

Comparison between Comma Incision and Standard Incision in Impacted Mandibular Third Molar Surgeries

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Abstract: The goal of this study was to find out the comparison between two incisions that is standard incision and comma incision and its influence on post-operative complications in surgical removal of impacted third molar. This comparative study consisted of forty patients which were divided in two groups of twenty each. The study group included 40 patients aged between 20-35 years with fully impacted mandibular third molars.

Keywords: Impacted mandibular third molar, comma incision, standard incision

1. Introduction

The mandibular third molar continues to generate more controversy concerning eruption pattern and pathologic sequelae than any other tooth in the oral cavity. Despite racial variation in eruption sequence and time, it is universally accepted that third molars are the last teeth to erupt.

Mandibular third molars are found in 80% of the general population, with 25% of the people having at least one impacted molar. The high prevalence of impaction is attributed to both genetic and environmental factors. Several reasons have been suggested for mandibular third molar surgeries. The causes generally include caries and their outcomes, germination disorders, periodontal problems, dentist's diagnosis such as orthodontic problems, cases with less infection potential like trauma, patient's will and loss of the root. In spite of meticulously planned and executed surgical procedures, complications like swelling, pain and trismus are inevitable and make it frustrating and annoying to both patient and the surgeon.

Extraction of impacted mandibular third molar often involves the incision of mucosa and bone removal. Along with above mentioned post-operative complications; there is increased risk of post-operative periodontal side effects. Therefore, formation of periodontal pockets, loss of clinical attachment, and loss of second molar bone are also possible complications. As a result, the surgical procedure, especially the incision type used in the surgery of impacted teeth, seems to be essential. Although the result reported by some investigators indicate no noticeable relation between the type of the flap and post-operative periodontal health, different results have been reported in the short and long term studies.

The incision of mucosa, reflection of mucosal flap and the duration of surgery have been shown to affect the intensity and frequency of post-operative complications in 3rd molar surgery. As these are the main variables related to post-operative complications in 3rd molar surgery. Different flap designs have been developed and advocated for surgical removal of impacted 3rd molar so as to minimize the post-

operative complications. The goal of our study is comparison of comma incision with standard wards incisions.

2. Methodology

The present study was conducted among the patients attending the outpatient department of oral and maxillofacial surgery. The study group included 40 patients aged between 20-35 years with fully impacted mandibular third molars.

Inclusion Criteria	Exclusion Criteria
1) Both sexes of age group 20-35 years	1) Patients with history of any bleeding disorders
2) Fully impacted mandibular third molars	2) Patients with possible compromised immune system
3) ASA-I patients	3) Pregnant patients

All patients were informed regarding the purpose of the study and effects of the drugs used. After obtaining written consent for participation and completion of pre-operative investigations, the patients were taken up for surgery under local anaesthesia.

Ethical committee clearance was obtained for the same. All patients were informed about purpose of study and a written consent and ethical committee clearance was obtained for the same. 40 patients who fulfilled the above criteria were selected for the study. The study groups were categorized into comma incision (group I) and standard incision (group II). Orthopantomograph was taken for all cases. Impactions were classified based on WINTER'S classification of impaction.

Armamentarium

Betadiene 10%, Normal saline, Suction tip, Syringe – 10ml, 5ml, 2ml Plastic cheek retractor, Local anesthesia – 2% lidocaine with 1:2,00,000 adrenaline, Bp handle no. 3, Bp blade no. 15, Dial's Periosteal elevator, Howarth's elevator, Kay Austin's retractor Tongue depressor, Malleable retractor, Straight hand piece, Bur – round, straight, Elevators, third molar forcep, Allis tissue holding forcep, Needle holder, Suture – mersilk 3.0 etc.



Figure 1: Armamentarium

Surgical Procedure

The patients enrolled in the study were prepared using standard aseptic conditions. Povidone Iodine was used for surgical scrub. After preparing the patient, inferior alveolar nerve block, lingual nerve block and long buccal nerve block were given using 2% lignocaine Hydrochloride (with 1:200000 epinephrine bitartrate) as local anaesthesia. The impacted third molar was removed either using a comma incision or standard incision.

