COMMA SHAPED INCISION-AN ALTERNATIVE PROCEDURE FOR REMOVAL OF IMPACTED LOWER 3RDMOLAR

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Abstract

Background: The present study was undertaken to investigate the effect of standard Comma shaped Incision on post-operative sequelae in mandibular third molar surgery.

Materials & Method: A prospective study was carried out involving 15 patients who required 15 surgical extractions of impacted Pell and Gregory's Mesioangular, Class-II, Position-B mandibular third molars using comma shaped incision between January 2016 and August 2017. All extractions were performed under local anesthesia by the same dental surgeon and assistant. Pain (in Visual Analogue Scale score) was measured postoperatively on the 1st day, 3rd day and the 7th day. Swelling (in centimetres) and maximal inter-incisor distance (in millimeters) were measured preoperatively and postoperatively on 1st day, 3rd day and the 7th day. The data was analyzed by using independent Student's t test.

Results: The mean age groups were 24.8 ± 5.89 years. The Male: Female ratio was 17:13. Post operative pain was 6.13 ± 1.06 on 1st day, 3.33 ± 0.97 on 3rd day, and 0.73 ± 0.59 on 7th day. The difference was statistically significant on 3rd day (p=0.02) and 7th day (p=0.02). Similarly the post operative swelling in was 13.14 ± 5.93 on 1st day, 32.87 ± 10.75 on 3rd day, and 3.72 ± 3.23 on 7th day. The difference was statistically significant on 7th day (p=0.00). Similarly the post operative trismus was 43.80 ± 6.25 on 1st day, 20.40 ± 4.19 on 3rd day, and 1.69 ± 2.39 on 7th day. The difference was statistically significant on 3rd day (p=0.004).

Conclusion: Within the limitations of the present study, Comma shaped incision results in significantly less pain on 3rd and 7thpost operative day, significantly less swelling on the 7th post operative day, and significantly better mouth opening on the 3rdpost operative day. Further studies with a larger sample size are required in this direction.

Key Words: Third molar, Impacted, Comma shaped incision, Extraction.

Introduction

Lower Impacted third molars are teeth which do not complete eruption in the oral cavity because of resistance from adjacent teeth. The screening for presence of lower third molar is often started in late adolescence, when a partially developed tooth may become impacted. Impaction is defined as cessation of the tooth eruption produced by clinical or radio graphical visible physical obstacle in the path of eruption and/or by an ectopic location. Third molars are not generally seen in approximately 25% of individuals. The condition of unerupted mandibular third molars is prevalent, varies broadly and is affected by gender, age and ethnicity. The eruption failure of lower third molars is a very routine finding, and the disimpaction of lower third molar impacted tooth is a periodic surgical method to accomplish in their removal. It has been reported that a significant proportion of those on oral and maxillofacial surgery waiting lists are awaiting third molar removal.[1, 2] Sometimes, impacted mandibular third molar teeth don't cause any problems, and the only way the oral surgeon knows they are impacted is from examining the routine dental X-ray. However, as the age of the person progresses, they can stimulate varied problems such as pain in affected side of jaw (unilateral or bilateral), swelling, pericoronitis, difficulty in mouth opening, etc.[3,4] Often, people may not realize the issues that third molar have created until it's too late. These problems include

- Caries
- Pericoronitis
- Pain
- Gingival infection
- Extensive tooth decay
- Cyst

Extraction of lower third molars is one of the most frequently carried out surgical procedures in oral and maxillofacial surgery. Most of the lower third molar surgeries are performed without intra or post operative difficulties, however sometimes this usual procedures can result in several complications. The most common complication following third molar surgery includes sensory nerve damage, dry socket, infection, hemorrhage and pain. Less common complication are severe trismus, iatrogenic damage to the adjacent second molar and iatrogenic mandibular fracture.[5] In all surgical procedure, proper preoperative planning and the blending of surgical technique with surgical principle is of paramount importance for decreasing the incidence of complications.[6] It is well understood that this involves the manipulation of hard and soft tissue for mucoperiosteal flap reflection and subsequent bone removal during the surgery. It is obvious that the type of

