

## Percutaneous radiofrequency ablation of peripheral maxillary nerve: Description of new methodology

Sir,

Maxillary nerve is the second most affected branch in trigeminal neuralgia. It is treated with medical drugs like carbamazepine and baclofen. For long-term pain relief, chemical neurolysis and radiofrequency ablation (RFA) are commonly undertaken, of which RFA results in longer duration of pain relief, shorter onset and increased safety.<sup>[1]</sup> Chemical neurolysis of maxillary nerve can also result in serious complications.<sup>[2]</sup> RFA in chronic facial pain is being increasingly used with promising results.<sup>[3]</sup> We describe two patients where percutaneous RFA of peripheral maxillary nerve was undertaken without fluoroscopic/computed tomography (CT) guidance.

A 60-year-old female, a diagnosed case of idiopathic trigeminal neuralgia presented with electric, sharp shooting pain of Numerical rating scale (NRS) score 6/10 in the maxillary area with frequent exacerbations for the last two years. She had inadequate pain relief with oral medications such as carbamazepine, pregabalin, baclofen and tramadol/acetaminophen. For long-term relief, RFA of maxillary nerve via percutaneous approach was planned in the block area of the out-patient department (OPD). Anaesthesia machine, resuscitation equipment, monitor and emergency drugs were available in the OPD block area. After taking consent, intravenous line was secured and monitors (pulse oximetry, non-invasive blood pressure, electrocardiography) were attached. Under aseptic precautions, a 22 G radiofrequency needle (Cosman, 10 cm length, active tip – 1 cm) was inserted via coronoid notch on right side, in supine and neutral head position, after infiltration of local anaesthesia. After hitting lateral pterygoid plate, needle was directed 2–3 mm beyond the pterygoid plate antero-superiorly towards the root of the nose [Figure 1]. To identify maxillary nerve, sensory stimulation (50 Hz, 1 mA) was used to elicit paraesthesia in maxillary area, achieved in first attempt at 0.3 mV. Motor involvement was ruled out by 2 Hz and 2 mA. 1 ml of 1% lignocaine was injected which caused paraesthesia in affected area and was followed by RFA of maxillary nerve of 3 cycles



**Figure 1:** Infrazygomatic approach of maxillary nerve block (left); Radiofrequency generator for ablation of nerve (right)

at 65° for 60 s followed by injection dexamethasone 4 mg. This patient became pain-free for the next six months. All medications were reduced and tablet baclofen and tramadol were stopped.

The second case was a 66-year-old male patient of idiopathic trigeminal neuralgia of one year duration with pain refractory to medical management. Maxillary nerve RFA was performed with similar methodology as above. Sensory stimulation was achieved at 0.4 mV and RFA was performed after excluding motor response. The patient was pain-free for the next eight months and his oral medications were considerably reduced.

RFA of peripheral branches of the trigeminal nerve (infraorbital, supraorbital, mental and mandibular nerves) was found equally efficacious to RFA of gasserian ganglion through foramen ovale for trigeminal neuralgia; however, RFA of maxillary nerve was not undertaken in the study.<sup>[4]</sup>

In the commonly practised percutaneous infrazygomatic maxillary nerve blockade,<sup>[5]</sup> a reliable block requires the patient to report paraesthesia by block needle. Electrical stimulation has reported higher sensitivity of nerve identification than paraesthesia<sup>[6]</sup> which was utilised for RFA of maxillary nerve via CT-guided percutaneous infrazygomatic approach through foramen rotundum.<sup>[7]</sup> However, this is invasive, has radiation hazards and requires special area.

We propose RFA of maxillary nerve via percutaneous infrazygomatic approach and locating it by electrical stimulation. Added advantages are that it has no radiation hazards, is less invasive and it is an OPD block procedure.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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