



## FREQUENCY OF USE OF LOCAL AND GENERAL ANESTHESIA IN MOLAR EXTRACTIONS: COMPARISON OF LEVEL OF PAIN AND COMPLICATIONS.

Mariam Younus Paracha<sup>1</sup>, Samia Perwaiz Khan<sup>2</sup>, Mohammad Shoaib Noor<sup>3</sup>

<sup>1</sup>B.D.S, Lecturer, Pharmacology Department, Jinnah Medical & Dental College, Karachi Pakistan. dr.my.paracha12@gmail.com

<sup>2</sup>Professor & HOD Pharmacology, Jinnah Medical & Dental College, Karachi Email: samiaperwaiz@hotmail.com

<sup>3</sup>B.D.S, Lecturer, Oral Anatomy Department, Jinnah Medical & Dental College, Karachi Pakistan. shoaibnoor1@hotmail.com

### ABSTRACT

**Background:** Study of LA and GA anesthesia response indicates the comparison between both Local anesthesia (LA) is that technique which is used to make absent of sensation or feeling that is confined to a circumscribed area of the body. Analgesia (pain relieving) is locally given for insensitivity to pain. Local anesthetics have high efficacy and safety in medical and dental practice. Their use is so routine, and adverse effects are infrequent, which may be overlooked.

The aims of this study were to compare the frequency of use LA (Lidocaine) and GA (Isoflurane) in molar extractions. And to determine the complications of this procedure.

**Methods:** Data was collected through questionnaire (sampling) method of hundred patients who recently had molar extractions in the three dental hospital (private hospital, government hospital, DUHS (OJHA Campus), Karachi. Frequency of Procedures of molar extraction done in LA or GA and any postsurgical complications were recorded.

**RESULTS:** Approximately 67 procedures were done on LA compared to 48 cases of molar extraction done in GA. This study shows frequency of use of GA, DUHS (30%), Medicare (28%), Abbasi Shaheed Hospital (37%) and LA varies among different hospitals DUHS (60%), JMDC (72%), Abbasi Shaheed Hospital (62%) (Table 1). Post surgical complications in procedures done under LA / GA which included were pain, trismus, swelling, soft tissue injury, nerve damage, damage to adjacent teeth and dislocation of mandible were recorded. (Table 2).

**Key words:** LA (Local Anesthesia); GA (General Anesthesia); Molar extraction.

### INTRODUCTION

General anesthesia has benefits in procedures in children, although local anesthesia benefits are there in post-operative hemorrhage control and reduced assistance by anesthetist. [1, 2]

The use of local or general anesthesia was significantly associated with the age of the patients. In this study the mean age of patient given general anesthesia was 10 years in comparison to 12 years for those who had local anesthesia and inhalation sedation with local anesthesia. In this study the children who had all four first premolars (FPMs) extracted were more likely to have a general anesthetic than those who had one FPM extracted. [3] General Anesthesia (GA) is a

medically induced state of unconsciousness with loss of protective reflexes and includes specific traits amnesia, analgesia and akinesia. Currently available local anesthetic drugs for Use in dentistry can be divided into three categories.

Short-acting drugs, such as 4% prilocaine, 3% mepivacaine, and 2% lidocaine, provide 30 min or less of pulpal anesthesia. [4]. Two percent lidocaine with 1:50,000 or 1:100,000 epi-nephrine, 2% mepivacaine with 1:20,000 levonordefrin, 4% prilocaine with 1:200,000 epinephrine, and 2% pro-caineplus 0.4% propoxycaine with either 1:20,000 levo-nordefrin or 1:30,000 nor epinephrine are examples of intermediate duration agents (approximately 60 min of pulpal anesthesia)[5].

Long-acting local anesthetics such as Bupivacaine, effective for the suppression of both intraoperative and postoperative pain. They are effective for lengthy dental procedures and for prevention of severe pain following many types of surgical procedures. Although the currently available long-acting local anesthetics for dentistry have minimal side effects in the therapeutic doses used. [ 6,7]

The prevalence of intraoperative accidents during extraction of third molars was 6.19%. The most prevalent accident was maxillary tuberosity fracture, followed by hemorrhage. Complications include hemorrhage, soft tissue injury, damage to adjacent teeth, fracture of maxillary tuberosity, nerve damage or dislocation of mandible. Most common is maxillary tuberosity fracture along with hemorrhage [8] Fractured roots are the most common problem associated with tooth extraction, according to Hupp (2009) [9].

## **METHODOLOGY**

This was questionnaire based study. Survey forms were filled from three dentistry units, Jinnah Medical and Dental Hospital (Medicare), DUHS ( OJHA Campus) and Abbasi Shaheed Hospital, Karachi.

