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TRISMUS;

COMPARISON AFTER REMOVAL OF IMPACTED THIRD MOLAR IN PATIENTS VISITING ORAL SURGERY DEPARTMENT IN HYDERABAD.

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ABSTRACT… Objectives: To compare trismus in surgical removal of impacted mandibular third molar using comma incision and standard Wards incision. **Study Design:** Cross sectional study. **Setting:** Dental OPD of Isra Dental College, Isra University. **Period:** 1st January to 30th June 2016. **Materials and Methods:** A sample of 50 patients of impacted third molar was selected by non-probability purposive sampling for tooth extraction either by conventional technique or by coma shaped incision at the Department of Oral surgery, Isra Dental College Hospital. Patients were selected according to inclusion and exclusion criteria. Post-operative measurement of trismus was measured on 1st, 3rd and 7th day respectively. **Results:** Mean ± SD age in group A and B was noted as 28.5 ± 4.32 and 27.2 ± 4.39 years respectively. Male and female in groups A and B were noted as 16 (64%) and 9 (36%), & 14 (56%) and 11 (44%) respectively. Right and left lower mandibular teeth extraction in groups A and B were noted 11 and 14, & 10 and 15 respectively. Trismus was measured preoperatively and subsequently at day 1, day 3 and day 7. **Conclusion:** In conclusion, the Coma incision was preferable over the conventional method- the standard Ward`s incision because of lesser degree of trismus seen. Further research with newer flap designs and the comma design should be preferred by the clinicians for the extraction of impacted third molar surgery.

Key words: Coma Incision, Standard Ward`s Incision, Impacted Third Mandibular Molar, Trismus.

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INTRODUCTION

In early 1954, Mead defined an impacted tooth as "a tooth that is prevented from erupting into position because of malposition, lack of space, or other impediments".[1] Later Peterson defined impacted teeth as tooth that fails to erupt into the dental arch within the expected time.[2] In 2004 Agarwal defined impacted tooth as a tooth which is prevented from eruption because of anatomical barrier in the eruption pathway.[3] Most often impaction has been reported for the mandibular and maxillary third molar, followed by maxillary canines and the mandibular pre-molars.[4] Undoubtedly, the third molars are often encountered by impaction; this may be due to their anatomical tight space as they are the last to erupt when the space is already occupied by other teeth.[4,5] A chance of impaction of mandibular molars is more compared to maxillary molars.[4]

Age range of impaction of third mandibular molar varies between 17 – 50 years of age; however, the most frequent impaction is noted in the 3rd decade.[6] Third molar usually erupt during the ages of 17-21 years of postnatal life.[7] However, the time of eruption of third molar is subjected to variations with different race.[7-10] In Nigerians, the third mandibular molar erupts as early as 14 years of life.[9] On the contrary, third mandibular erupts at the age of 26 years in European adults.[8] Eruption of third mandibular molar also varies with gender, as it erupts 3-6 months earlier in male compared to female counterparts but previous studies had reported higher frequency of impaction of mandibular third molar in females compared to males.[11,12] Some researchers did not agree and reported that impacted mandibular third molars occur equally in both genders.[13,14]

Winter suggested a method based upon angulation of third molar where evaluated with the long axis of second molar and categorized as Mesioangular, Distoangular, Horizontal and Vertical angulation.[5] Mesioangular impaction of third mandibular molar is the most frequent subtype which is reported in 35% to 49%.[6,10,15] It is reported that the eruption and continuous change in anatomical position of third mandibular molar also varies with nature of diet, environmental factors and intensity of the masticatory muscles.[16]

An impacted tooth is usually locked by the soft tissue, bone, anatomical space and position of adjacent tooth, aberrant tooth bud position, aberrant path of eruption, teeth or jaw size discrepancy or due to some pathological lesion.[5]

Impacted mandibular third molar are frequently associated with serious complication side effects as pain, inflammation, trismus, bleeding, bone fractures, etc.[17] Impacted third molar mandibular may be associated with more serious complications such as cystic lesions, pericoronitis, neoplasm, root resorption, etc.[6] Many of the impacted third mandibular molar usually remain asymptomatic for many years, may be for whole life, but for the primary prevention of related complications is indicated.[10,15,18]

