

Case Report

A novel inverted 'V' flap in endo-DCR: case report

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Received: 03 August 2022

Revised: 13 September 2022

Accepted: 14 September 2022

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ABSTRACT

Endo-DCR has a successful outcome when the lacrimal sac is marsupialised on the nasal lateral nasal wall. The lacrimal sac and nasal mucosal edges heal by primary intention rather than by formation of granulation tissue with consequent restenosis or reclosure. An indigenous flap was utilized to cover the exposed bone following Endo-DCR in a young individual. The flap fashioned in an inverted 'V' prevented the granulation of secondary intent healing and thereby reclosure.

Keywords: DCR, Transnasal, Mucosal flap, Inverted V

INTRODUCTION

Endo-DCR on table yields a perfect dacryostome but later the exposed bone takes lot of time to get covered with a covering of mucosa. The latter either is the periosteum that heals by secondary intention or the adjoining mucosa that creeps to line it. The interim period goes through a phase of mushrooming sites of pale granulomas that necessitate removal either by cold instrumentation, chemical cauterization or by fulguration.

A favorable outcome is likely when the lacrimal sac is marsupialised on the lateral nasal wall with apposing lacrimal and mucosal edges and healing is by primary intent instead of by formation of granulation tissue with likelihood of restenosis or reclosure Tsirbar and Wormald.^{1,2} Indigenous techniques have been advocated to tackle this malady. Superior, inferior, anterior and posteriorly based nasal mucosal flaps have been utilized with varied results. An indigenous inverted V mucosal flap which was based superiorly was used in our patient, after opening the lacrimal sac inside the nose.

CASE REPORT

A 21 year young male underwent s and endoscopic transnasal DCR for chronic dacryocystitis. A D-shaped mucosal flap was elevated with its lower limb parallel to the inferior turbinate, upper as far above the middle turbinate axilla and based posteriorly on the uncinat process. Interiorly the bone was exposed anterior to maxillary line this overlying bone over the nasolacrimal duct was nibbled caudio-cranially to expose the nasilacrimal duct and ascended to visualize the lacrimal sac. The sac was thence marsupialised to drain the stagnant contents proximal to the obstruction.

Subsequent to saline irrigation, the posteriorly based nasal mucosal flap was deposited on the neo-dacryostome and the duct to assess extent of coverage and thereby an incision was carried out with a sharp curved scissors till the axilla to create an inverted 'V' shaped flap that covered the exposed bone anterior to the naso lacrimal duct and superior to the sac. The mucosal edges of the flap approximated the incision line, thereby leaving no bone

exposed. Surgicel was placed at these sites and gelfoam placed in the neo dacryostome to be removed on the fifth day.

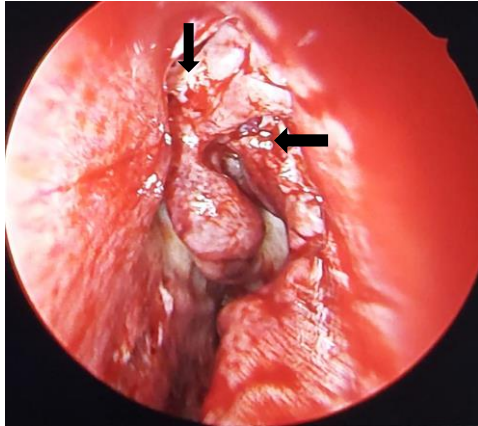


Figure 1: Flap raised over the sac and nasolacrimal duct (arrows).

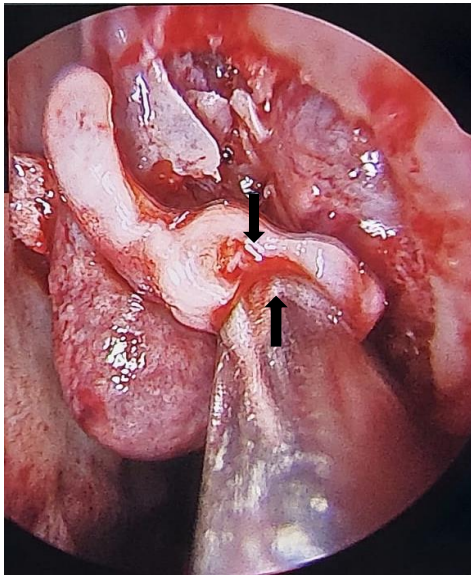


Figure 2: Flap transected vertically (arrow).