incision is an important consideration in the surgical removal of the impacted teeth. Further it is vital to note that the design of the flap is critical parameter in the surgery of the third molar. The design of the flap influences the visibility and accessibility to the impacted tooth and also has an impact on subsequent healing process of the surgical defect created following the surgery.[7] To minimize these complications clinicians have sought an optimal surgical approach and have investigated the use of various flaps. Comma shaped incision is starting from a point which is at the depth of stretched vestibular reflection, which is posterior to the distal aspect of the presenting 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. After reflection of the flap, common steps for removal of impacted third mandibular molars are followed; the result of previous studies show that with comma shaped incision there is less chance or less severity of post operative complications. Even though comma shaped incision appears to be better than the standard Ward's incision, literature search shows that comparative studies between these two incisions are rather limited.[8, 9]

Materials and method

The objectives were to evaluate the following parameters of the comma shape flap designs at pre-operative, 1st, 3rd and 7th post-operative days -

1. Post operative pain.
2. Pre operative and Post operative swelling.
3. Pre operative and Post operative trismus (mouth opening).

Inclusion criteria

1. Patients with understanding of oral hygiene.
2. Patient with mesioangular, Class I and II position B impaction as described by Pell and Gregory Classification.[2]
3. Patient willing to participate in the course of study
4. Age 18 years or older.
5. Patient was free from periodontal disease
6. His/her general systemic health could not be compromised.

Exclusion criteria

1. Medically Compromised patients that would jeopardize the bone healing process (e.g. diabetes, osteoporosis, blood disorder, etc).
2. Severe parafunctional habits (bruxism or clenching)
3. Drug or alcohol abuse.
4. Poor oral hygiene
5. Chronic smokers
6. Pregnant patient and lactating patient.
7. Patient not willing to participate.

This study was a prospective, hospital based, randomized clinical study, which was carried out on a total of 15 patients (n=15). Patients who had bilateral or unilateral impacted mandibular 3rd molars or partially erupted 3rd molars, without any symptoms of pain or swelling, who had good oral hygiene and required the removal of impacted mandibular third molars were included in this study. Selected cases were made to undergo all hematological investigations. They were required to sign an informed consent pre-operatively. A thorough oral prophylaxis and any minor restorative work were done prior to the surgery. Assessment of position, class and depth were done by an OPG (Figure1). Preoperative measurements of the face for swelling and mouth opening were done (Figure 2). The surgical procedure was carried out by a single surgeon and assistant, and randomization was done by sealed envelopes. Postoperatively pain, swelling and mouth-opening was measured on 1st, 3rd and 7th days respectively. A wash out period of at least 10th days after 7th day of surgery was given and patient was recalled on the 25th day if required.

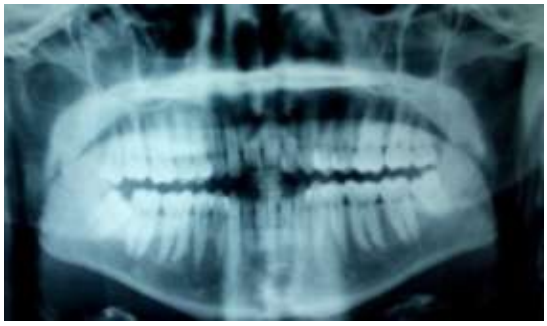


Figure 1: Preoperative evaluation of OPG

Figure 2: Preoperative extraoral measurement for mouth opening

Operative Technique

A standardized approach to the surgical extraction of the impacted lower third molars using Buccal Guttering technique was followed:

1. Inferior alveolar, lingual and long buccal nerve block injections using lignocaine 2% with adrenaline (ADR) 1:80,000 were used to achieve local anaesthesia.
2. Comma shaped incision was placed, and a full thickness mucoperiosteal flap was raised. (Figure 3)
3. Bone was eliminated using burs with a straight handpiece with plenty of saline irrigation. The

splitting technique was used to deliver the tooth from the socket, as and when needed.(Figure 4)

4. The flap was repositioned and sutured using silk in interrupted pattern. (Figure 5)
5. Pressure packs were applied.
6. Post extraction instructions were explained to the patient.
7. On 7th post-op day sutures were removed.

