Original Study

EVALUATION OF SURGICAL OUTCOMES BETWEEN COMMA SHAPED AND WARD'S INCISION IN MANDIBULAR THIRD MOLAR IMPACTION

*Ram Pershad Chooni Lal Sharma[1], Kashif Ali Channar[1], Shumaila Sheikh[2], Nayel Syed [3], Aisha Jabeen[3], Sadaf Ibrahim[3], Javeria Muhammad Arif[4], Rasheeda Fatima[3], Abdul Kadir[3], Mirza Tasawer Baig[3]**

[1] *Department of Oral and Maxillofacial Surgery, Liaquat University of Medical and Health Sciences Jamshor, Pakistan*
[2] *Operative Dentistry, Bibi Asifa dental collage.SMBBMULarkana, Pakistan*
[3] *Faculty of Pharmacy, Ziauddin University Karachi, Pakistan*
[4] *Dr. Ziauddin Hospital, Karachi, Pakistan*

ABSTRACT

Objective: To assess the surgical outcomes between Comma type incision and wards incision after surgical extraction of wisdom teeth.

Materials and Method: The randomized control study was carried out at Oral & Maxillofacial Surgery Department, Institute of Dentistry, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad from August 2018 till February 2019. It involved 100 patients with impacted mandibular 3rd molar (mesioangular) which was divided into 2 groups. Group A (50 patients) underwent surgical extraction with Comma shaped incision and Group B (50 patients) with Ward's incision. Patients were divided without regard of gender within age limit (20 to 45 years) exceptions were pregnancy, trismus, limited mouth opening, oral submucous fibrosis, and other types of impactions. Post-operative complications like bleeding, pain, swelling, restriction of mouth opening, and dehiscence were evaluated by Chi-square test and paired t-test.

Results: Males and females were 33% and 63% respectively. The mean age was 29.65±7.5 in group A, and 28.74±5.7 in group B. According to preoperative pain assessment, no pain and mild pain were found in 26% and 44% patients of group A and 16% and48%patients of group B, moderate pain and severe pain was in 30%of group A and 34% and 2%patients of group B. On 1stpostoperative day the mild, moderate pain and bleeding were higher in group B patients. On 3rdand 7thpost-operative day no pain, no bleeding found in both groups, dehiscence was found in 2%of patients in group and 10% of patients in group B. According to preoperative mouth opening assessment the mean of mouth opening was 39.5±2.8 in group A, and 42.86±4.4 in group B.According to thepreoperative swelling assessment, the mean of swelling was 175±11 in group A and 180±1 was in group B. According to postoperative swelling assessment, there was increase swelling seen more in group Bas compare to group A 1st, 3rd day which regresses on 7th day postoperatively.

Conclusion: The study showed that, within its limitations, Comma shaped incision appears to be simpler, easier, better access, and more effective technique for minimizing the post-extraction bleeding, swelling, mouth opening, pain, and wound dehiscence linked with inflammatory sequel after removal of impacted wisdom teeth.

Key words: post-operative complications, Impacted 3rd molar, incisions.

Introduction

Tooth impaction is defined as a failure to erupt completely in dental arch within expected time and it is caused by various reasons such as lack of space, development in an abnormal position, physical barrier in eruption path, high density of overlying bone, size and position of theadjacent tooth [1-5]. The sequence of various impacted teeth follows mandibular wisdom teeth, upper jaw wisdom teeth, upper jaw cuspid, mandibular bicuspid, maxillary bicuspid, mandibular cuspid, maxillary anterior teeth, maxillary lateral incisors [6].Wisdom teeth remain impacted most often, presumably due to gene effects, external factors, lack of space, development in anabnormal position, physical barrier in eruption path, high density of overlying bone, size and position of theadjacent tooth[1].The wisdom teeth erupt in the oral cavity at the ages of 18 or 24 years [7]. The Surgical extraction of the wisdom teeth is among the frequently performed protocol leads to different complications after removal that includes pain, limited mouth opening, inflammation at the site of teeth removal, no approximation of wound edges at the site of extraction, these all affects the patients in their healthy life [8].The severity of pain mostly occurs after a few hours of extraction, it may remain for afew minutes or hours. Edema at the site of extraction dreads the patients for some time before it lessens over the latter time. Limited mouth opening lasts for few days or more occurs due to edema of

muscles at the site of extraction caused the problems in taking of meals for once or twice of seven days[9, 10].

