

Setup for Nasal Endoscopy and Endoscopic Surgery

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Introduction

Nasal examination should be obligatory in any patient who is being considered for lacrimal surgery. Preoperative assessment should include nasal endoscopy to allow evaluation of any concurrent intranasal pathology or anatomical variations. Furthermore, lacrimal surgery itself is now widely practiced via an endoscopic approach and therefore Ophthalmologists performing lacrimal surgery should familiarize themselves with the use of nasal endoscopes.

Nasal Endoscopes

The use of rigid nasal endoscopes (Hopkins telescopes) is now standard practice for clinical examination of the nose as it provides a detailed, magnified, high-quality view of the nose and sinus passages. Nasal endoscopes are available in a variety of different sizes and angulations. Standard nasal endoscopes are available in 2.7- and 4-mm caliber thickness (Fig. 7.1), with varying viewing angles ranging from 0° to 120°,

which are used for both clinical examination and operative procedures. The most suitable endoscope to use during a clinic examination is a 30° 2.7-mm diameter Hopkins endoscope. The 30° angled allows for a panoramic view of the nasal cavity and the smaller diameter is best used to avoid inflicting any discomfort to the patient. Intraoperatively however, the wider 4-mm nasal endoscopes are preferred as they offer better illumination and view through the wider caliber telescope. For most purposes it is sufficient to use either 0° or 30° endoscopes for operative procedures. The 0° endoscope offers a straight-line view and is the easiest to use. It is often possible to perform a full dacryocystorhinostomy using

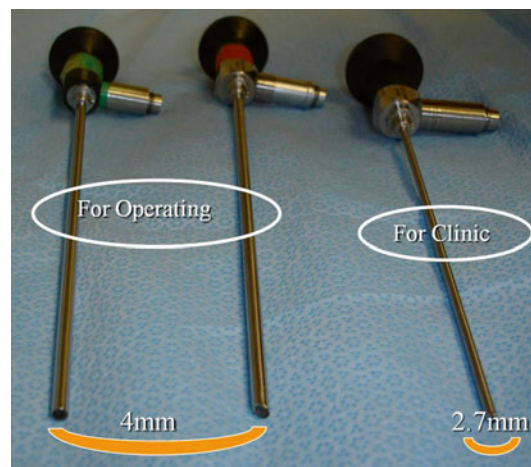


Fig. 7.1 Nasal endoscopes; from left to right 4-mm 0°, 4-mm 30°, and 2.7-mm 30° endoscopes

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this endoscope. In some cases however, a 30° endoscope is necessary for better visualization of the lateral nasal wall when the anatomy dictates.

Adjunct Equipment

In addition to the selected endoscope, a good halogen or xenon light source is essential for the best possible optics while using the endoscopes. This also requires good quality fiber-optic cables to connect with light source. Handheld light sources that can connect to Hopkins endoscopes are available, but a light cable and a separate light source are preferable and easier to use.

Outpatient Setup for Nasal Endoscopy

Before starting nasal endoscopy, the patient's nose should be prepared by applying topical local anesthetic with decongestant. Our preference is to use two sprays of co-phenylcaine spray (5 % lignocaine with 0.5 % phenylephrine) into each nasal cavity (Fig. 7.2), which should be left for at least 5 min before attempting any instrumentation, to allow sufficient time for the anesthetic and vasoconstrictive effect. The patient should then be positioned appropriately, either sitting upright facing the examiner or lying down, with head elevation of about 45°, and turned toward the examiner who should be on the patient's right side. Diagnostic nasal endoscopy in the clinic can

then be performed with a 2.7-mm, 30° nasal endoscope, using a three pass technique. The endoscope should be held in the right hand and supported between the thumb and index finger of the left hand, to avoid any sudden movements. With each pass, the condition of the nasal mucosa and anatomical structures are examined, as well as carefully noting of any anatomical variations or intranasal pathology.

