Ultrasound-guided maxillary and inferior alveolar nerve blocks for postoperative analgesia in gnathoplasty

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Gnathoplasty, plastic and reconstructive surgery of the jaw, is an invasive surgery with intense postoperative pain. Although local anesthetic by the surgeon and intravenous opioids were administered to prevent the pain, the opioid can cause postoperative nausea and vomiting, resulting in a delayed postoperative ambulation. Maxillary and inferior alveolar nerve blocks are performed in patients with refractory trigeminal neuralgia.1 However, there have been few studies evaluating the analgesic effects of these blocks for gnathoplasty. We report a successful case of gnathoplasty managed with a combination of bilateral maxillary and inferior alveolar nerve blocks under ultrasound guidance for perioperative pain control.

This case report was approved by our institutional review board prior to the retrospective data collection. The patient was a 19-year-old man who underwent gnathoplasty of maxilla and mandible. Peripheral nerve blocks were applied after general anesthesia (video 1). Bilateral inferior alveolar nerve block was performed with the lateral extraoral approach. The head was turned away from the anesthesiologist, and the mouth was kept open with a disposable bite block. A 5–12 MHz linear probe was placed just caudad to the zygomatic arch. The maxillary artery was observed in the pterygomandibular space (PMS), inside where the inferior alveolar nerve and lingual nerve, peripheral branches of the mandibular nerve, were included. The 22-G block needle was inserted in the out-of-plane technique and advanced until the tip was adjacent to the artery to infiltrate the inferior alveolar nerve.2 Five mL of 0.375% ropivacaine was bilaterally injected into the PMS. Then bilateral maxillary nerve block was performed in the suprazygomatic approach.3 The transducer was slid to the anterior to observe the pterygoid fossa, and the lateral pterygoid plate was observed. The point of needle insertion was at the angle formed by the superior edge of the zygomatic arch and the posterior orbital rim. Because the maxillary nerve exists in the pterygoid fossa and cannot be directly observed, 5 mL of 0.375% ropivacaine was injected after the needle tip hit the lateral pterygoid plate and a negative aspiration test.

Supplementary video related to this article can be found at https://doi.org/10.1016/j.aja.2017.11.001.

Before surgical incision, the surgeon injected 9 mL of 2% lidocaine with 1:200,000 epinephrine under the palatine mucosa on each maxilla and mandible, and 6 mg of betamethasone were intravenously administered. The surgery lasted for 7 h 38 min. The hemodynamics of the patient remained stable intraoperatively without any opioid and the patient did not require any rescue analgesia after emergence. Moreover, the patient needed no rescue analgesics throughout the postoperative period and was discharged on the 16th postoperative day.

The combination of maxillary and inferior alveolar nerve blocks under ultrasound guidance was highly effective for perioperative analgesia for gnathoplasty. Both blocks have risks of vascular and nerve injuries, especially because the suprazygomatic maxillary nerve block is a deep approach.3–5 However, we were able to perform the block safely by visualizing the structures and the spread of local anesthetic with ultrasound. In this case, the patient needed no rescue analgesics. The duration of these blocks was extraordinarily long in this case, possibly because the administration of intravenous dexamethasone prolonged the analgesic duration of peripheral nerve block.6

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Conflict of interest
None

References