To reduce the sequel of the wisdom tooth extraction, all surgeries must be performed with a thoroughly skilled mind in combination with keen planning before the procedures commenced. The wisdom teeth extraction causes physical injury during the reflection of softer structures like flaps, in addition to this causes harm to hard structures like bone when the full-thickness flap is raised. The most important component which affects the sequel of wisdom tooth extraction is thedesigning of theflap for this, it is necessary to raise the soft tissue called a flap.Also, the removal of bone should be done to expose underlying impacted teeth. A full-thickness flap is used to disclose the 2nd molar adjacent to the wisdom teeth [11, 12].For the Suitable visualization, complete exposure of thesurgical site, the neat surgical procedure, and proper access to the incisions are applied as a consequence the soft tissue is raised known as a flap which reduces distress of patients by decreasing the sequel happening after lower wisdom extraction[13, 14].

Various incisions and flap proposed and applied for the access, visualization the site of lower wisdom impaction these are such as (bould Henry) Envelope flap, L shaped incision, Bayonet type cut, three-sided type cut, cut made by Ward, alternate of Ward cut, Comma-shaped cut, S typed cut, cut made by Szmyd, alternate of Szmyd cut, Berwick`s tongue type cut[15].

Comma shaped incision is a type of incision in which the whole lower impacted wisdom teeth will be exposed by raising the flap, permittingthe oral surgeon to remove lingual or buccal bone effortlessly as the extraction accomplished. It can be closed with one or two sutures eventually.Most important thing is that the wound doesnot rest on the deficient bone, also, it does not extend towards the muscular structures located posterior to lower jaw wisdom teeth.

Ward's incisionis a type of incision that has helped expose the surgical site, as a result, can be accessed the wisdom teeth suitably with easily closing of it by thread passing through buccal and lingual. The releasing incision may sometimes encounter the vessel passing buccally under the soft structures vexing at thecommencement of theprocedure. Moreover, it sutured at the deficient bone which additionally leadsthe wound's healing to with very much pain[16, 17].

The rationale of this study is to identify the better incision for extraction of a mesioangular impacted third molar concerning postoperative complications, incision is chosen to compare are comma-shaped and wards incision, previously conducted studies were concluding that comma-shaped incision is superior in terms of pre and postoperative complication but the sample size was small. This study contains a large sample size, due process this will be helpful for the oral and maxillofacial surgeon and clinician to select the incision during impacted third molar surgery[18].This study aims to compare the preoperative and postoperative complications between comma-shaped incisions and the ward's incision.

Methodology

All the patients reporting with impacted mandibular third molar irrespective of age and gender for management were requested and enrolled in a study. A thoroughly detailed history and clinical examination radiography investigation of (OPG and Periapical x-ray) were performed on all the patients reporting at theDepartment of Oral & Maxillofacial surgery faculty of Dentistry LUMHS hospital. The Total 100 number of a patient attendant within two groups (Group A Comma Shape Incision and Group B Ward's Incision). Written consent was obtained from the patient or attendant the questionnaires were filled from each patient.All patients were treated under the local anesthesia by standard method of Comma Shape Incision or Ward's Incision.

Inclusion Criteria: patient with either gender,age ranges from 20 to 45 years, mesioangular impacted in the lower jaw.

Exclusion Criteria: VerticalDisto-angular,Horizontally impacted wisdom teeth, Pregnant patient,Patient with trismus&Pericoronitis,OSF.

