and comma incisions.

Kruskal–Wallis test was used to analyze the post–operative complications in standard and comma incisions over time.
RESULTS

In extractions which were done by making standard incisions, 45% of subjects were found to have severe pain on day 1, whereas only 15% of subjects had severe pain in the extractions which were done by using comma incisions. It was found that there was a highly statistically significant difference between the two types of incisions on day 1 on comparing the pain. ($Z=-3.46, p=0.001$).

Similarly, the pain was severe for 5% of the patients who had undergone extractions with standard incisions and it was only 20% in patients on the 3rd day in whom extractions were done by making comma incisions. ($Z=-3.45, p=0.001$).

It was found that there was no statistically significant difference between the two types of incisions on day 1 on comparing the swelling. ($Z=-0.632, p=0.527$). The swelling was severe for 20% of the patients who had undergone extractions with standard incisions and it was only 5% in patients on the 3rd day in whom extractions were done by using comma incisions. ($Z=-2.24, p=0.025$).

The mouth opening on day 1 on standard incision side of between 29 – 25 mm was 35%, whereas only 10% of the patients interincisal distance measurement lied between this value in comma incision side. It was found that there was a highly statistically significant difference between the two incisions on comparing the mouth opening. ($Z=-1.99, p=0.046$).
opening on day 1 (Z = -3.87, p value = 0.00). But though there was a clinical difference between the two incisions on days 3 and 7, there was no statistical significance [Table/Fig- 8].

There was no statistical difference between standard incisions and comma incisions in relation to pocket depth which was measured at the end of first month and the second month. However, on comparing standard incisions and comma incisions separately over time, it was found that there was a statistical significance between the pocket depth in first month and the second month (Standard incision – t = 12.78, p value = 0.001, comma incision – t =11.54, p value = 0.00) [Table/Fig- 9].

**DISCUSSION**

The incisions which are used to expose impacted third molars can be broadly classified into triangular and envelope types. Regardless of variations in the anterior end of the incisions, all incisions extend posteriorly from the distal aspect of the preceding second molar, towards the ascending ramus. The standard incisions have been modified by several surgeons. The comma shaped incision was designed by Nageshwar and it proved to be superior to the standard incision.
their own controls in crossover trials. Variations which are caused by individual differences or fluctuations in disease activity can thus be eliminated or minimized. The results which were obtained were statistically significant and it was considered that sufficient information was obtained from the study. This cross-over design greatly enhanced the statistical power and validity of the study.

CONCLUSION
The results of this study showed that the new incision design was preferable over the conventional method, considering the lesser degree of post-operative complications.

REFERENCES

Author(s):
1. Dr Saravana Kumar B
2. Dr Sarumathi T
3. Dr Veerabahu M
4. Dr Uma Raman

Particulars of Contributors:
1. Reader, Department of Oral Maxillofacial Surgery, Sree Balaji Dental College and Hospital, Bharath University, Pallikaranai, Chennai, India.
2. M.Sc Epidemiology, Reader, Department of Oral Medicine & Radiology, Sree Balaji Dental College & Hospital, Bharath University, Pallikaranai, Chennai, India.
3. Professor HOD, Department of Oral Maxillofacial Surgery, Ragas Dental College & Hospital, India.
4. Professor & HOD, Department of Oral Maxillofacial Surgery, Sree Mogambika Institute of Dental Sciences, India.

Name, Address, E-Mail Id of The Corresponding Author:
Dr Saravana Kumar,
Reader, Department of Oral Maxillofacial Surgery, Sree Balaji Dental College and Hospital, Bharath University, 68/30 Thiruvaluvur Street, Ethiraj Nagar, West mambalam, Chennai - 600033, Tamilnadu, India.
Phone: +91 9444385847
E-mail: drsaranomfs@gmail.com

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