Regional anaesthesia for outpatient nasal surgery

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Summary

Regional anaesthesia is not used widely for outpatient nasal surgery. The aim of this study was to determine the role of nasociliary and infraorbital nerve block in 24 patients undergoing nasal surgery comprising: cosmetic or reconstructive surgery of the nose and surrounding soft tissue, polypal removal, turbinectomy, reduction of fractured nasal bones, small tumour resection or emergency surgery on isolated facial lacerations. Mild sedation with midazolam $0.03 \text{ mg kg}^{-1}$ was used before anaesthesia. Nasociliary and infraorbital blocks were technically easy to perform, safe and provided good intraoperative conditions. Only minor complications were observed, including local bruising in eight patients and transient diplopia in one patient. No patient received general anaesthesia, but infiltration of local anaesthetic was necessary in four patients because of incomplete anaesthesia in the surgical area. Operative conditions were judged as good or excellent by surgeons in 20 of 24 patients. Twenty of 24 patients were very satisfied or satisfied with anaesthesia. Duration of surgery exceeding 60 min and excessive bleeding in the nasopharynx were the main limiting factors for the use of facial regional anaesthesia. (Br. J. Anaesth. 1996; 76: 151–153)

Key words


Regional anaesthesia of the face is used commonly for diagnosis or neurolytic blocks for chronic pain syndromes. However, these techniques have limited use as safer general anaesthesia has developed because of the discomfort and stress produced by facial surgery. Facial surgery is very frequently performed on an outpatient basis, especially for minor procedures involving the soft tissues of the nose, cheek, lower eyelid and upper lip. Regional anaesthesia may offer several advantages for the ambulatory patient, including: avoidance of the common side effects of general anaesthesia and tracheal intubation; decrease in patient recovery time; and residual analgesia in the early postoperative period [1]. The purpose of this study was to evaluate if outpatient nasal surgery performed under regional anaesthesia was safe and not accompanied by severe discomfort.

Methods and results

After obtaining informed consent, we studied 24 patients, mean age 36 yr (range 19–62 yr). Nineteen patients were scheduled for different nasal surgical procedures including: cosmetic or reconstructive surgery of the nose and surrounding soft tissue (12), polypal removal (1), turbinectomy (2), reduction of fractured nasal bones (2) and resection of small tumours (2). Five patients with a “full stomach” were managed as emergencies for isolated nasal or upper lip lacerations, or both, after facial trauma. Regional anaesthesia was performed on each side by block of the infraorbital nerve and nasal branches of the nasociliary nerve, with patient supine.

The nasociliary nerve is a branch of the ophthalmic nerve giving off several important groups of branches while in the orbital cavity. The ethmoidal branches supply the mucous membrane of the sphenoidal, ethmoidal and frontal sinuses. The nasal branches supply the mucous membrane of the anterior part of the septum, the lateral wall of the nasal cavity, and the skin of the ala and apex of the nose by the internal and external branches, respectively [2]. To block the nasociliary nerve or its branches, a 3-cm, 25-gauge needle was inserted 1 cm above the inner canthus and directed posterolaterally, keeping contact with bone. At a depth of 1.5 cm the needle should be at the anterior ethmoidal foramen, and 2 ml of anaesthetic solution was then injected. The needle was then advanced slowly 1 cm further to reach the posterior ethmoidal foramen, and 2 ml of anaesthetic solution was then injected. The two injections were also likely to block another branch of the nasociliary nerve, the infratrochlear nerve which supplies the root of the nose [3].

The infraorbital nerve is a terminal cutaneous branch of the maxillary nerve emerging through the infraorbital foramen. It divides into three groups of branches supplying the skin of the nose and the septum mobile nasi, the upper lip and its mucosa, and the lower eyelid and its conjunctiva [2]. To block the infraorbital nerve, an oral approach was performed as follows: the infraorbital foramen was
palpated approximately 2.5 cm from the midline of the face, on an imaginary straight line passing through the supraorbital notch, the pupil of the eye, the infraorbital foramen and the second bicuspid tooth. Depression of the foramen was fixed with a finger while a 3-cm, 25-gauge needle was inserted in the mucobuccal fold along the axis of the bicuspid tooth. The needle tip was advanced, being guided by the finger over the foramen. Anaesthetic solution (3 ml) was injected in the vicinity of the foramen without entering the canal [4].

Blocks were carried out with a mixture of equal volumes of 0.25% bupivacaine and 1% lignocaine with adrenaline 1:400 000. The nasociliary blocks were produced without adrenaline to eliminate any risk of retinal artery spasm. In addition, for surgical procedures involving the mucous membrane of the superior and middle turbinates and the posterior part of the septum, topical anaesthesia of the nasal branches of the pterygopalatine nerves was performed on each side. These branches lie on the lateral wall of the nasal passage, just posterior to the middle turbinate. A small piece of gauze soaked in a mixture of 5% lignocaine and 0.25% phenylephrine was introduced along the middle turbinate and placed at the end of the nasal passage for at least 10 min [3]. This combination of vasoconstrictor and anaesthetic agent reduced bleeding during surgery. The nasociliary and infraorbital nerve blocks were considered adequate in the first instance, if the apex and the skin on the side of the nose were anaesthetized, respectively. I.V. sedation was administered before anaesthesia with midazolam 0.03 mg kg\(^{-1}\).

