Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr ICV 2018= 82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of efficacy of lingual split technique and bur technique for removal of impacted lower third molar: A comparative study

Ashish Kashyap[1], Divya Jaggi[2]

[1]MDS (Oral and Maxillo-facial Surgery), [2]MDS (Periodontology), Medical officer (Dental), Department of health and family welfare, HP

***ABSTRACT*:**

Background: Debate has taken place for many years on the relative postoperative morbidities of different methods of surgical extraction of impacted mandibular third molars. Surgical methods need to be those which reduce the risk of complications to a minimum. Hence; the present study was conducted for assessing and comparing the efficacy of lingual split technique and bur technique for removal of impacted lower third molar. **Materials & methods:** A total of 40 patients scheduled to undergo surgical procedure for removal of impacted mandibular third molar were enrolled in the present study. All the patients were divided into two study groups as follows with 20 patients in each group: Group 1: Patients who underwent impacted third molar removal with lingual split technique, and Group 2: Patients who underwent impacted third molar removal with conventional bur technique. All the procedures were carried out under the hands of skilled and experienced oral surgeons. Pederson scale used for difficulty index was used for comparison among both the study groups. Higher value on Pederson scale indicated increased difficulty level. Follow-up was done upto a time period of 7 days and postoperative pain was assessed on VAS (visual analogue scale). **Results:** While comparing the Pederson difficulty index in between the two study groups, non-significant results were obtained. While comparing the mean VAS at different time intervals in between the two study groups, non-significant results were obtained. While comparing the mean duration of surgery among the two study groups, significant results were obtained. Also, while comparing the mean mouth opening at different postoperative time intervals in between the two study groups, non-significant results was obtained. **Conclusion:** Both the techniques were equally effective in controlling postoperative pain and swelling among patients undergoing removal of impacted lower third molar. However; lingual split technique was less time consuming in comparison to bur technique.

Key words: Third molar, Lingual split, Bur

Received: 18 Sept, 2019 Revised: 20 Sept, 2019 Accepted: 25 Sept, 2019

Corresponding author: Dr. Divya Jaggi, MDS (Periodontology), Medical officer (Dental), Department of health and family welfare, HP

This article may be cited as: Kashyap A, Jaggi D. Assessment of efficacy of lingual split technique and bur technique for removal of impacted lower third molar: A comparative study. J Adv Med Dent Scie Res 2019;7(10): 192-195.

INTRODUCTION

Third molar eruption and continuous positional changes after eruption can be related not only with race but also with nature of the diet, the intensity of the use of the masticatory apparatus, and possibly due to genetic background. Many theories were proposed for impaction such as Phylogenetic theory, Mendelian's theory, Nodine's theory, Pathological theory, Endocrinal theory, and Orthodontic theory.[1, 2]

Debate has taken place for many years on the relative postoperative morbidities of different methods of surgical extraction of impacted mandibular third molars. The number of techniques is numerous, each with its own variations, which when combined represent a rather heterogeneous area with many variables. The main surgical methods, however, can be broadly categorized as using a chisel or a bur. The standard method in the United Kingdom today is the surgical bur technique, although some surgeons still use a chisel as a first-line. The surgical bur technique uses burs under irrigation to remove bone to produce space for elevator application and tooth delivery, via a buccal approach. The lingual split (or split bone)

technique, however, uses chisels and was first described in print by Ward in 1956.[3- 5] The incidence of complications after surgical removal of impacted mandibular third molars needs to be as low as possible, particularly as this is a high volume procedure performed in both the general dental and hospital services. Surgical methods need to be those which reduce the risk of complications to a minimum.[6] Hence; the present study was conducted for assessing and comparing the efficacy of lingual split technique and bur technique for removal of impacted lower third molar.

MATERIALS & METHODS

The present study was conducted for assessing and comparing the efficacy of lingual split technique and bur technique for removal of impacted lower third molar. A total of 40 patients scheduled to undergo surgical procedure for removal of impacted mandibular third molar were enrolled in the present study. Written consent was obtained from all the patients after explaining in detail the entire research protocol. Complete demographic and clinical details of all the patients were obtained. All the patients were divided into two study groups as follows with 20 patients in each group:

Group 1: Patients who underwent impacted third molar removal with lingual split technique, and

Group 2: Patients who underwent impacted third molar removal with conventional bur technique

Pre-treatment hemodynamic profile of all the patients was assessed. Local anaesthesia was delivered and third molar were removed with techniques according to the respective groups. All the procedures were carried out under the hands of skilled and experienced oral surgeons. Pederson scale used for difficulty index was used for comparison among both the study groups. Higher value on Pederson scale indicated increased difficulty level. Follow-up was done upto a time period of 7 days and postoperative pain was assessed on VAS (visual analogue scale). All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test and student test were used for evaluation of level of significance.

