
PSA block for maxillary molar's anesthesia - an obsolete technique?

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Background. Routine use of posterior superior alveolar (PSA) nerve block or maxillary infiltration for the removal of maxillary molars has been validated.

Objective. The present study was undertaken to determine the relative contribution of posterior superior alveolar (PSA) block in cases of anesthesia required for maxillary molars.

Study design. One hundred patients requiring removal of maxillary second and third molars were enrolled. These patients were divided into 2 groups. One group received infiltration for anesthesia and other group received PSA nerve block using lignocaine with vasoconstrictor. All extractions were performed using a consistent technique of intraalveolar extraction. Data relating to the pain during extraction obtained on a visual analog scale and a verbal response scale, requirement of repeated injection for anesthesia, efficacy of these injections in localized infections, and requirement of rescue analgesics 3 hours after extraction.

Results. Statistical data confirmed clinical equivalence between infiltration and PSA nerve block.

Conclusions. Considering the difficulty in mastering the technique of PSA nerve block, and the possibility of more complications associated with it (compared with infiltration); it may not be necessary for anesthesia of maxillary molars. (*Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2011;112:e39-e43)

Oral surgical and dental procedures are routinely performed in outpatient settings. Regional anesthesia is the most common method to anesthetize the area of surgery before the office-based procedures. Many techniques can be used to achieve anesthesia of the dentition and surrounding hard and soft tissues of maxilla and mandible. Orofacial anesthetic techniques can be classified into 3 main categories:

- Local infiltration.
- Field block.
- Nerve block.

The maxilla is very porous and highly vascular. Therefore, anesthesia of maxillary teeth can be accomplished more easily than with mandibular teeth. Buccal infiltration of anesthetic solution over the root apices of teeth is quite effective because the bone is so porous. Many pharmacologic strategies have been developed to prevent peripheral and central sensitization, thereby attenuating or even preventing the postoperative amplification of pain sensation. We discuss 2 of these in the present

study: local infiltration for maxillary molars and postero-superior alveolar (PSA) block. This study was undertaken to determine the relative contribution of PSA block in cases of anesthesia required for maxillary molars.

MATERIALS AND METHODS

One hundred healthy patients requiring maxillary molar extractions were enrolled in this study. The inclusion criteria were maxillary second and third molars indicated for extraction under local anesthesia, and the patients' belonging to the category of ASA1 status. Exclusion criteria were impacted maxillary third molars and patients unable to give informed consent or allergic to lignocaine. The included patients were divided into 2 groups of 50 patients in each group on a random basis. One group received local infiltration and the other received PSA block for anesthesia.

Before being administered local anesthetic agent, each patient was given a thorough explanation of the visual analog scale (VAS). The VAS has markings of numbers 0-5; with 0 being no pain and 5 being hurts worst. A solution of 1.8 mL 2% lignocaine with 1:80,000 adrenaline was injected for maxillary infiltration and PSA block. After completion of these injections, and after an interval of 5 minutes to allow for anesthetic effect, teeth were extracted with the use of a consistent technique. If an unacceptable level of pain or discomfort was experienced during extraction, a second injection was given.

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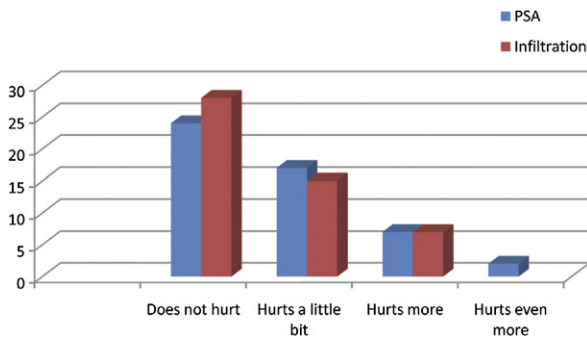


Fig. 1. Pain response according to VAS.