As part of surgical procedures, various types of conventional flaps are used in clinical practice but these are usually associated post-operative complications such as pain, hematomas, swelling, trismus, etc.[19] Surgical removal of third mandibular molar is very common surgical procedure.[1] Impaction of mandibular third molars is a common condition related with different difficulty degree of extraction operation and risk of complications, including iatrogenic trigeminal nerve injury.[1] A unique surgical flap termed comma incision was introduced about a decade ago for the removal of impacted third mandibular molar.[5,20] Typical designing of flap helps avoiding tendon injury of temporalis which was frequently encountered in traditional incisions leading to complication of trismus.[21] Comma incision is claimed of having lesser incidence of pain and swelling.[19] Since then utility of comma incision has never been studied thoroughly and credibility of the flap in minimizing postoperative complications along with adequate surgical access need to be determined.[19] The purpose of this study is to compare coma incision with standard ward incision, as far as complication are concerned following removal of mandibular third molar.[19]

OBJECTIVE

To compare trismus in surgical removal of impacted mandibular third molar using comma incision and standard Wards incision.

RATIONALE

The purpose of this study is to revalidate the effectiveness of comma incision in comparison with ward's incision as far as complications are concerned. Furthermore this study will help to re-establish the credibility of a flap which has reported lesser incidence of post-operative complication for one of the more frequent surgical procedure in oral surgery. The present study may be used as reference for future research.

MATERIAL AND METHODS

Our study is a cross sectional study of the general population N= 50, out of which 25 were males and 25 were females respectively. Patients visiting the Dental OPD of Isra dental college, Isra University from 1st January to 30th June 2016 were recruited. Patients coming to the OPD of Isra Dental College are generally both from rural and urban areas as Hyderabad is a small city and adjoining cities don't have tertiary based hospitals in their localities. Patients with impacted mandibular third molars of both genders were included into this non-probability purposive sampling study. Patients with ages 20–35 years were included. Patients having restricted mouth opening, systemic disorders, severe pericoronitis and pregnant patients were excluded from this study along with patients having disto-angular, horizontal and vertical impactions. All the data after compilation was analyzed and the results were put together. SPSS version 22 was used to analyze the data. The purpose was to compare trismus in surgical removal of impacted mandibular third molar using comma incision and standard Wards incision. Written consent

form was obtained from the patient and they were then categorized into two groups i.e. standard ward incision and comma incision. Trismus was then determined by maximal interincisal distance by scale. Post-operative measurement of trismus was measured on 1st, 3rd and 7th day respectively.

RESULTS

The present study was conducted at the Department of Dentistry, Isra Dental College. The study was conducted to compare the standard Ward`s (Group A, n=25) and comma incision (Group B, n=25) for the postoperative complications for impacted mandibular third molar tooth.

Mean ± SD age in group A and B was noted as 28.5 ± 4.32 and 27.2 ± 4.39 years respectively (t- value 1.07 and p= 0.26). Insignificant p-value shows the study subjects in the 2 groups were age matched. Age distribution is shown in Table-I. Male and female in groups A and B were noted as 16 (64%) and 9 (36%), & 14 (56%) and 11 (44%) respectively (X^2 =0.33 and p= 0.56) as shown in Table-II. Right and left lower mandibular teeth extraction in groups A and B were noted 11 and 14, & 10 and 15 respectively (X^2 =0.82 and p= 0.74). Right and left lower mandibular tooth extraction is shown in Table-III.

Trismus was measured as Mean ± SD millimeter (mms) of mouth opening. Preoperatively trismus in group A (Ward`s incision) and group B (Comma`s incision) were noted as 39.33± 7.39 and 42.0± 4.02 mm respectively. Non-significant difference was noted as indicated by t value of (0.58 and p-value 0.12). Pre-operative trismus is shown in Table-IV.

Post-operative Day 1 trismus in group A (Ward`s incision) and group B (Comma`s incision) were noted as 24.36± 7.32 and 30.0± 4.82 mm respectively. Statistically significant difference was noted between groups. Coma incision patients showed reduction in trismus (t value of 13.47 and p-value 0.002). Post-operative trismuson Day 1 is shown in Table-IV.

Day 3 trismus in group A (Ward`s incision) and group B (Comma incision) was noted as 29.0± 6.29 and 36.48± 4.66 mm respectively. Statistically significant difference was noted between groups. Coma incision patients showed reduction in trismus (t value of 14.98 and p-value 0.0001). Post-operative trismus on Day 3 is shown in Table-IV.