Data Collection:
Participants with their eligibility in the study had to be fully evaluated by proper protocols of history taking and the records made in thequestionnaire.Before surgery pain was measured through a visual analogue scale where pain recorded and LMO by foot scale [16].The swelling was measured by calculating the space between the swellings determined by drawing three lines with five points represented facial structures. Figure 2 is representing the fixed points used that were A; the most posterior point at the midline on the tragus, B; lateral canthus of the eye, C; the most lateral point on the corner of the mouth, D; soft tissue pogonium which is the most prominent point at the midline on the chin and E; most inferior point on the angle of the mandible. The 3 lines were vertical distance (BE) and the horizontal distance (AC, AD) (H+V/2) (Figure 1), as measurement noted before and after the procedure on days 1st,3rd,and 7th. The difference between measurements before and after surgery was noted.

Figure 1: Three points for swelling measurement.

Figure 2:Presentation of wards incision

Figure 3: Oozing of bleeding socket in wisdom teeth

Figure 4:Established dehiscence in wisdom teeth

Bleeding was measured by the amount of blood loss and complete cessation of bleeding, as assessed clinically by the principal investigator (Figure 3). Figure 4 shows Dehiscence that is defined as the"parting of mucosa after closure". The participants were allowed to pick any of the envelop that contains a card on which the the incision type was mentioned. The participants were not able to read the type of method mentioned on the slip within an envelop. Two groups; A and B were formed. All procedures with aseptic technique were performed; LA for block anesthesia of inferior dental nerve with two cartridges of 1.8 mL of 2% xylocaine with epinephrine (1: 100,000) (Medicine; made in Korea).

In group A, a common-shaped cut applied next to the 2nd molar which curves to its DB line continues as crevicular incision by using surgical blade #15 (Feather safety razor co. Ltd Japan). In group B, Ward's type cut was applied by using the blade as mentioned mesial to the impacted lower third molar. The straight elevator was used to lift the tooth; if retrieval procedure of tooth wasn't successful bone removal with rose head bur along with irrigation and the tooth delivered through applying elevator, in the end, smoothen with bone filer after that wound sutured with 3-0 Vicryl suture (Johnson & Johnson; made in the USA). Sterile folded gauze (2 x 2) was placed over the surgical wound to achieve hemostasis. Standard antibiotics and analgesics started for 5 days. As the surgery finished all variables were recorded on the proforma. Every patient was called for a follow-up on the 1st, 3rd day, and 7th day.

Data Analysis:

The data was investigatedby SPSS version 20.0. Qualitative variables had stated by way of absolute frequency and percentage. The quantitative variable was measured by nominal and scales (pain, swelling, mouth, opening). Descriptive statistics include patient age, gender, history, and procedure of removal of the tooth, intra-operative, and after-surgery complications were counted with the help of chi-square and t-test. AP value of less than or equal to 0.05 was considered statistically significant.

Result:

Either gender was 33% and 63% respectively. The mean agewas29.65±7.5 in group A, and 28.74±5.7 in group B (Figure 5). Table 1 shows preoperative pain assessment that exhibits, no pain and mild pain was found in 26% and 44% patients of group A and 16% and 48% patients of group B, moderate pain and severe pain were in 30% of group A and 34% and 2% patients of group B. According to the preoperative mouth opening assessment, the mean of mouth opening was 39.5±2.8 in group A, and 42.86±4.4 in group B (Table 2). According to the preoperative swelling assessment, the mean of swelling was 175±11 in group A and180±1 was in group B (Table 3). Table 4 shows on 1st postoperative day the mild, moderate pain and bleeding were higher in group B patients. On the 3rd and 7th

postoperative day no pain, no bleeding found in both groups, dehiscence was found in 2% of patients in group and 10% patients group B. According to postoperative swelling assessment, there was increase swelling seen more in group B as compared to group A 1st,3rd day which regresses on the 7thday postoperatively.