Immediately after extraction, patients rated their level of pain on VAS. A verbal response scale (VRS) was additionally used after extraction, by asking 2 additional questions to assess whether the procedure was “acceptable” or “unacceptable”; and to describe pain as “less than expected,” “as expected,” or “greater than expected.”

Data regarding the pain experienced during the extraction, requirement of supplemental anesthesia, requirement of rescue analgesics within the time span of 3 hours after surgery, efficacy of anesthesia in localized infections, frequency of positive aspirations, and post-operative complications related to anesthesia were recorded.

Statistical analyses

Data were subjected to different types of statistical analysis, such as *P* value, Mann-Whitney *U*, and Wilcoxon *W* and *Z*.

RESULTS

Pain

In the VAS scale, we did not come across any patients experiencing pain as “hurts a whole lot” or “hurts worst” (scores 4 and 5; Fig. 1; Tables I, II, and III). So the tables and graphs are made by omitting these 2 options. The *P* values for VAS and VRS were .382 and .442, respectively, which are $>.05$, indicating that there was no significant difference between infiltration and PSA. That is, VAS/VRS are almost equal for both infiltration and PSA. The *P* value for repeated injections was .798 which is $>.05$, indicating that there was no significant difference between infiltration and PSA. That is, repeated injections were almost equal for infiltration and PSA. The *P* value for requirement of nonsteroidal antiinflammatory drugs (NSAIDs) after 3 hours was .356, which is $>.05$, indicating no significant difference. That is, requirement of NSAIDs after 3 hours was almost equal for infiltration and PSA.

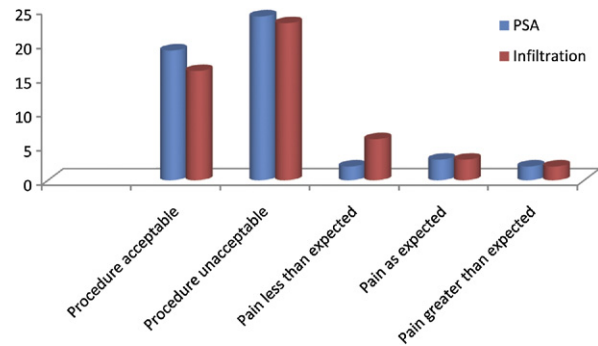


Fig. 2. Patient's response according to VRS.

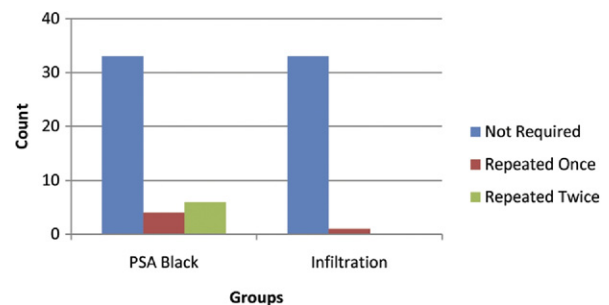


Fig. 3. Frequency of repeated injections.

Efficacy of anesthesia in localized infections

In our data, we had 34 patients who had periapical infection, out of which 14 underwent PSA block and 20 underwent infiltration to achieve anesthesia. Both of the techniques were equally effective. The *P* value for localized infection was .208, which is $>.05$, indicating that the null hypothesis of no significant difference was accepted. That is, localized infections were almost equal for infiltration and PSA.

Positive aspirations and postoperative complications

We encountered only 2 cases with positive aspiration in case of PSA block; and 2 patients reported with postoperative complication. One reported with hematoma and another 1 with trismus after receiving this block on the fifth postoperative day. No such complications were noticed in patients who received infiltration. In the case of the patient who developed hematoma, we advised the patient to use cold fermentation with ice and observed the patient periodically every three days until the swelling subsided. The patient with trismus was prescribed muscle relaxants and physiotherapy.

The present study was made to compare clinical efficacy of infiltration compared with PSA block by

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