The mesioangular mandibular third molars were each randomly assigned to 1 of the 2 surgical techniques.

First technique comma incision Group I - The reflection of the buccal vestibule below the preceding second molar is stretched down as far as possible with the index finger or thumb of the hand without twirling the scalpel as shown in figure 2,3



Figure 2



Figure 3

Starting from a point at the depth of this outstretched vestibular reflection posterior to the distal aspect of the preceding second molar, the incision is made in an anterior direction. The incision is made to a point below the second molar, from where it is freely curved up to meet the gingival

crest at the distobuccal line angle of the second molar as shown in figure 4



Figure 4

The incision is continued as a crevicular incision about the distal aspect of the second molar. This comma-shaped incision entitles the reflection of a distolingually based flap adequately exposing the entire third molar area. In cases in which part of the impacted tooth is seen in the mouth, a small modification is made. After the aforementioned incision is completed, a second incision is made from the distobuccal point on the exposed portion of the third molar to join the first incision approximately midway down as shown in figure 5, 6



Figure 5



Figure 6

This allows excision of a triangular gingival flap. Bone was removed with a rotary bur under constant irrigation of normal saline to reduce the heat generated and to remove debris as shown in figure 7. Adequate bone was removed so as to create a space into which the impacted tooth could be removed by elevation.



Figure 7



Figure 8

Tooth sectioning was done whenever necessitate by means of a straight bur. The tooth was taken out as shown in figure 8. Tooth follicle or granulation tissue was then removed by means of a curette. After the surgical procedure is completed, the distolingually based flap is stretched and secured with 1 or occasionally 2 sutures.

Second technique standard incision Group II - Anterior incision curves forward from the distobuccal corner of the crown of the lower second molar and ends alongside the mesiobuccal cusp of that tooth as shown in figure 9



Figure 9



Figure 10

Incision is then extended distally level with 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 incision completed by closing the blades. Posterior part of the incision must slope outwards as well as backwards, for the ascending ramus lies to the lateral side of the body of the mandible as shown in figure 10. A mucoperiosteal flap was reflected and the underlying bone was exposed satisfactorily as shown in figure 11



Figure 11



Figure 12



Figure 13

Tooth sectioning was performed using the same method as for the first technique as shown in figure 12, 13, 14. The flap was approximated and sutured same as in first technique.



Figure 14

Medication Prescription

Cap. Amoxicillin 500 mg/TID X 5 days, Tab. Metrogyl 400 mg/TID X 5 days, Tab Diclofenac sodium 50 mg+ Paracetamol 500 mg/BD X 3 days, Clorhexidine 0.2% Mouthwash/QID

Post- Extraction instructions

- 1) After the extraction and the placement of sutures, patients were instructed to bite firmly on a gauze pack to arrest bleeding and to aid in clot formation.
- 2) To ensure that the patient's post-operative period is pain free and uneventful as possible, analgesic was prescribed.
- 3) Patients were instructed to avoid vigorous mouth washing, violent exercise, stimulants or very hot food or

drink for the next twenty four hours to minimize the risk of post- extraction haemorrhage.

4) Patients were recalled after 7 days for suture removal.

3. Evaluation of Clinical Parameters

Pain

Pain would be assessed using the verbal Categorical Scale. Patients will also be shown how to complete a pain questionnaire to assess postoperative pain using the same VCS (Verbal categorical scale)

Swelling

Pre-operative and Post-operative facial measurements were taken by marking 5 points on the face i.e. symphysis, mastoid, angle of mandible, lateral canthus of eye and the ala of nose as shown in figure15

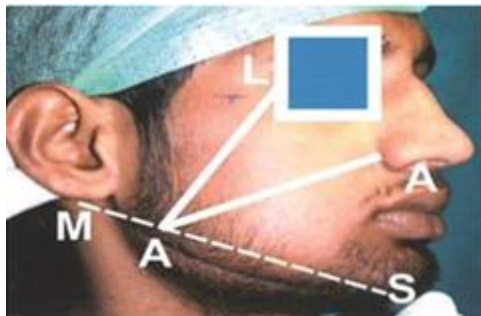


Figure 15

Trismus

Interincisal opening was measured pre-operatively and post-operatively on the 1st, 3rd and 7th day as shown in figure 16,17