Out of 115 patients who had molar extractions recently were asked to fill in the questionnaire form. Selected age groups were 18-25 years and 40 onwards. Frequency of performing molar extraction under local or general anesthesia. Data was collected to the comparison of pain (Severity and duration post surgery) and associated complications related to the procedure including trismus, swelling, soft tissue injury, nerve damage, damage to adjacent teeth and dislocation of mandible were recorded.

**RESULTS:****Table 1: SHOWING FREQUENCY OF USE OF LA (LIDOCAINE) AND GA (ISOFLURANE) IN MOLAR EXTRACTIONS**

RESPONDENTS	Numbers Of Patients	Age groups		FREQUENCY OF LA Administration	FREQUENCY OF GA Administration
		18-25(years)	40 yrs onwards		
<b>DUHS(OJHA CAMPUS)</b>	N = 40	25	15	20 (60%)	15 (30%)
<b>GOVERNMENT HOSPITAL(ABBASI SHAHEED)</b>	N= 40	22	18	25 (62%)	15(37 %)
<b>PRIVATE HOSPITAL(MEDICARE)</b>	N = 35	20	15	25 (72%)	10 (28%)

**Table 2: Complication in procedure done under LA and GA.****Table 2a. PRIVATE HOSPITAL (MEDICARE)**

COMPLICATIONS		LA (Lidocaine)	GA (Isoflurane)
<b>Pain</b>			
-Severity	Mild (0-5)	8	
	Moderate(5-10)	4	6
	Severe (10- Onwards)		
-Duration	15 minutes	4	
	30 minutes	3	2
	> 30 minutes		
<b>Trismus</b>		8	10
<b>Swelling</b>		14	10
<b>Nerve damage</b>			1
<b>Soft tissue injury</b>			1
<b>Damage to adjacent teeth</b>		2	
<b>Dislocation of mandible</b>			1

**Table 2b. GOVERNMENT HOSPITAL (ABBASI SHAHEED)**

COMPLICATIONS		LA(Lidocaine)	GA (Isoflurane)
<b>Pain</b>			
-Severity	Mild (0-5)	8	
	Moderate(5-10)	2	6
	Severe (10- Onwards)	3	4
-Duration	15 minutes	4	
	30 minutes	4	3
	> 30 minutes		3
<b>Trismus</b>		8	10
<b>Swelling</b>		10	14
<b>Nerve damage</b>		1	
<b>Soft tissue injury</b>		3	
<b>Damage to adjacent teeth</b>		2	
<b>Dislocation of mandible</b>			1

**Table 2c. DUHS (OJHA CAMPUS)**

COMPLICATIONS		LA (Lidocaine)	GA (Isoflurane)
<b>Pain</b>			
-Severity	Mild (0-5)	8	
	Moderate(5-10)	4	6
	Severe (10- Onwards)	2	4
-Duration	15 minutes	4	
	30 minutes	2	4
	> 30 minutes		2
<b>Trismus</b>		8	10
<b>Swelling</b>		10	15
<b>Nerve damage</b>			
<b>Soft tissue injury</b>		3	2
<b>Damage to adjacent teeth</b>		2	
<b>Dislocation of mandible</b>			1

The result of this study from three different Dental hospitals shows Frequency of performing molar extractions under Local or General Anesthesia and complications associated with procedure. This study frequencies of GA , DUHS (30%), JMDC(28%), Abbasi Shaheed Hospital (37%)and LA varies among different hospitals DUHS (60%), JMDC(72%), Abbasi Shaheed Hospital (62%)(Table 1). This study also indicates complications among patient of three dental units. Post surgical complications in procedures done under LA / GA which included were pain (Severity and duration post surgery) and trismus, swelling, soft tissue injury, nerve damage, damage to adjacent teeth and dislocation of mandible were recorded.(Table 2)

## **DISCUSSION**

As shown in this study while comparing the use of local and general anesthesia in the three hospital and post surgical complication.

Patients can be assessed, particularly regarding their medical and surgical suitability for anesthesia. Local anesthetic with or without vasopressors are used to perform various infiltrative techniques and nerve blocks. These are used for conscious sedation or topical anesthesia. Considering the risks of general anesthesia, the possibility of performing the procedure under local anesthesia with or without sedation should always be considered. The risks of general anesthesia should be explained to the patient, and consent obtained. [10]

In patients with known adverse reactions and allergies to local anesthetics allergy tests in patients were performed. [11] The intracutaneous test is a simple and easy test and has often been used as a means of identifying safety of LA[12] Anesthesia, parenthesis, or dysesthesia are more serious adverse outcomes and events of complicated extraction if either inferior alveolar nerve or lingual nerve gets damaged during the procedure. Injury to the lingual nerve during third molar removal could be unintended and is a result of the anatomical proximity of the tooth to the nerve. The sensory disturbances caused as a result of nerve injury can be troublesome.