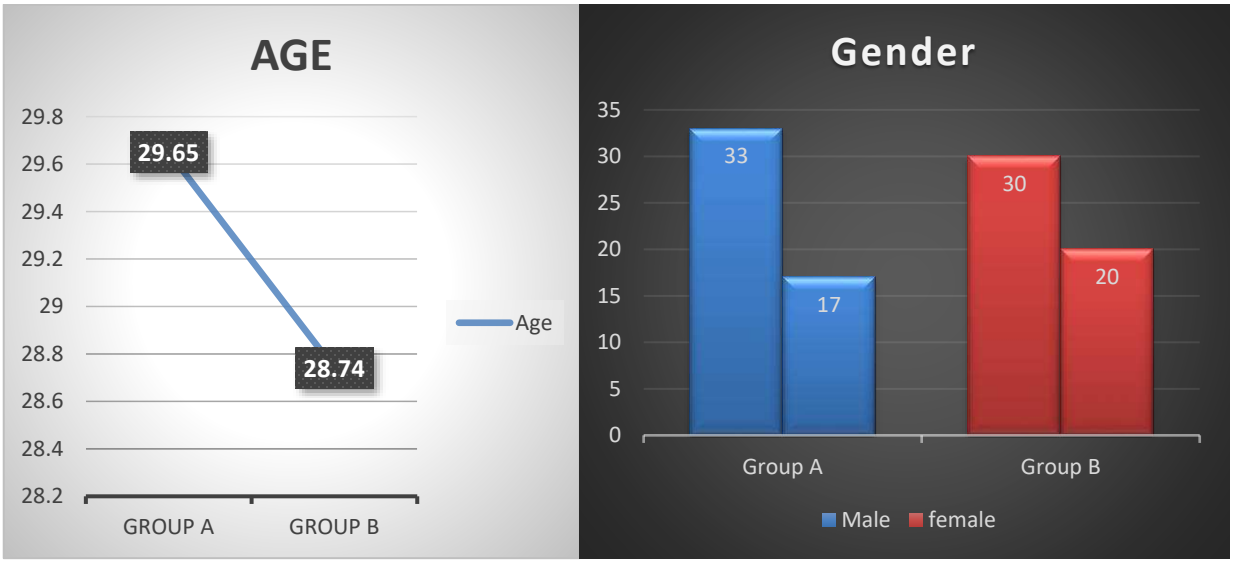

Figure 5: Age and Gender of patient

	No Pain	Mild Pain	Moderate Pain	Severe Pain
Group A	13	22	15	0
Group B	8	24	17	1

Table 1: Pre –Operative Pain Assessment

	Group A	Group B
Mouth Opening (Mean)	39.5	42.86

Table 2: Pre-Operative Mouth Open

	Group A	Group B
Swelling (Mean)	175mm	180mm

Table 3: Pre-Operative swelling

Day 1st	PAIN				Mouth Opening (Mean)	Bleeding		Dehiscence		Swelling (Mean)
	No Pain	Mild Pain	Moderate Pain	Severe Pain		Yes	No	Yes	No	
Group A Day 1st	49	0	1	0	38.7mm	3	47	2	48	177mm
Day 3rd	50	0	0	0	39mm	0	50	1	49	176mm
Day 7th	50	0	0	0	39.5mm	0	50	0	50	175mm
Group B Day 1	27	19	4	0	30.7mm	38	12	10	40	184mm
Day 3rd	50	0	0	0	33.5mm	0	50	5	45	184mm
Day 7th	50	0	0	0	42.73mm	0	50	2	48	180mm

Table 4: Post-Operative Day 1, Day 3, and Day 7th Pain, Mouth Opening, Bleeding, Dehiscence & Swelling.

