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IP Indian Journal of Anatomy and Surgery of Head, Neck and Brain

Journal homepage: <https://www.ijashnb.org/>

Editorial

Endoscopic dacryocystorhinostomy (Endo-DCR) — An ideal approach

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ARTICLE INFO

Article history:

Received 14-05-2024

Accepted 22-07-2024

Available online 01-08-2024

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1. Introduction

Dacryocystorhinostomy (DCR) is a surgical procedure designed to restore normal drainage of tears through the nasolacrimal duct and relieve symptoms caused by its obstruction. Traditionally performed using external methods, recent advancements in endoscopic techniques have significantly transformed the management of this condition. Endoscopic dacryocystorhinostomy (Endo-DCR) offers numerous advantages over conventional approaches, including enhanced visualization, reduced surgical trauma, and improved patient comfort.¹

First introduced by McDonogh and Meiring in 1989, Endo-DCR has gained widespread acceptance due to its high success rates and minimal scarring. This minimally invasive procedure utilizes nasal endoscopes and specialized instruments to establish a direct connection between the lacrimal sac and the nasal cavity, bypassing any blockage in the nasolacrimal duct. Endo-DCR is particularly beneficial for patients with acquired or congenital ductal obstructions, chronic inflammation of the lacrimal sac (dacryocystitis), and those who have had unsuccessful previous lacrimal surgeries.²

Recent advancements in technology, such as high-definition imaging systems and specialized endoscopic instruments, have further improved surgical outcomes.

These innovations enable surgeons to perform precise anatomical dissections while minimizing damage to surrounding tissues, thereby reducing the risk of complications and promoting faster recovery times.¹

2. Clinical History and Presentation

Dacrocystitis, an inflammatory condition affecting the lacrimal sac, presents clinicians with a complex challenge that necessitates a thorough preoperative evaluation to ensure favorable patient outcomes. The initial assessment begins with a detailed medical history, focusing on symptoms such as persistent watering of the eyes (epiphora), discharge of pus from the puncta, and tenderness around the lacrimal sac. Additionally, identifying potential predisposing factors such as prior trauma, chronic sinusitis, or anatomical anomalies assists in tailoring an appropriate management strategy.^{3,4}

Clinical examination plays a crucial role in confirming the diagnosis of dacrocystitis. External inspection may reveal redness and swelling over the lacrimal sac, while palpation often elicits tenderness and localized warmth. Evaluation of the lacrimal drainage system through procedures like the Jones dye test helps differentiate between obstructive and non-obstructive forms of the condition.⁵

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3. Preoperative Evaluation

Nasal Endoscopy: This is essential for evaluating nasal anatomy, identifying mucosal abnormalities, and assessing nasolacrimal duct patency.⁶

3.1. Imaging studies

1. **CT Scan:** Provides detailed anatomical information, evaluating inflammation extent, anatomical variations, and obstructions.⁷
2. **MRI:** Occasionally used for soft tissue assessment and lacrimal apparatus evaluation.⁷
3. **Dacryocystography :** Confirms lacrimal duct obstruction or anatomical abnormalities.⁸
4. **Microbiological Assessment:** Cultures discharge to identify infections and guide antibiotic therapy.⁹
5. **General Medical Assessment:** Evaluates overall health, comorbidities, and medications impacting anesthesia and surgery.
6. **Patient Counseling:** Includes discussions on procedure details, expected outcomes, risks, and postoperative care.

3.2. Procedure

The surgery can be performed under either general endotracheal or local anesthesia. Improved visualization is achieved through nasal turbinate decongestion and correction of a high septal deviation if any septal deviation. Initially, a vertical mucosal incision approximately 1.5 cm in length is made with 15 blade over the frontal process of the maxilla, situated above the anterior end of the inferior turbinate, in front of the anterior end of the middle turbinate, and about 1 cm behind the piriform aperture. A parallel second incision is made 2 cm posteriorly to this. By making either an inferior or superior horizontal incision, a mucosal flap can be pedicled cranially or caudally, which can later be used to cover part of the new ostium. Theoretically, a medial horizontal incision could provide both superior and inferior flaps, enhancing the ostium's structural support. In case these flaps are damaged during subsequent drilling, any remaining segments can be utilized for coverage.¹⁰