Complications related to the third molar removal are many and vary from immediate to postoperative. When inferior dental canal is very closely situated to the tooth being extracted, it could result in direct trauma to nerves and vessels in the canal. At times, parts of the tooth or whole tooth can be dislodged and disappear into maxillary sinus [13,14].

Study done by Permanent inferior alveolar and lingual nerve injuries and mandibular fractures during and after lower third molar removal. Several other studies/reports include inflammatory processes, unusual abscess formations and displacement of teeth in different spaces. The noted most common postoperative complications were alveolar osteitis, infection, bleeding, and paresthesia. [15]

## **CONCLUSION**

Mandibular third molar extraction is although a routine dental procedure but is associated with risk factors of anesthesia and complications. Complications such as neural injuries trismus, swelling and displacement of tooth/tooth part into tissue spaces can be avoided by adequate preoperative evaluation of the patient and meticulous surgical technique by an expert oral surgeon.

## **REFERENCES**

1. Townsend JA, Hagan JL, Smiley M. Use of Local Anesthesia During Dental Rehabilitation With General Anesthesia: A Survey of Dentist Anesthesiologists. *Anesth Prog*, 2014 : 61:11–17.
2. Sammons HM, Unsworth V, Ray C, Choonara I, Cherrill J, Quirke W. Randomized controlled trial of the intraligamental use of a local anaesthetic (lignocaine 2%) versus controls in paediatric tooth extraction. *Int J Paediatr Dent*. 2007;17:297–303.

3. S. Albadri, H. Zaitoun, S. T. McDonnell and L. E. Davidson. Extraction of first permanent molar teeth: results from three dental hospitals. *British Dental Journal* 2007; 203: E14 .
4. Covino BG:Ultra long-acting local anesthetic agents. *An-esthesiology* 1981;54:263-264.
5. Gangarosa LP:Newer local anesthetics and techniques For administration.*J Dent Res* 1981;60:1471-1480.
6. Sisk AI.Long-acting local anesthetics in dentistry.*Anesth Prog.* 1992; 39(3): 53–60.
7. Costantinides F, Biasotto M, Maglione, Lenarda RD.Local vs general anaesthesia in the development of neurosensory disturbances after mandibular third molars extraction: A retrospective study of 534 cases.*Med Oral Patol Oral Cir Bucal.* 2016 Nov; 21(6): e724–e730.
8. Cantlay K, Williamson S, Hawkings J, Anesthesia for dentistry. *Contin Educ Anaesth Crit Care Pain.* 2005 5 (3): 71-75.
9. Sebastiani AM, , Regina S, Todero B , Gabardo G, Costa DJ, Rebelatto B, Scariot R. Intraoperative accidents associated with surgical removal of third molars. *Braz J Oral Sci.* October | December 2014 - Volume 13, Number 4.
10. Hupp JR, Ellis E, Tucker MR. *Oral maxillofacial surgery and contemporary.* Rio de Janeiro: Elsevier; 2009.
11. Tomoyasu Y, , Mukae K, Suda M, , Hayashi T , Ishii M, Sakaguchi M, , Watanabe Y, Jinzenji A, Arai Y, Higuchi H, Maeda S and Miyawaki T. Allergic Reactions to Local Anesthetics in Dental Patients: Analysis of Intracutaneous and Challenge Tests. *The Open Dentistry Journal.* 2011, 5, 146-149.
12. Barbaud A, Goncalo M, Bruynzeel D, Bircher A. Guidelines for performing skin tests with drugs in the investigation of cutaneous adverse drug reactions. *Contact Dermatitis* 2001; 45: 321-8.
13. Elitsa G. Deliverska, Milena Petkova, Papers Complications after extraction of impacted third molar- literature review,*Journal of IMAB- Annual Proceeding Scientific* 2016, vol. 22, issue 3
14. Chi H. Bui,Edward B. Seldin,,and Thomas B. Dodson, Types, Frequencies and Risk Factors for Complications After Third Molar Extraction2003 *American Association of Oral and Maxillofacial Surgeons Oral Maxillofacial Surg.* 2003,61:1379-1389,.
15. Brauer HU, DDS, DentM, MA; Green, R A., Pynn BR.Complications During and After Surgical Removal of Third Molars. *Oral health* June 1, 2013.