Infra-orbital nerve block anesthesia—extended coverage using intra-oral ‘molar approach’

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ABSTRACT

The maxillary teeth are supplied by the anterior, middle and posterior superior alveolar nerves. The anterior and middle superior alveolar (AMSA) nerves exit the skull from the infra-orbital foramen, where they can be blocked for procedures on the maxillary anteriors and premolars. Sometimes, the middle superior alveolar nerve has a variant course and is not blocked by the conventional block technique. A new technique has been described for blocking the AMSA nerves, keeping in view the alternate pathway of the middle superior alveolar nerve.

Keyword: *Infra-orbital nerve block.*

The infra-orbital nerve is conventionally blocked at its exit from the infra-orbital foramen utilizing the percutaneous or the intra-oral approaches. Intra-orally, the nerve can be blocked either via the ‘central-incisor’ approach or the ‘premolar’ approach.¹ Recently, the palatal approach anterior and middle superior alveolar (AMSA) nerve block has also been described.^{2–4} Variations in the nerve supply of maxillary

teeth have been reported.^{5–7} In 28% of the population, the region distal to canine is supplied separately by a variant middle superior alveolar (MSA) nerve rather than the infra-orbital trunk itself. Conventional approaches may fail to provide pulpal anesthesia in this region in these cases.^{7,8}

We employed a ‘molar approach’ to block the infra-orbital nerve with distinct advantages.

Figure 1 Landmarks for infra-orbital ‘molar approach’ block. (A) Point of needle entry, (B) points of local anesthetic deposition.

Figure 2 The needle is inserted at the height of the buccal vestibule in the first molar region in an upward, inward and backward directions.

Nerves anesthetized are

1. Anterior superior alveolar nerve
2. Middle superior alveolar nerve
3. Infra-orbital nerve with its terminal branches
4. Part of superior dental plexus supplying the first molar.

Areas anesthetized include incisors, canine, premolars, buccal roots of the first molar with their investing buccal tissues; lower eyelid, upper lip and ala of the nose.

Landmarks are glabella, infra-orbital ridge, infra-orbital depression, mucobuccal fold, zygomatic buttress, maxillary first and second molars.

Needle pathway: The needle passes through the mucosa and the fibers of the buccinator muscle, deep to the zygomaticus minor muscle and the facial vessels to finally lie at the opening of the infra-orbital canal, superior to the origin of the levator anguli oris muscle.

TECHNIQUE

1. The patient is seated in the dental chair so that the maxillary occlusal plane is at 45° to the floor.
2. For a block of the right side, the operator stands at a 9 o'clock position. With the thumb placed on the infra-orbital foramen and the cheek retracted using the index finger, the patient is asked to look straight with the mouth open partially.
3. An imaginary line is drawn connecting the glabella, infra-orbital depression and the distobuccal cusp of the maxillary second molar. A 1½-inch-long 25-gauge needle is inserted at the height of the mucobuccal fold in the first molar region parallel to this line (Figure 1).
4. The needle is advanced slowly in an upward, inward and backward directions passing anterior to the zygomatic buttress at an angle of 65° to the maxillary occlusal plane. The needle is inserted about ¾ inches and manipulated by the thumb so that it lies on the infra-orbital foramen (Figure 2).
5. With the bevel facing the bone, 1 mL of the solution is slowly deposited at the foramen. The needle is withdrawn depositing 0.7 mL halfway and another 0.5 mL at the point of entry.

ADVANTAGES

1. Failure to achieve adequate pulpal anesthesia distal to the canine is minimized as MSA also gets blocked.
2. Anesthesia from the midline till the first molar can be achieved with a single puncture. This may be especially beneficial in certain procedures like arch bar fixation, flap surgeries and gingivectomy wherein multiple pricks may otherwise be needed to block the differential nerve supply.
3. The chances of orbital complications are minimized as the entry of the needle through the foramen into the orbit virtually does not exist, as the infra-orbital canal opens in an infero-medial direction whereas the needle is directed postero-superiorly.
4. As compared with the palatal approach, AMSA blocks this technique and is less painful.

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