This procedure creates a 15 mm × 20 mm mucosal defect on the lateral nasal wall where it projects as the hard lacrimal crest. Behind this lies the lacrimal fossa, covered by a delicate bony plate just in front of the uncinat process. Using Kerrison's punch, remove the frontal process of the maxilla overlying the lacrimal sac. The exposed medial wall of the sac, measuring 15–20 mm in height, is palpated internally using a probe inserted through a cannaliculus, then incised endonasally with a sickle knife. After draining mucous fluid or pus, the incised wall is trimmed to a diameter of approximately 4 mm × 5 mm. Flap can be repositioned. Nasal packing for 1 or 2 days may be advised to prevent postoperative bleeding from the bone.¹⁰

4. Complications of Endoscopic

Dacryocystorhinostomy (Endo DCR):¹¹

4.1. Intraoperative complications

1. **Bleeding:** Occurs due to injury to nasal mucosa or blood vessels.
2. **Perforation:** Accidental puncture of nasal mucosa or adjacent structures.

4.2. Early postoperative complications

1. **Bleeding:** Immediate or delayed postoperative bleeding requiring intervention.
2. **Infection:** Sinusitis or cellulitis.
3. **Delayed Wound Healing:** Prolonged healing of nasal mucosa.

4.3. Late postoperative complications

1. **Nasal Synechiae:** Adhesions between nasal mucosa and adjacent structures.
2. **Epiphora:** Persistent tearing due to incomplete resolution of nasolacrimal duct obstruction.
3. **Recurrence of Symptoms:** Persistence or recurrence of symptoms requiring revision surgery.
4. **Mucocele Formation:** Rare formation of mucoid cyst in the lacrimal sac.

5. Conflict of Interest

None.


References

1. Brunworth J, Wormald PJ. Powered Endoscopic Dacryocystorhinostomy. *Laryngoscope*. 2015;112(1):69–72.
2. Trebbi M, Mattioli F, Soloperto D, Bettini M, Presutti L. Endoscopic Surgery of the Lacrimal Drainage System. 1st ed. Cham: Springer; 2016. p. 99. Available from: https://doi.org/10.1007/978-3-319-20633-2_6.
3. Kanski JJ, Bowling B. Kanski's Clinical Ophthalmology: A Systematic Approach. 9th ed. and others, editor. Elsevier; 2016.
4. Flint PW, Haughey BH, Lund VJ, Niparko JK, Richardson MA, Robbins KT. Cummings Otolaryngology: Head & Neck Surgery. 7th ed. and others, editor. Elsevier; 2015. p. 3568.
5. Harrie RP, Carter JR. Clinical Ophthalmic Echography: A Case Study Approach. 2nd ed. New York: Springer; 2013. p. 492.
6. Ali MJ, Psaltis AJ, Wormald PJ. Long-term outcomes in revision powered endoscopic dacryocystorhinostomy. *Int Forum Allergy Rhinol*. 2013;3(3):241–4.
7. Vaid S, Lee S, Osaki T. CT and MR imaging of orbital infections and complications in acute rhinosinusitis. *Radiographics*. 2004;24(1):205–15.
8. Aref AA, Hartstein ME. Advances in diagnostic imaging of the lacrimal drainage system. *Curr Opin Ophthalmol*. 2003;14(6):328–32.
9. Sasaki T, Ohsawa K, Kioi Y. Pathogen detection and clinical course of dacryocystitis. *Orbit*. 2009;28(4):245–9.
10. Wigand ME. Endoscopic Surgery of the Paranasal Sinuses and Anterior Skull Base. 2nd ed. and others, editor; 2008. p. 237.

11. Ali MJ, Psaltis AJ, Wormald PJ. Complications of endoscopic dacryocystorhinostomy: avoidance, recognition, and management. . *Otolaryngol Clin North Am.* 2006;39:1063–79.

Cite this article: Padmanabhan K. Endoscopic dacryocystorhinostomy (Endo-DCR) — An ideal approach. *IP Indian J Anat Surg Head, Neck Brain* 2024;10(2):29-31.

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