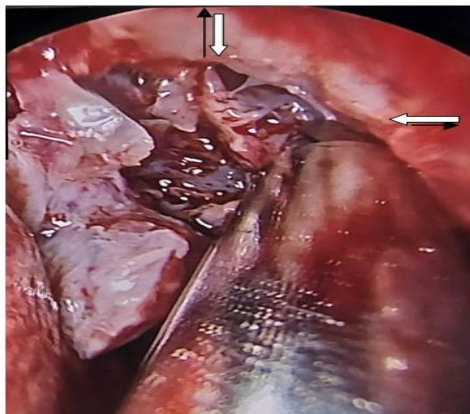


Figure 3: Exposed bone anterior (horizontal arrow) and superior (vertical arrow) to the dacryostome.

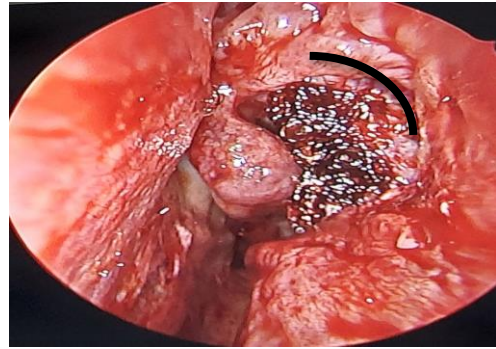


Figure 4: Flap repositioned over the exposed bone. (curved arrow).

DISCUSSION

External DCR was the ‘gold standard’ intervention for nasolacrimal duct obstruction, with successful outcome of 90-95%.³ Endonasal dacryocystorhinostomy was undertaken as earlier as 1893 by Caldwell. Visualization of site of the sac inside the nose was difficult and lead to complications, thus it went into oblivion.

Endoscopic sinus surgery, overcame this issue of intranasal visualization with a rigid telescope. Endo-nasal DCR is quicker than the conventional external approach, equivalently successful and preferred by patients.⁴

Three techniques are in vogue nowadays, namely external dacryocystorhinostomy (DCR), endoscopic DCR with laser and without laser.

Successful outcome depends on extensive bone removal to expose the lacrimal sac in its totality, and approximating the lacrimal sac and the nasal mucosa. This ideology has been utilized in intranasal endoscopic lacrimal sac surgery. Mann and Wormald proposed that the DCR ostium shrinks a small but significant amount in the first 4 weeks after surgery and then stabilizes.⁵

Endoscopic DCR has many advantages over external DCR (e.g., avoidance of facial scarring, disruption of lacrimal sac pump action from the orbicularis oculi muscles, and of division of the medial canthal ligament.² However, this technique does not have same success rate as external DCR.¹Wormald that a large bony ostium and complete lacrimal sac exposure are important for achieving both a patent post-operative ostium and a result comparable to external DCR.⁶ To better the surgical success of endoscopic endonasal DCR, innovative methods have developed in the last two decades with the emphasis on preservation of nasal mucosal flaps and creation of a large bony ostium.^{1,7} Durvasula et al documented granulation tissue to be due to bone devoid of mucosa.⁸

The lacrimal sac flap technique has a higher success rate of 89% wrt the conventional entire medial sac wall is excision technique.⁵ A U-shaped flap positioned over the neo dacryostome was consequent with primary healing

minus granulations in the Wormald series with a 95% surgical patency rate for an average of 11 months.⁶ Unfortunately, in these techniques of U-shaped and L-shaped nasal mucosal flaps; there is loss of a large extent of the middle part of the flap, 9 and inability to line the widely exposed bone.¹ Moreover, a small part of nasal mucosal flap is easily torn or often lost. The Kansu comparative analysis of surgical outcomes in EES-DCR with or without mucosal flaps and the results showed that the closure of bare bone with a nasal mucosal flap and an approximation between the lacrimal sac mucosa and the nasal mucosa reduced the incidence of granulation tissue formation.¹⁰

The free mucosal flap of Mahendran covers the bare bone in patients undergoing EES-DCR but it is time-consuming, free mobile and survives with difficulty on the bare bone; more so when the harvested flap does not provide adequate coverage to the bare bone in the vicinity of the ostium.¹¹ Our technique involved creation of a large bony ostium and a large posterior flap at the medial sac wall, followed a vertical incision whereby creating an inverted V flap. The superior part being reflected to cover the bare bone over the axilla and the anterior limb, anterior to the neodacrostome, the latter approximates the first incision line and thereby promotes early healing.

CONCLUSION

Early and a long term patency of the neo-dacrostome is likely, if the opening heals circumferentially by primary intention. The inverted 'V' flap, utilized by us lined the exposed bone in the vicinity of the neo-dacrostome, and thereby avoided the persistent granulations and hence facilitated free egress of lacrimal secretions inside the nose.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Munjal M, Munjal S, Arora P, Sharma S, Arora V, Kaur H, et al. A novel inverted 'V' flap in endo-DCR: case report. *Int J Otorhinolaryngol Head Neck Surg* 2022;8:847-9.