Figure 3: Comma shaped incision & reflection of flap

Figure 4: Bone guttering & removal of third molar

Figure 5: Flap repositioned & closure done

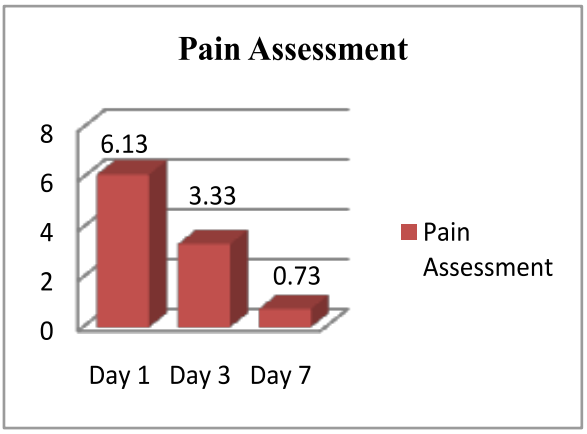
Observations and Results

A total of 15 patients who reported to the department of oral and maxillofacial surgery Teerthanker Mahaveer Dental College & Research Centre, Moradabad, requiring removal of impacted mandibular third molars were included in the present study. Only patients with Mesioangular class II and position B according to Pell and Gregory classification were included

The mean age of patients was 21.93 ± 4.23 (Mean ± Standard Deviation) years, with an age range of 17 years – 32 years, and The male: female ratio was 8:7, and The mean angulations (in degrees) of the impacted third molar in relation to the second molar of the patients was 50.4^0 ± 16.00 . The mean time taken to remove the impacted tooth was in 31 ± 6.32 minutes in Group 1, with a range of 20 minutes to 45 minutes.

Evaluation of Pain

All measurements of pain were designated with a visual analogue scale (VAS) score. Pain magnitude was assessed by using a 10 centimetre horizontal line that ran from (0 cm) 'no pain' to (10 cm) 'worst pain'. This measurement was recorded by patients themselves in triplicate and the average was noted (Graph 1).

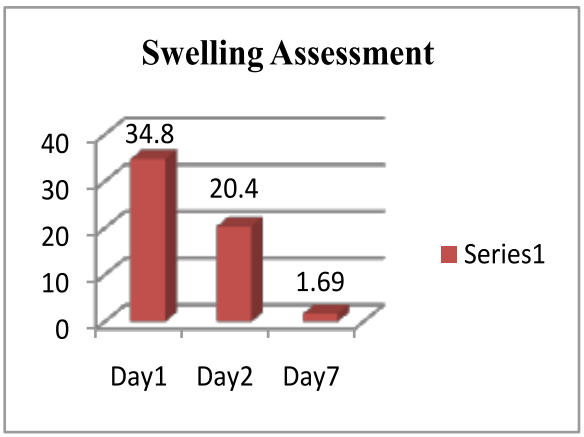


Graph 1: Pain assessment

Evaluation of Swelling

It was decided to use a calibrating tape to check swelling and width of face in two dimensions only. The reference lines used were the edge of the tragus of the ear on the operated side to the corner of mouth and gonion to lateral canthus of eye of the operated side. The distance between the tragus and the corner of mouth was added to the distancebetween the gonion and lateral canthus of eye over the maximum convexity of the soft tissues.

The average of measurements was then recorded in centimetres (cm). Percentage of swelling was calculated as [(Post Op - Pre Op)/Pre Op] X 100 (Graph 2).