Figure 16

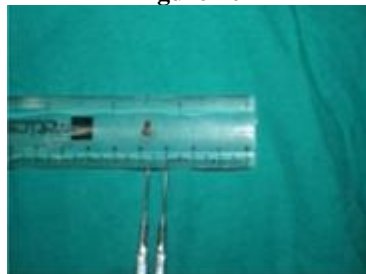
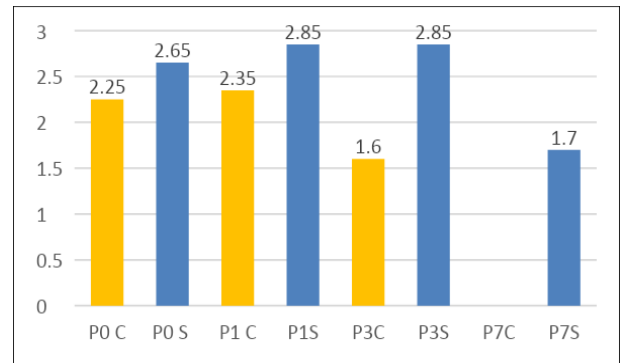


Figure 17

Table 1: Comparison of pain score

	Group	N	Mean	Std. Dev.	T Value	P Value
P0	1	20	2.25	0.444	-2.707	0.010* (S)
	2	20	2.65	0.489		
P1	1	20	2.35	0.489	-3.658	0.001* (S)
	2	20	2.85	0.366		
P3	1	20	1.60	1.273	-4.219	0.000* (S)
	2	20	2.85	0.366		
P7	1	20	0.00	0.000	-8.233	0.000* (S)
	2	20	1.70	0.923		

*p value < 0.05 is considered statistically significant

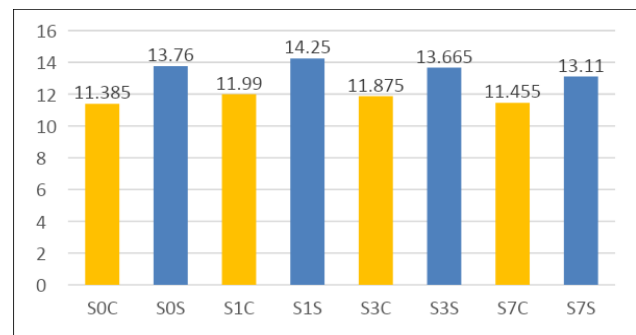


Graph 1: Distribution according to pain at various level of Group-I & Group-II

Table 2: Comparison of swelling

	Group	N	Mean	Std. Dev.	T Value	P Value
S0	1	20	11.385	.5373	-9.475	0.000* (S)
	2	20	13.760	.9838		
S1	1	20	11.990	.4767	-8.899	0.000* (S)
	2	20	14.250	1.0308		
S3	1	20	11.875	.4587	-6.160	0.000* (S)
	2	20	13.665	1.2158		
S7	1	20	11.455	.5196	-5.293	0.000* (S)
	2	20	13.110	1.2981		

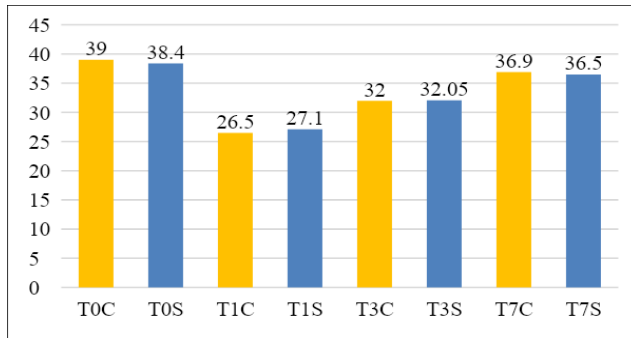
*p value < 0.05 is considered statistically significant



Graph 2: Distribution according to swelling at various level of Group - I & Group - II

Table 3: Comparison of trismus

	Group	N	Mean	Std. De.	T Value	P Value
T0	1	20	39.00	1.806	0.681	0.501 (NS)
	2	20	38.40	3.500		
T1	1	20	26.50	3.236	-0.601	0.551 (NS)
	2	20	27.10	3.076		
T3	1	20	32.00	1.777	-0.088	0.930 (NS)
	2	20	32.05	1.820		
T7	1	20	36.90	1.373	0.867	0.391 (NS)
	2	20	36.50	1.539		



Graph 3: Distribution according to trismus at various level of Group - I & Group – II Subjects

4. Discussion

Regardless of variations in the anterior end of the incision, all extend posteriorly from the distal aspect of the preceding second molar towards the ascending ramus.