The following variables were assessed: time to full sensory loss in the anaesthetized area, tolerance of the surgical procedure estimated by the surgeon on a four-point scale (excellent, good, fair or poor), time to recover light touch and patient satisfaction after surgery on a four-point scale (very satisfied, satisfied, little satisfied or dissatisfied).

Sixty-seven blocks were produced, including 42 nasociliary and 25 infraorbital blocks. They were associated with topical anaesthesia of the pterygopalatine nerves in only seven patients. Depending on the surgical procedure, the number of blocks performed on each patient was 1, 2, 3 and 4 for 2, 11, 1 and 10 patients, respectively. The blocks were frequently bilateral, particularly for surgical procedures involving the nasal cavity. Mean time to full sensory loss was 11 (range 5–15) min, mean duration of surgery was 45 min (range 15–90 min), and mean duration of block before recovery of light touch sensory was 1 h 31 min (range 30 min–2 h 30 min). However, the latter result was affected by the use of lignocaine alone for the two shortest surgical procedures (15 min). No patient received general anaesthesia, but infiltration of local anaesthetics was necessary in four patients because of incomplete anaesthesia in the surgical area. Additional administration of midazolam was necessary during surgery in 11 patients without exceeding a dose of 0.05 mg kg\(^{-1}\). The minor side effects of nasociliary blocks were: a little bruise and swelling of the upper lid in eight patients and diplopia disappearing as the block dissipated in one other patient. In our study, an intraoral approach was performed to block the infraorbital nerve. By using this approach and a 3-cm, 25-gauge needle, no haematoma was noticed. Tolerance of the surgical procedure was considered fair (2) or poor (2) in four patients compared with good (16) or excellent (4) in 20 patients. Twenty-two patients were very satisfied (10) or satisfied (12), but two patients were dissatisfied because of the feeling of suffocation from draping the face (one) and swallowing of blood (one).

Comment
The results of the present study demonstrated that regional anaesthesia is suitable for outpatient nasal surgery.

Nasociliary and infraorbital blocks are technically easy to perform, safe and provide good intraoperative conditions. These blocks also produce good anaesthesia. Indeed, nasociliary and infraorbital nerve blocks are considered adequate in the first place if the apex and side of the nose are anaesthetized, respectively. Because adrenaline is not used for the nasociliary block to prevent any risk of retinal artery spasm, this block wears off first. Thus, the mean duration of block represents the mean duration of anaesthesia in the area supplied by the nasociliary nerves. This could explain the short duration of block in our study. Consequently, we suggest that the infraorbital nerve is blocked before nasociliary block, even if the duration of anaesthesia is not increased significantly because of the short time taken to block the infraorbital nerve. The failure rate was 16% (4/24), which is low with regard to the total number of blocks carried out (67). This rate included only partial failure allowing surgery to proceed with single local anaesthetic infiltration. In addition, in the case of unilateral surgery, a smaller number of injections is required to perform anaesthesia, and this also decreases the risk of failure.

All of the failures involved the nasal cavity. However, it is extremely difficult to be certain each time which are the appropriate blocks because the areas supplied by the nasociliary and pterygopalatine nerves overlap. The lack of pterygopalatine nerve block may be responsible for some failures reported in our study. No major complication was observed and swelling of eyelid, the more common side effect of nasociliary block, may be prevented by local pressure during anaesthetic injection. The time to prepare and perform the blocks, and the onset time are appropriate for the outpatient setting. Light sedation with midazolam allows anaesthetic and surgical procedures to be performed without severe discomfort and stress, as assessed by patient satisfaction.

The amnesic effect of midazolam may make it difficult to assess adequately “Patient satisfaction”. However, midazolam was used in small doses (0.03 mg kg\(^{-1}\)) to relieve anxiety just before the blocks were carried out and a dose of 0.05 mg kg\(^{-1}\) was not exceeded. We do not believe that in these doses the amnesic effects of midazolam dramatically modified patient assessment of satisfaction. How-
ever, duration of surgery exceeding 60 min and excessive bleeding in the nasopharynx are felt as unpleasant and represent the main limiting factors the use of regional anaesthesia in facial or nasal surgery.

Facial surgery may also be performed by local anaesthetic infiltration [5, 6]. However, regional nerve blocks have advantages over infiltration for facial anaesthesia because there is less tissue swelling at the operative site [5]. Some operations performed in our study could have been undertaken with simple packing of the nose with local anaesthetic agents. However, in our experience, anaesthesia produced by simple packing does not allow surgery on deep tissues without severe discomfort even if the patient is also sedated. In emergency cases, infiltration anaesthesia is satisfactory for small clean wounds of the face, but injection of local anaesthetics into or around dirty or macerated wounds, with the risk of distortion and damage of tissue, should be avoided. Furthermore, most of the patients treated as emergencies are assumed to have a full stomach, and regional anaesthesia in this context avoids the risk of general anaesthesia.

References