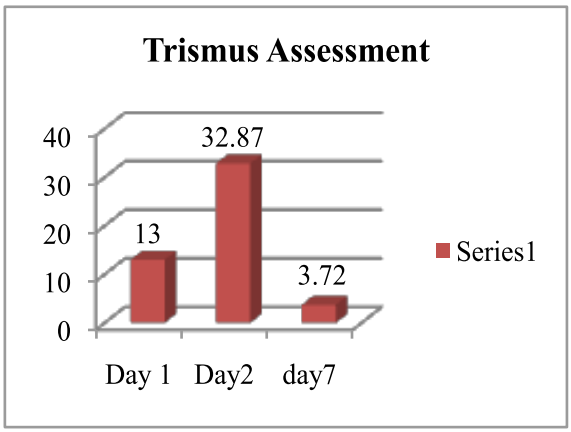


Graph 2: Swelling Assessment

Evaluation of Trismus

The maximum inter-incisal gap between the mandibular and maxillary incisors was measured by a stainless steel scale in millimetres. The incisal-edges of the teeth at the extreme convenient mouth-opening possible were used as

the significant points. Percentage of trismus was calculated as [(Pre Op – Post Op)/Pre Op] X 100.
The data so obtained was subject to Statistical Analysis using independent Student's t test, using SPSS version 20.0 software (IBM Technologies) (Graph 3).



Graph 3: Trismus Assessment

Discussion

The surgical removal of lower impacted third molar is a routine surgical procedure in oral and maxillofacial surgery. This practice requires technical expertise, flawless judgment, and complete knowledge of anatomy and surgical-principles, rationale of antibiotic remedy, good anesthesia, proper medication, nutritional balance, complete patient's care. Impacted mandibular third molar are most commonly seen in adults and the severity of these complications is depends on the one important factor which is flap design.[10,11]

In the present study, the mean age was 24.8 ± 5.89 years. This finding is in accordance to a study done by Desai A[12] et al. (2014). However, literature reports different age groups in different studies. Few other studies have reported different age group as Nageshwar in 2002 studied in 100 patients and his study reported that the mean age of group 1 was 26.12 ± 4.87 and the value of group 2 was 25.20 ± 3.97.[8]

In the present study the male female ratio was 17:13 demonstrating that men seek third-molar surgery more frequently than men. According to Nakagawa et al [13], the female gender is a risk factor because of the mandible's lesser bone thickness. In the present study, however, gender was not a determinant of surgical difficulty.

In our study pain was assessed by using the VAS (visual analog scale) score as it takes little time to describe to patient and easily understood by the patient. This showed that less post operative pain occurs in comma shaped incision which is similar to a previous study by Nageshwar.[8] But this result is not in correlation with Van Gool AV et al. as they have seen that severity of pain is not correlated to the type of incision.[14] Pain usually occurs after third molar surgery because of tissue cellular destruction, which is caused by prsotaglandins, bradykinins and other mediators of inflammation.[15] Comma shaped incision is less extensive and requires less tissue manipulation than the standard Ward's incision, which could have resulted in lesser inflammation, and lesser post operative pain in our study.

The possible explanation of less swelling in Comma shaped incision is explainable due to the fact that a smaller mucoperiosteal flap is raised in comma incision. The drainage of edema is better in comma shaped incision because of its design, which could have result in lesser inflammation, and lesser post operative swelling in our study. In our present study the comparison of mean values of trismus on 1st post operative day was not significantly different, although comma shaped incision showed better result. On the 3rd post operative day the mean value of trismus was significantly better, and was again not significant on the 7th day. This is in accordance with the study of Szymd et al. as they reported that the restricted mouth opening is on the peak in the day of surgery.[16]

Conclusion

In the present study, 15 patients with impacted mandibular third molar were included; the parameters evaluated were postsurgical swelling, pain, and trismus. Upon evaluation, the result showed that the postsurgical pain, swelling and trismus were less in the comma shaped incision group.

The present study, within its limitations, has shown that

1. Post operative pain is significantly less in the comma shaped incision on the 3rd and 7th day.
2. Post operative swelling is significantly less in the comma shaped incision on the 7th day.
3. Post operative trismus is significantly less in the comma shaped incision on 3rd day

The comma shaped incision appears to be a simpler and more effective technique for minimizing the postsurgical morbidity linked with inflammatory sequelae after third molar surgery. Further studies with a larger sample size are required in this direction.

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