Setup for Endoscopic Surgery

Endoscopic lacrimal surgery is almost always performed between two surgeons including an Ophthalmologist and rhinologist. A full complement of all nasal endoscopes, as well as sinus and ophthalmology instruments should be available [1, 2]. The endoscope needs to be connected to a light cable and high-quality light source, as well as a camera and large viewing stack (Fig. 7.3) which can be seen by both sets of surgeons and theatre scrub nurse. The operating surgeon should be positioned on to the right side of the patient with the assisting surgeon adjacent to them. Good interaction between the two surgeons is essential to facilitate the surgery, for example in guiding the light probe to demonstrate the extent of bone removal required for adequate exposure of the lacrimal sac and also in supporting the sac while the other surgeon is opening it. The scrub nurse and instrument tray should be positioned on the opposite side of the patient, and the anesthetist needs to be away from the operating head end (Fig. 7.4a, b).



Fig. 7.2 Co-phenylcaine (5 % lignocaine with 0.5 % phenylephrine)

Before commencing endoscopic surgery, the patient's nose should be prepared in the anesthetic room, following induction of anesthesia.

Any one of the variety of different nasal preparations which permit decongestion via their vasoconstrictive effect can be used, including Moffat's solution (2 ml of 10 % cocaine, 1 m of 1:1,000 adrenaline, and 2 ml of sodium bicarbonate), oxymetazoline nasal drops, or co-phenylcaine spray, depending on local availability and personal preference. After its application, the patient can be positioned for surgery in the reverse Trendelenburg position, with 30° head elevation. Where possible, hypotensive anesthesia should be maintained throughout the surgery to minimize intraoperative bleeding.



Fig. 7.3 Stack system with High Definition screen, connected to camera and endoscope

For endoscopic surgery, the wider caliber 4-mm endoscopes are used throughout. Initially, the 4-mm, 0° nasal endoscope should be used to inspect each nasal cavity and apply topical adrenaline (1 in 1,000) on merocel patties or ribbon gauze, within the middle meatus, for at least 5 min. Following that a standard dental syringe is used to inject 1 ml of 1:80,000 adrenaline and lignocaine 2 % into the area of the planned mucosal flap for further decongestion and to facilitate dissection (Fig. 7.5). Once the nose is adequately decongested, the surgery can commence. Endoscopic surgery is performed mainly with the 4-mm, 0° endoscope but can be changed to the 4-mm, 30° endoscope for a better-angled view of the lateral nasal wall.

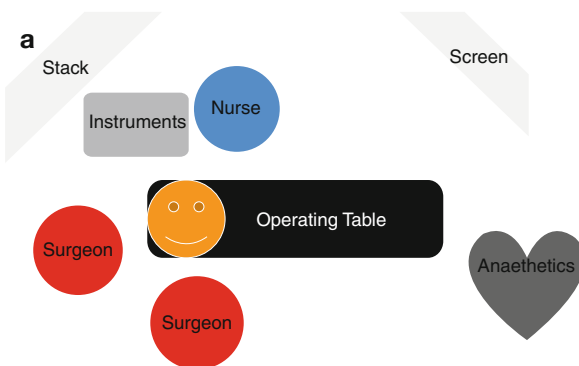


Fig. 7.4 (a) A schematic representation of the intraoperative setup for endoscopic surgery. A second screen at the foot of the table is included for better visualization by the second surgeon. (b) A photograph of the operating team

during an endoscopic dacryocystorhinostomy. In this setting, an assistant surgeon is seen holding the lacrimal light probe and the operating surgeons are at the right side of the patient



Fig. 7.5 A dental syringe with 1:80,000 adrenaline and 2% lignocaine cartilages



Fig. 7.6 A fiber-optic light probe is being inserted into the lower canaliculus



Fig. 7.7 A 15 Blade armed onto a long, slim handle slim to provide adequate length for access within the nose



Fig. 7.8 A Freer's elevator which can be used to elevate mucosal flap



Fig. 7.9 Straight Blakesley forceps



Fig. 7.10 A 45° upturned Blakesley forceps

Surgical Instruments

For transnasal endoscopic lacrimal surgery, a limited functional endoscopic sinus surgery set as well as ophthalmic set is required for all the necessary instruments. These should include a fiber-optic light probe to guide to the position of the lacrimal sac (Fig. 7.6), a 15 blade on a long, slim handle to provide adequate length for access within the nose (Fig. 7.7), a Freer's elevator for elevating the mucosal flap (Fig. 7.8), a straight and 45° upturned Blakesley forceps for grasping bony and mucosal fragments (Figs. 7.9 and 7.10), a microdebrider with a 4-mm Trucut blade (Fig. 7.11) for mucosal trimming, a 2.5-mm diamond burr (Fig. 7.12) for

bone removal, a standard sinus suction (Fig. 7.13), a keratome for opening the lacrimal sac (Fig. 7.14), and silicone lacrimal tubes if intubation is planned (Fig. 7.15).