RESULTS

In the present study, a total of 40 patients were analysed and were broadly divided into two study groups with 20 patients in each group. Mean age of the patients of group 1 and group 2 was 28.6 years and 28.9 years respectively. There were 13 males and 7 females in group 1 while there were 11 males and 9 females in group 2. While comparing the Pederson difficulty index in between the two study groups, non-significant results were obtained. Among the patients of group 1, mean VAS at 24 hours postoperatively, 3 days postoperatively and 1 week postoperatively was found to be 3.3, 2.8 and 1.9 respectively. Among the patients of group 2, mean VAS at 24 hours postoperatively, 3 days postoperatively and 1 week postoperatively was found to be 3.8, 2.5 and 1.6 respectively. While comparing the mean VAS at different time intervals in between the two study groups, non-significant results were obtained. In the present study, mean duration of procedure among subjects of group 1 and group 2 was found to be 21.85 minutes and 29.46 minutes respectively. While comparing the mean duration of surgery among the two study groups, significant results were obtained. Also, while comparing the mean mouth opening at different postoperative time intervals in between the two study groups, non-significant results was obtained.

Table 1: Demographic data

Parameter		Group 1	Group 2
Age group (years)	Less than 20	5	4
	20 to 30	11	12
	More than 30	4	4
Mean age (years)		28.6	28.9
Gender	Males	13	11
	Females	7	9

Table 2: Comparison of Pederson difficulty index

Pederson scale	Group 1	Group 2
Mean	5.60	5.10
SD	0.64	0.85
t- value	25.82	
p- value	0.418 (Non-significant)	

Table 3: Comparison of postoperative pain as assessed by VAS

Time interval	Mean VAS		p- value
	Group 1	Group 2	
24 hours postoperatively	3.3	3.8	0.56
3 days postoperatively	2.8	2.5	0.18
1 week postoperatively	1.9	1.6	0.27

DISCUSSION

Surgical management of impacted third molar is difficult because of its anatomical position, poor accessibility, and potential injuries to the surrounding vital structures, nerves, vessels soft tissues, and adjacent teeth during surgeries. The factors contributing to the post-operative morbidity are many, but the most important one is the trauma from bone cutting as the procedure involve significant bone cutting, which is carried out either by chisel and mallet or by rotary cutting instruments (like surgical bur).[6- 9] Hence; the present study was conducted for assessing and comparing the efficacy of lingual split technique and bur technique for removal of impacted lower third molar.

Table 4: Comparison of mean duration of procedure

Duration of procedure (minutes)	Group 1	Group 2
Mean	21.85	29.46
SD	4.36	8.75
p- value	0.029 (Significant)	

Table 5: Comparison of postoperative mouth opening

Time interval	Mean mouth opening (mm)		p- value
	Group 1	Group 2	
24 hours postoperatively	32.75	31.96	0.74
3 days postoperatively	35.12	34.19	0.66
1 week postoperatively	39.45	38.96	0.39

In the present study, a total of 40 patients were analysed and were broadly divided into two study groups with 20 patients in each group. While comparing the Pederson difficulty index in between the two study groups, non-significant results were obtained. Singh KI et al compared the modified lingual split technique and conventional buccal bone cutting technique for the surgical extraction of impacted mandibular third molar. Ten patients with bilaterally impacted third molars were randomly selected for the study. Technique selection for side was done by coin tossing method for randomization. One side of each patient was operated by conventional buccal bone cutting technique and other side was operated by modified lingual split technique by Davis modification. Washout period was of 2 weeks between the two surgical extractions. Various parameters were recorded intraoperatively and postoperatively. Conventional buccal bone cutting technique took more time than modified lingual split technique, whereas no significant difference was found between the two techniques on comparing postoperative parameters such as trismus, dry socket, inflammation, and nerve paresthesia. Clinically, pain felt and swelling observed were less in modified lingual split technique as compared to conventional buccal bone cutting technique. They conclude that modified lingual split technique was less time-consuming, less painful, and less swelling was observed in comparison with conventional buccal bone cutting technique.[10]