Day 7trismus in group A (Ward`s incision) and group B (Comma incision) is shown in Table-IV. It was noted as 34.48± 6.58 and 41.56± 2.29 mm respectively. Statistically significant difference was noted between groups. Coma incision patients showed reduction in trismus (t value of 15.09 and p-value 0.0001).

	Right lower Mandibular	Left lower Mandibular	X^2	p-value
Group A. Standard Ward`s incision (n=25)	11	14	0.82	0.74
Group B. Coma incision (n=25)	10	15		

Table-III. Tooth extraction in study Population (n=50)

Trismus (mm)					
N = 50		Mean	SD	t-value	p-value
Pre-Operative	Group A: Standard ward incision	39.33	7.39	0.58	0.12
	Group B: Comma Incision	42.0	4.02		
Day 1	Group A: Standard ward incision	24.36	7.32	13.47	0.002
	Group B: Comma incision	30.16	4.82		
Day 3	Group A: Standard ward incision	29.0	6.29	14.98	.0001
	Group B: Comma incision	36.48	4.66		
Day 7	Group A: Standard ward incision	34.48	6.58	15.09	.0001
	Group B: Comma incision	41.56	2.29		

Table-IV. Measurement of trismus in study population (n=50)

DISCUSSION

Tooth impaction is defined as defective eruption of a tooth caused by clinically or radio logically evident anatomical barrier in its eruption pathway or due to its ectopic position(22). Impacted mandibular third molar is reported to be present in 33% of population which needs surgery for its removal, hence surgical disimpaction of third mandibular molar is most common surgical procedure performed in dental clinics.[23] Third molar of lower jaw comprise bulk of impacted teeth.[24] Major surgical postoperative complications include the pain, swelling and trismus.[25,26]

Flap designing plays major role in visibility to reach impacted tooth, and better healing of surgical wound. Various surgical incisions had been practiced to create a surgical flap. These include Standard Ward's incision, Modified Ward's incision, envelope (Koener's) incision and Bould Henry 'S'-shaped incision, etc.[21,27-31] Ward's and Modified Ward's incision are frequently used in surgical practice. The beauty of Ward's and Modified Ward's incision lies in their excellent visibility, mechanical ease and easy closure by suturing between the buccal and lingual soft tissues.[1,4,8]

Pasha et al reported more male population compared to female which is consistent to the present study.[1] Similarly Kumar et al has also reported predominant male population which is also consistent to the present study.[4]

In present study, trismus was measured as Mean ± SD millimeter (mms) of mouth opening. Trismus was least pronounced in Comma incision compared to standard Ward`s incision. Mouth opening in group A (Ward`s incision) and group B (Comma`s incision) on Day 1, 3 and 7 were noted as 24.36± 7.32 and 30.0± 4.82 mm (p=0.002), 29.0± 6.29 and 36.48± 4.66 mm (p= 0.0001) and 34.48± 6.58 and 41.56± 2.29 mm respectively (p=0.0001). The finding of trismus on different days is consistent to previous studies by Pasha et al[1] and Kumar et al[4] which encountered less number of subjects with restricted mouth opening (trismus) after removal of impacted mandibular third molar when compared to standard ward incision side. Probably this is because envelope and comma incision does not extend posteriorly therefore, avoid dissection of temporal is tendon and thus mouth opening is not significantly affected.[1,4]

Gupta et al and Yamaguchi et al reported that restricted mouth opening peaks on the day of surgery. Bodh et al, reported that trismus after third molar extraction is the usual caused by muscle of mastication leading to spasm secondary to raising of mucoperiosteal flaps to reduce the severity of trismus. These studies are in contradiction to the present study.[32,33]

CONCLUSION

The results of this study showed that the new incision design i.e. the Coma incision was preferable over the conventional method- the standard Ward`s incision, considering the lesser degree of post–operative complications. Further research with newer flap designs like the comma design, which will minimize the postoperative complications, should be considered in the extraction of impacted third molar surgery.

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The time is always right to do what is right.

– Dr. Martin Luther King, Jr. –

AUTHORSHIP AND CONTRIBUTION DECLARATION

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1	Alvina Ali Shaikh	Data collection, Data analysis	
2	Salman Shafique	Literature search / review	
3	Hassan Shahid	Data analysis / interpretation, References, Formatting / proof reading.	