Grooves and Moore⁶ began the vertical incision from a point distal to the disto-buccal gingival line angle of the second molar to conserve the distal periodontal tissue of the second molar. Guralnick⁷ used a horizontal incision only to achieve good exposure and ease of closure. Despite sincere attempts, the conventional incisions did not fulfill the necessary conditions for flap design namely

- 1) Incision should not lie over bony defects.
- 2) Incision should not cut across muscle or tendon insertion.

A flap that achieved these conditions should be made by using a distolingually based flap by an incision made buccal to the distal aspect of the second mandibular molar. Comma shaped, incision as designed by Nageshwar⁸ is a distolingually based flap and the flap does not have a distal extension. The reflection of the buccal vestibule below the preceding second molar is stretched down as far as possible with the index finger or thumb of the hand not wielding the scalpel. This stretches the buccinators beyond its origin on the mandible.

This flap does not have a distal extension towards the anterior border of the ramus & this technique resulted in an unbroken flap, that on closure, completely covered the bone defect created by the removed tooth and whose borders lay on sound bone. Structures like buccinator muscle, pterygomandibular raphe fibers, vessels in the retromolar pad region, temporalis tendon remained undamaged as no part of the incision extended in that region.¹ Pain was significantly more in the wards incision group on 1st, 3rd and 7th postoperative day as compared to the comma incision.

Our Results correlated with those of Nageshwar⁸ as he found no difference in the postoperative pain following-third molar surgery using marginal and Paramarginal flaps. They attributed post-operative pain to the reflection of mucoperiosteum in both the flaps. Bosch and Gool⁴ concluded that incision and reflection of mucoperiosteum was responsible for pain. They reported that the type of flap design (horizontal v/s vertical release) had no influence on the degree of pain contrary to our findings where more pain was observed in the standard incision group as compared to the comma incision Group. Bosch and Gool et al⁴ conducted

a comparison between horizontal and vertical type of releasing incision in third molar surgery. Further, the general trend was a decrease in trismus over the days, with the highest value on the 1st post-operative day. Also trismus was found to extend beyond a week on the average. In the present study, it was found that irrespective of the flap design used, after 7 days; pain and swelling were found in most of the patients, whereas trismus was zero i.e. even in absence of trismus, pain and swelling was present to some extent. Swelling has been reported to be affected by age and gender of the patient. In the present study, patients included were in the age group of 20-35 years; therefore, no such correlation could be established.

5. Conclusion

The present study was primarily aimed to compare comma incision and standard incision in impacted mandibular third molar.

The study consisted of 40 subjects who were divided into Group I-comma incision and Group II-standard incision. Influence of comma shaped incision and standard incision on post-operative complications in the extractions of the mandibular third molars was evaluated.

Comma incision and standard incision were used to reflect the mucoperiosteal flap after which the common steps for removal of impacted third molars were followed. The parameters time from incision to exposure, pain, swelling and trismus were evaluated on the post-operative day, 1st day, 3rd day, and 7th day respectively. The pain scores on operative day, day 1st, 3rd and 7th day in the surgical area with comma incision were significantly lower compared to the pain in the area where standard incision was given. Swelling were significantly lower with comma incision as that with the standard incision. There was no significant difference in trismus between the two groups post-operatively.

From this study we conclude that the new incision design is preferable to the conventional method considering more post-operative patient comfort (less pain, swelling and trismus) and the less degree of post-operative complications encountered. Further research with newer flap designs, which will minimize the post-operative complications, should be considered in the extraction of impacted third molar surgery.

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