In the present study, among the patients of group 1, mean VAS at 24 hours postoperatively, 3 days postoperatively and 1 week postoperatively was found to be 3.3, 2.8 and 1.9 respectively. Among the patients of group 2, mean VAS at 24 hours postoperatively, 3 days postoperatively and 1 week postoperatively was found to be 3.8, 2.5 and 1.6 respectively. While comparing the mean VAS at different time intervals in between the two study groups, non-significant results were obtained. Praveen G et al compared the morbidity rates of the three different surgical techniques and their efficacy with regard to postoperative pain, swelling, labial and lingual sensation. Ninety patients with a symptomatic impacted mandibular third molar with the age range of 14-62 years were divided into three groups of 30 patients each for surgical bur technique, lingual split technique and simplified split bone technique. All patients were operated by the same surgeon under local anesthesia (2% lignocaine) in the dental chair. The severity of pain and swelling was recorded on a visual analogue scale and the presence or absence of sensory disturbance at 6, 24, 48 hours and seven days after operation. The pain was scored according to a visual analogue 4-point scale. Patients were asked to indicate which side was more swollen and to record this assessment on the swelling scale. Lingual split technique was more painful than the other two techniques. Surgical bur technique had more swelling than the other two techniques. Labial and lingual sensations were not altered in all the techniques. The simplified split bone technique had the least morbidity than the lingual split and surgical bur technique.[11]

In the present study, while comparing the mean duration of surgery among the two study groups, significant results were obtained. Also, while comparing the mean mouth opening at different postoperative time intervals in between the two study groups, non-significant results was obtained. Singh V et al assessed the efficacy of three different surgical techniques (lingual split, using chisel and mallet, buccal approach techniques, using rotary instruments used in the removal of impacted mandibular third molars. Their study comprised of 150 impacted mandibular wisdom teeth. Patients were divided in three groups and bone covering the third molar was removed by the Lingual split technique using chisel and mallet, Buccal approach technique using chisel and mallet, and Buccal approach technique using rotary instruments. Surgical time was significantly increased in bur technique. Trismus was significantly increased in lingual split technique and bur technique from buccal approach technique using chisel and mallet. Post-operative nerve injury was significantly higher in lingual split technique. Dry socket was more in patients of bur technique. They found that lingual split technique using chisel and mallet is found to be better among all three techniques used followed by buccal approach using chisel and mallet and the buccal approach technique using rotary instruments.[12]

CONCLUSION

From the above results, the authors concluded that both the techniques were equally effective in controlling postoperative pain and swelling among patients undergoing removal of impacted lower third molar. However; lingual split technique was less time consuming in comparison to bur technique.

REFERENCES

1. Juodzbalys G, Daugela P. Mandibular third molar impaction: Review of literature and a proposal of a classification. J Oral Maxillofac Res 2013;4:e1.
2. Bjork A, Jensen E, Palling M. Scandinav mandibular growth and third molar impaction. Acta Odontol Scand 1956;14:231-72.
3. Ward TG. The split bone technique for removal of lower third molars. Br Dent J 1956;101:297-304.

4. Lewis JE. Modified lingual split technique for extraction of impacted mandibular third molars. J Oral Surg 1980;38: 578-83.
5. Archer WH. Oral and Maxillofacial Surgery. 5 th ed, Vol. 1. USA: W.B. Saunders Company; 1976.
6. Szmyd L, Hester WR. Crevicular depth of the second molar in impacted third molar surgery. J Oral Surg 1963;21:185-9.
7. Rood JP. Lingual split technique. Damage to inferior alveolar and lingual nerves during removal of impacted mandibular third molars. Br Dent J 1983;154:402-3.
8. Rud J. The split-bone technique for removal of impacted mandibular third molars. J Oral Surg 1970;28:416-21.
9. Robinson PP, Smith KG. Lingual nerve damage during lower third molar removal: a comparison of two surgical methods. Br Dent J 1996;180:456-61.
10. Singh K, Sharma A, Bali A, Malhotra A, Patidar DC, Tanwar K. Comparison of modified lingual split technique and conventional buccal bone cutting technique for the surgical extraction of impacted mandibular third molar. Indian J Dent Sci 2019;11:207-13.
11. Praveen G1, Rajesh P, Neelakandan RS, Nandagopal CM. Comparison of morbidity following the removal of mandibular third molar by lingual split, surgical bur and simplified split bone technique. Indian J Dent Res. 2007 Jan-Mar;18(1):15-8.
12. Singh V, Alex K, Pradhan R, Mohammad S, Singh N. Techniques in the removal of impacted mandibular third molar: A comparative study. Eur J Gen Dent 2013;2:25-30