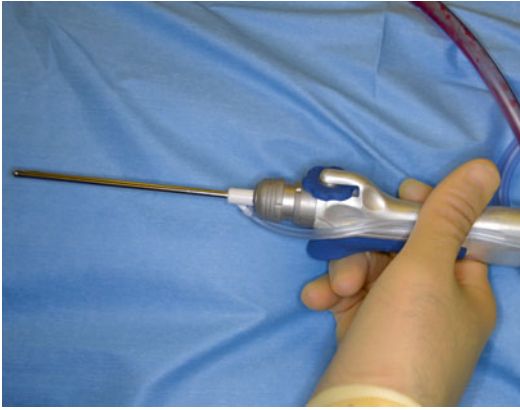


Fig. 7.11 A microdebrider handle attached to a straight 4-mm Trucut blade



Fig. 7.14 A keratome blade

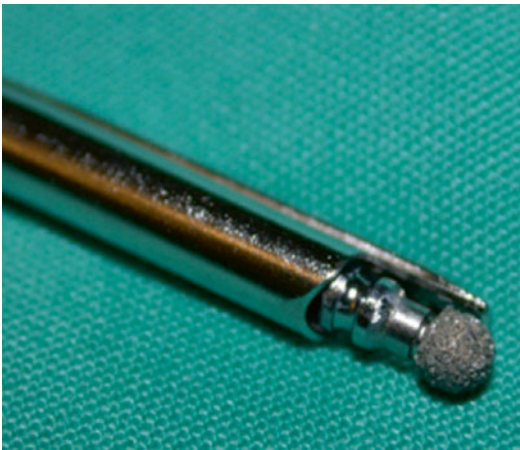


Fig. 7.12 A 2.5-mm diamond burr



Fig. 7.13 A metal Fergusson suction

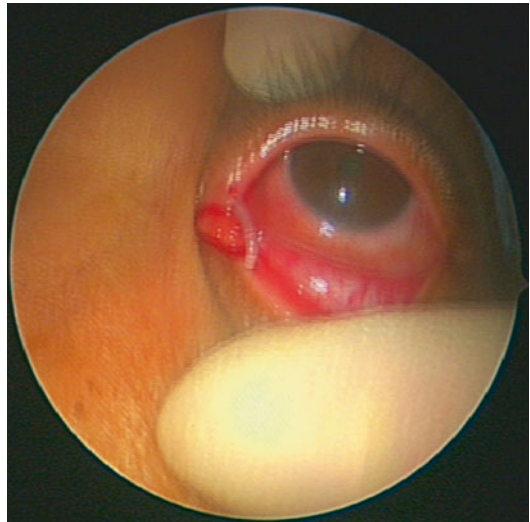


Fig. 7.15 Silicone intubation

Conclusion

Nasal endoscopy is a key technique that should be mastered by anyone practicing lacrimal surgery. It is vital as part of the preoperative assessment to evaluate for any coexisting nasal pathology or anatomical abnormalities that may impede surgical access. It also now forms the cornerstone for an endoscopic approach for lacrimal surgery and should therefore be familiarized by Ophthalmologists who are interested in this area of surgery. A number of practical tips and

considerations for the setup of nasal endoscopy, both in the clinic and operating theater, have been highlighted here within to facilitate its practice.

References

1. Olver J. Adult lacrimal surgery. In: Olver J, editor. Colour atlas of lacrimal surgery. 1st ed. Oxford: Butterworth-Heinemann; 2002. p. 91–145.
2. Tsirbas A, Wormald PJ. Mechanical endonasal dacryocystorhinostomy with mucosal flaps. *Br J Ophthalmol.* 2002;87:43–7.