Discussion:

The incisions that have been utilized to expose wisdom tooth during surgical removal is generally categorized into three-cornered and envelope types. Irrespective of differences in the front end of the incisions, all incisions extend posteriorly from the proximal 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 it showed is greater in qualities than wards incision [19].Lower impacted third molars contribute a majority of teeth that are impacted in the oral cavity [20]. A tooth that not fully erupts in the oral cavity owing to confrontation presented due to adjacent tooth or bone. Removal of lower jaw impacted wisdom tooth with negligible post-operative side effects is a routine surgical principle, validation of antibiotic medication, decent anesthesia, correct medicine, dietary equilibrium, ample patient's carefulness.whole operating processes, appropriate preoperative preparation in addition to the amalgamation of operating methods using operating opinion is of principal significance aimed at lessening rate of complications [21].The impacted mandibular third molar is seen in adults and the complication related to it depends on its most significant feature of the incision.In our study,themean age was 29.65±7.5 in group A, 28.74±5.7 in group B's mean age. While in previous studies, it was different in different studies, a study done by Nageshwar on 100 patients found that the mean age was 26.12±4.87 in group 1 and mean age was 25.20±3.97 in group 2. In their study, Saubhagya A. et al found a mean age of 24.8±5.89 [19, 22].In our study,according to gender comparison,33(66%) were male in group A and 30(60%) males were in group B while 17(34%) females were in group A and 20(40%) females were in group B. The gender comparison was statistically insignificant (p=0.539). The overall ratio of male and female in both groups 1:2.7 which states that males are more prone to have third molar surgery than females that's similar to the study of Saubhagya*et al*. in which they found a17:13 male and female ratio, in our study gender, was not used as a variable to determine the problems related to lower jaw wisdom teeth, Nagakawa*et al* stated that female are more prone to have the problems related to lower jaw third molar due to diminishing size of lower jaw bone in thickness[23]Post-operative after surgery of wisdom tooth the pain and swelling occurs. The extraction of thewisdom tooth in its surroundings released a biochemical that causes pain i.e. histamine, bradykinin,andprostaglandins.Moderate to severe pain typically increase on the 1st day, Pain decreases in intensity if the wound heals normally[24]. In the current study, the pre and post-operative pain checked by thevisual analogue scale (VAS) as this scale can be easily interpreted by a patient simply.According to preoperative pain assessment, no pain was found in13(26%) patients in group A and 8(16%) patients of group B, mild pain was in 22(44%) patients of group A and 24(48%) patients of group B, moderate pain was in 15(30%) patients of group A and 17(34%) patients of group B, and severe pain was only in 1(2%) patient of group B. The results were statistically significant with (p=0.034). Onthe postoperative 1st day, the mild and moderate pain was significantly higher in group B patients with (p=0.001), while on the postoperative day 3rdand 7th,no pain found in both groups was statistically significant (p =0.001). This is comparable with Kumar *et al*., Pasha *et al*., Saubhagya*et al.,* and Nageshwar, who found less pain in group Aconcerninggroup B [11, 17, 19, 22]. It was incomparable with the study of Gool*etal*and according to them, there is no relation between incision type and pain [25].In current study, thepreoperative mouth opening assessment their mean of mouth opening was 39.5±2.8 in group A, 42.86±4.4 in group B mean of mouth opening was statistically significant with (p=0.001), postoperative mouth opening assessment on 1stday their mean of mouth opening was 38.7±2.6 in group A, 30.7±4.4 in group B mean of mouth opening was statistically significant with (p=0.001), on 3rd day their mean of mouth opening was 39.56±2.6 in group A, 33±4 in group B mean of mouth opening was statistically significant with (p=0.001), and on 7thday their mean of mouth opening was 39.5±2.6 in group A, 42.73±4.4 in group B mean of mouth opening was statistically significant with (p=0.001) is comparable with Kumar *et al*, Pasha Z *et al*, Saubhagya*et al* and Nageshwar where they found more statistically significant difference on post-operative 1st day in which comma shaped incision patients faced less difficulty in mouth opening as compared to wards incision, no any difference on 3rd and 7th day [11, 17, 19, 22]Salata et al.andSzmyd*et al*. established there is difficulty in mouth opening post-operative days, current study agreed with it [26]. In the current study, the post-operative swelling postoperative swelling assessment on day 1 their mean of swelling was 175±11 in group A, 180±1 in group B mean of swelling was statistically significant with (p = 0.001), on day 3 their mean of swelling was 176±1 in group A, 184±4 in group B mean of swelling was statistically significant with (p = 0.001), on day 7 their mean of swelling was 175±11 in group A, 184±7 in group B mean of swelling was statistically significant with (p = 0.001), that's similar to the study of Saubhagya*et al.* and Nageshwar observed less swelling in comma-shaped incision patients as compare wards incision [19, 22]. In the current study, the post-operative bleeding on 1st day was present in three(6%) patients in group A while in group B thirty-eight(76%) patients thatwere still significantly high in group B patients with (p=0.001). On the 3rd and 7thday,no bleeding was observed equally in groups statistically significant with (p=0.001) comparable with the study of Desai et al where they found more bleeding inwards incision[13].In the current study, the post-operative dehiscence on 1stdaywas still significantly high in group B patients with (p = 0.001) was observedintwo(4%) in group A while thirty-two (64%) patients in group B,on3rdday no dehiscence foundin group Awasobservedtwo(4%) patients in group B,and7thday no dehiscence found in group A, while it was observed inone(2%) in group B, statistically significant with (p=0.001) is comparable to study of [27, 28].

