Methods in Medicine

ENDOSCOPIC TRANSNASAL DACRYOCYSTORHINOSTOMY

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ABSTRACT

Dacryocystorhinostomy for chronic dacryocystitis has hitherto been performed only by ophthalmologists using the external approach. The rigid nasal endoscope offers a direct and simpler transnasal approach to dacryocystorhinostomy. This approach is more conservative and easier. It is far less traumatic causing no external scars or any disruption of medial palpebral ligaments and angular facial veins. Recent use of lasers, microdebriders and special bone cutting drills have further simplified this surgery and improved its efficacy.

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KEY WORDS: Dacryocystorhinostomy; Nasal endoscopy.

Introduction

Traditionally an external approach has been utilised by ophthalmologists to overcome obstruction of nasolacrimal system. However, during a routine functional endoscopic sinus operation the nasolacrimal duct was inadvertently exposed. This started a train of thought to apply it to the advantage of patients with lacrimal duct obstruction. This endonasal approach has now been tried successfully for some years by various workers [1-3]. The method described below is direct transnasal approach using a rigid Storz rod lens endoscope with a 30 degree viewing angle. This brings field of vision right into the nose, directly onto the operated area. The operation is therefore easier and more exact with less tissue trauma than the external approach.

Surgical Anatomy

The nasal vestibule leads into the nasal atrium which is concave anteriorly but has a vertical convex ridge just before the atrium leads into the middle meatus. This ridge corresponds to the frontal process of the maxilla immediately anterior to its junction with the lacrimal bone which lies 3 mm behind this ridge. The nasolacrimal sac lies in the lacrimal fossa which is on the lateral aspect of lacrimal bone. The nasolacrimal duct joins the sac halfway between attachments of middle and inferior turbinates. The uncinate process of ethmoid bone is attached to lacrimal bone anteriorly by anterior footpieces which are the extreme posterior limits of dissection. Entry beyond this point in a lateral direction leads into the post septal part of the orbit.

Surgical Technique

The instruments used are a 30 degree Storz Hopkins rod lens endoscope and an angled handpiece with drill, sickle knife, diathermy, curved suction cannula and forward biting forceps.

The procedure can be done under local or general anaesthesia. The anterior nasal cavity is packed with xylocaine impregnated gauze and the ridge area is infiltrated with 1:80,000 adrenaline and lignocaine. This gives easy access, mucosal anaesthesia and a bloodless field. The infiltrated mucosal area is then flattened with a freer dissector. Using a sickle knife a vertical incision is made in the lateral nasal wall mucosa just in front of the ridge extending from above the middle turbinate to the top of the inferior turbinate. The mucous membrane is dissected off the bone in a posterior direction until the base of the uncinate process and all bleeding sites are cauterized. The exposed bone just behind the ridge is palpated from anterior to posterior using firm lateral pressure. The lacrimal bone being papery thin gives way. If the bone is thick and unrelenting the angled drill is used. The maxillary part of the fossa is removed anteriorly going as high up under the middle turbinate as possible and about halfway down the length of the duct. The lacrimal part of the fossa is removed to the base of the uncinate process, being very careful posterolaterally. Finger pressure on the sac area from outside bulges it into the nasal cavity. An inferiorly based flap may be cut in the medial wall of the sac folded down and sutured into the inferior turbinate. The lacrimal canaliculi can now be probed at this stage if necessary.

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A pilot study using this technique has been carried out by us. Eight patients of chronic dacryocystitis and one of mucocele of lacrimal sac underwent transnasal endoscopic dacryocystorhinostomy. The surgery was done under LA using 30° rigid nasal endoscope. Intranasal drainage of lacrimal sac was easily established, this was confirmed on the table by injecting saline through the lacrimal punctum and observing its flow into the nose.

Post-operatively there were no complications except oedema of lower eyelid which subsided after a few days.

The cases have been followed up for 4-5 months. There have been no complications and the lacrimal tract has remained patent as confirmed by dacryocystography (Fig 1).

This operation is a conservative and direct one and is easily learned by the ear, nose and throat specialist. It is far less traumatic than the external approach as there is no facial scar, no disruption of the medial palpebral ligaments or of the angular facial vessels.

In difficult cases locating the sac can be a problem. Shining a cold light from the outside over the lacrimal fossa can help identify the nasal relationship of the sac. Care should be taken not to press the light against the skin as it will cause a skin burn.

Difficult or revision cases should initially be approached endoscopically but if difficulties arise resort to the classic external approach.

Additional technological advances continue to improve the results of endoscopic dacryocystorhinostomy. Ralph et al [4] performed dacryocystorhinostomy using lasers. They used Holmium Yttrium Aluminium Garnet lasers because of its property of fiberoptic delivery, soft tissue coagulation and bone cutting. Forty six patients were treated with excellent results and with no post-operative complication.

Powered surgical instruments like soft tissue shavers and bone cutting drills offer great advantages. Soft tissue shavers also called microdebridors rely on shear and suction to resect soft tissue providing precision

Fig. 1 : Post-operative dacryocystography showing flow of contrast medium in nose (see arrow)

cutting with less bleeding and no post-operative adhesions [5]. Advanced drill technology has also been extremely useful. Presence of built in suction at resection site in bone cutting drills increases the visibility and maneuverability during endoscopic dacryocystorhinostomy [6].

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