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Original Research

Comparison of two anaesthesia methods for the surgical removal of maxillary third molars

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***ABSTRACT*:**

Background: The extraction of teeth is based on the choice of local anaesthesia which has three main clinical considerations i.e. anesthetic potency, latency and duration of the anesthetic affect. The present study was conducted to compare the two anaesthesia methods for the surgical removal of maxillary third molars. **Material and methods:** The present study was conducted to evaluate the efficacy of PSA nerve block technique and infiltration technique for extraction of maxillary 3rd molar. In our study total sample size was 40 who underwent a surgical removal of symmetrically bilaterally impacted upper third molars age ranged between 18 and 30 years. Each of the 40 patients was scheduled to undergo bilaterally and symmetrically identical upper third molar surgical extraction. In each patient, the choice of which anesthetic techniques were going to be administered, the PSA block technique and on the contra lateral side the infiltration technique was done. The palatal injection was combined to both techniques. Preoperative pain assessed by a professional operator who was different from the surgeon who performed the surgery. Each record was repeated three times on every case: during the injection, at the end of operation and after 15 minutes from the end of operation by using visual analogue scale. The data was analysed using SPSS version 22 (SPSS Inc. Chicago, Illinois, USA). The pain VAS scores were analyzed by analysis of variance (ANOVA) for repeated measures. **Results:** Patients with weak pain intensity during injection was more with PSA(60%). Patients with no pain at the end of operation was more with PSA(80%). Patients with no pain after 15 minutes of the procedure was more with PSA(90%). **Conclusion:** Our study concluded that PSA was better than infiltration.

Key words: PSA, infiltration, palatal.

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INTRODUCTION:

Surgical extraction of impacted teeth can be either uneventful and uncomplicated, or difficult, with considerable postoperative pain.[1] Maxillary third molars are frequently amenable to removal surgically under local anesthesia.[2] Fear of a intraoral injection and postoperative pain can prevent patients from seeking dental care and often this fear is related to the anxious reaction of needle penetration and pain during the injection.[2,3] Procaine was the first synthesized local anesthetic agent by Alfred Einhorn in 1904 and it became the main local anesthetic in medicine and dentistry. The first amide anesthetic to be synthesized was lidocaine by Nils Lofgren in 1943.[5]

The amide anesthetic gained popularity and was started being widely used and was considered the gold standard for usage and comparison.[6] The onset of action of lidocaine varies from 2 to 3 min and the duration of its anesthesia is 85 minutes at the pulpal level, with addition of epinephrine as vasoconstrictor.[7] Local anesthesia plays an vital role in making dental treatment comfortable. It has been called the most important drug in dentistry too. On the contrary, local anesthetic injections are seen by many patients as worrying and a reason for avoiding dental treatment.[8] A range of local anesthetic drugs have been used in dentistry amongst which lidocaine is the most popular. The common techniques for providing anesthesia in maxillary molars include posterior superior alveolar (PSA) nerve block and infiltration anesthesia.[9,10]

MATERIAL AND METHODS:

The present study was conducted to evaluate the efficacy of PSA nerve block technique and infiltration technique for extraction of maxillary 3rd molar. In our study total sample size was 40 who underwent a surgical removal of symmetrically bilaterally impacted upper third molars age ranged between 18 and 30 years. Patients who were healthy and non-Smokers having no medications and were free from active local inflammatory lesions, were included in the study. Before the commencement of study, patients were informed about the study and informed consent was taken before surgery. An orthopantomographic (OPG) images were used to ensure the symmetry of the type of impaction and to classify all the impacted maxillary third molars according to Winter's classification[11] and Pell and Gregory classification.[12] Each of the 40 patients was scheduled to undergo bilaterally and symmetrically identical upper third molar surgical extraction. The two extractions were performed in two separate sessions approximately 4 weeks apart to allow for total recovery from the first one. In each patient, the choice of which anesthetic techniques were going to be administered, the PSA block technique and on the contra lateral side the infiltration technique was done. The palatal injection was combined to both techniques. A topical anesthetic gel 5% lidocaine was placed with a cotton tip applicator. After reaching the target area, aspiration was performed in all the planes during the administration of the injection using standard 24G 1 inch needle. In the infiltration technique, after two minutes of buccal infiltration, a palatal infiltration was administered. A 1.8 mL of 2% lidocaine hydrochloride with 1:80,000 adrenaline solutions was deposited at a rate of 1 ml/min. After 5 minutes of the injection of a determined dose of local anesthesia, the surgical procedure was performed. The surgical procedure was similar in all cases and was performed by the same surgeon. Full thickness mucoperiosteal flaps were used. Osteotomy and odontectomy was carried out using a round and straight fissure surgical bur under simultaneous continuous irrigation of cold sterile saline solution. Teeth were removed either intoto or by separation of crown and root depends upon difficulty index of each tooth. Primary closure was done with a 3-0 black braided silk suture. After surgery, all the patients were advised to take an oral antibiotic amoxicillin 500 mg t.i.d and non-steroidal antiinflammatory drug Diclofenac potassium 50 mg t.i.d for 3 days. The suture removal was done after one week postoperatively. Preoperative pain assessed by a professional operator who was different from the surgeon who performed the surgery. Each record was repeated three times on every case: during the injection, at the end of operation and after 15 minutes from the end of operation by using visual analogue scale. The data was analysed using SPSS version 22 (SPSS Inc. Chicago, Illinois, USA). The pain VAS scores were analyzed by analysis of variance (ANOVA) for repeated measures.

RESULTS:

In our study total participants were 40 in which bilaterally and symmetrically identical upper third molar surgical extraction was done. Patients with weak pain intensity during injection was more with PSA(60%). Patients with no pain at the end of operation was more with PSA(80%). Patients with no pain after 15 minutes of the procedure was more with PSA(90%).

Table 1: Pain intensity in two sides with different type of injection

Type of injection	VAS during injection	VAS at the end of operation	VAS after 15 minutes
Infiltration			
No pain	8(20%)	26(65%)	32(80%)
Weak	22(55%)	8(20%)	8(20%)
Moderate	10(25%)	6(15%)	0(0%)
PSA block(20)			
No pain	10(25%)	32(80%)	36(90%)
Weak	24(60%)	4(10%)	4(10%)
Moderate	6(15%)	4(10%)	0(0%)

DISCUSSION:

For the effective pain control, the choice of local anesthetic techniques may influence the amount of discomfort produced during intraoral injection in order to propose an easy and safe method to anesthetize the dentition and surrounding hard and soft tissues during management of surgical extraction.[13] The various anesthesia techniques available in dentistry are nerve block anesthesia, infiltration anesthesia, intra-osseous anesthesia, sub-periosteal infiltration, intraligamental, intra-pulpal, intranasal, sublingual, conscious sedation, general anesthetic techniques. Amongst these, the commonly used anesthetic techniques include nerve block and site specific infiltration techniques. Maxillary infiltration anesthesia is a common method to anesthetize maxillary teeth.[14] Also the PSA nerve block has been advocated to anesthetize the first, second, and third molar teeth.[15]

In our study total participants were 40 in which bilaterally and symmetrically identical upper third molar surgical extraction was done. Patients with weak pain intensity during injection was more with PSA(60%). Patients with no pain at the end of operation was more with PSA(80%). Patients with no pain after 15 minutes of the procedure was more with PSA(90%).

Halim SH concluded that the both methods have the same statistic equivalence for the surgical extraction of maxillary third molars with the significant advantages of PSA nerve block technique over infiltration technique that least number of necessary injections but at the same time the risk of a potential complication like hematoma also must be considered.[16]

Al-Delayme RE concluded that although the average pain score for all studied times in PSA side was lower than the average pain score in infiltration technique, repeated

statistical measures demonstrated that no significant pain reduction occurred in the two techniques.[17]

CONCLUSION: Our study concluded that PSA was better than infiltration.

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