Conclusions and Recommendation:

The results of the study, within its limitations, has shown that Comma shaped incision appears to be a simpler, easier, and more effective technique for minimizing the post-surgical pain, swelling, trismus, bleeding, and wound dehiscence linked with inflammatory sequelae.After impacted 3rd molar surgery, previously conducted studies also concluded that comma-shaped incision is superior in terms of intra and post-operative complications. Further comparative studies with a larger sample size are required in this direction for better assessment following both the incisions after extraction of impacted 3rd molars.Limitationof the study was the sample size, age of the patient, duration of the study, depth of impaction, variables.

References

1. Abandansari AS, Foroughi R. The Effect of Releasing Incision on the Postoperative Complications of Mandibular Third Molar Surgery. Int J Ad Biotech Res. 2016;7:1144-51.
2. Farsi NM, El Ashiry EA, Abdrabuh RE, Bastawi HA, El Meligy OA. Effect of Different Pulp Capping Materials on Proliferation and Odontogenic Differentiation of Human Dental Pulp Mesenchymal Stem Cells. Int. j pharm. res. Allied sci.2018;7(3):209-223.
3. El Ashiry EA, Alamoudi NM, Farsi NM, Al Tuwirqi AA, Attar MH, Alag HK, Basalim AA, Al Ashiry MK. The Use of Micro-Computed Tomography for Evaluation of Internal Adaptation of Dental Restorative Materials in Primary Molars: An In-Vitro Study. Int. j. pharm. res. Allied sci. 2019;8(1):129-37.
4. Shamsaddin H, Barghi H, Jahanimoghadam F, FarokhGisour E, Safizadeh S. Prevalence of Dental Pain and Its Relationship with Socioeconomic Status among 6-to 12-Year-Old Children in Kerman, Iran. Arch. Pharm. Pract. 2018;9(1):14-20.
5. Jahanimoghadam F, Gisour EF, Askari R, Rad M. Attitude Regarding Dental Stem Cells among Dental Practitioners in Kerman, Iran. Arch. Pharm. Pract. 2018;9(3):10-13.
6. Malik N. Textbook of Oral and Maxillofacial Surgery, 2nd ed. New Delhi: Philadelphia; 2016.
7. Yazdani J, Amani M, Pourlak T, Maghbooliasl D. Comparison of the influence of two different flap designs on pain and swelling after surgical extraction of impacted mandibular third molars. J Am Sci. 2014;10:4.
8. Channar KA, Tareen MK, Hamad J, Warraich RA. Role of Antibiotics in Surgical Removal of Asymptomatic Mandibular Third Molar Impaction. J LiaquatUni Med Health Sci. 2014;13(03):112-5.
9. Shahzad MA, Munir MF, Chatha MR, Sohail A. effect of two triangular flap designs for removal of impacted third molar on maximal mouth. PODJ. 2015;35:2.
10. Arta SA, Kheyradin RP, Mesgarzadeh AH, Hassanbaglu B. Comparison of the influence of two flap designs on periodontal healing after surgical extraction of impacted third molars. J Dent Res Dent Clinics Dent Prosp. 2011;5(1):1.
11. Kumar S, Sarumathi T, Veerabahu M, Raman U. To Compare Standard Incision and Comma Shaped Incision and Its Influence on Post–Operative Complications in Surgical Removal of Impacted Third Molars. J ClinDiagn Res. 2013;7(7):1514.
12. Ustad F, Dandagi S, Ali FM, Kota Z, Prasant MC, Aher V. Comparative Evaluation of Envelope and Triangular Flaps in Inferior Third Molar Surgery. Indian J Stomat. 2013;4(3):66-70.
13. Desai A, Patel R, Desai K, Vachhani NB, Shah KA, Sureja R. Comparison of two incision designs for surgical removal of impacted mandibular third molar: A randomized comparative clinical study. ContempClin Dent. 2014;5(2):170.
14. Baqain ZH, Al-Shafii A, Hamdan AA, Sawair FA. Flap design and mandibular third molar surgery: a split-mouth randomized clinical study. Int J Oral Maxillofac Surg. 2012;41(8):1020-1024.
15. Blanco G, Lora D, Marzola C. The Different Types of Flaps in the Surgical Relations of the Third Impacted Molars–Literature Review. Dentistry. 2016;7(425):2161-1122.
16. Incision BC. Comma incision for impacted mandibular third molars. J Oral Maxillofac Surg. 2002;60:1506-1509.
17. Pasha Z, Naqvi ZA, Shaikh S, Khan NA. Comparative Evaluation of Comma-shaped Incision with Standard Incision in Third Molar Surgery: A Clinical Study. J Oralfac Res. 2015;(5)1:12-17.
18. Susarla SM, Dodson TB. How well do clinicians estimate third molar extraction difficulty? JOMS. 2005;63(2):191-99.
19. Nageshwar. Comma incision for impacted mandibular third molars. J Oral Maxillofac Surg. 2002;60:1506-09.
20. MacGregor AJ. The impacted lower wisdom tooth. 1st Ed. Oxford; 1985.
21. Quek SL, TayCK, Tay. KH, Toh SL, Lim KC. Pattern of third molar impaction in a Singapore Chinese Population- a retrospective radiographic study. Int J Oral Max Fac Surg. 2003;32:548-52.
22. Agarwal S, Kukreja P,Gupta D.S,Khare G,Satish K,Khan M.Comma Shaped Incision-An Alternative Procedure for the removal of impacted lower 3rd molar. TMU J Dent. 2018;5(1):8-18.
23. Slade GD, Foy SP, Shugars DA, Philips C. The impact of third molar symptoms, pain, swelling on oral health-related quality of life. J Oral Max Fac Surg. 2004;62:1118-24.
24. ChapmanPJ. Postoperative pain control for outpatient oral surgery. J Oral MaxilloFac Surg. 1987;16:319-24.
25. Van Gool AV, Ten Bosch JJ, Boerring G.Clinical consequences of complaints and consequences after removal of mandibular third molar.Int J Oral Surg. 1997:6:29-37.

26. Szmyd L. Impacted teeth. Dent Clin N Am. 1971;15(2):299-318.
27. Rahpeyma A, Khajehahmadi S, Ilkhani S. Wound dehiscence after wisdom tooth removal in mandibular mesioangular class IB impactions: Triangular transposition flap versus envelope flap. J Dent Res Dent Clin Dent Pros. 2015;9(3):175.
28. Punjabi SK, Khoso NA, Butt AM, Channar KA. Third molar impaction: evaluation of the symptoms and pattern of impaction of mandibular third molar teeth. J LiaquatUni Med Health Sci. 2013;12(1):26-9.

Corresponding Author

Mirza TasawerBaig
Faculty of Pharmacy, Ziauddin University Karachi