Original Research Article

External versus endonasal endoscopic DCR: A comparative study

Aalok Kumar[1], Nitika Gupta[2*], Rohan Gupta[3], Vipin Singh[4]

[1]Assistant Professor, Department of Ophthalmology, Hind Medical College, Lucknow, Uttar Pradesh, INDIA.
[2]Assistant Professor, Department of ENT, Government Medical College, Kathua, Jammu, Jammu and Kashmir, INDIA.
[3]Associate Consultant, Department. of ENT, Shri Mata Vaishno Devi Narayana Super speciality Hospital, Katra, Jammu, Jammu and Kashmir, INDIA.
[4]Senior Resident, Department of Ophthalmology, KGMU, Lucknow, Uttar Pradesh, INDIA.
Email: nitikagupta5949@gmail.com

Abstract

Background: Dacryocystorhinostomy (DCR) is an operation that creates a lacrimal drainage pathway into the nasal cavity to facilitate drainage of the previously obstructed excreting system and is the gold standard in treating patients who have nasolacrimal duct obstruction. This study was done to compare external and endonasal endoscopic DCR, in terms of results and to know the technique with better outcomes. **Materials and Methods:** Out of the total 150 patients, 70 underwent endonasal DCR while 80 underwent external DCR. Patients were followed up at 1week, 3 weeks and 3months postoperatively. Success was defined as an asymptomatic patient or freely patent syringing at last follow up while any symptomatic patient with regurgitation on syringing was considered as a failure. **Results:** Success rate was comparable in both the groups, 60 patients out of the 70, were patent after 3 months of postoperative evaluation in the endonasal group, 10 patients continued to be symptomatic and were regarded as failures. Similarly, 16 patients were reported as failure in the external group out of the total 80 patients. **Conclusion:** The gold standard approach for treating nasolacrimal duct obstruction is external DCR as reported by earlier studies, but the Endonasal approach has comparable results with the additional advantages of better cosmesis and decreased surgical time.

Key Word: Dacryocystitis, Dacryocystorhinostomy, External, Endonasal, Endoscopic

***Address for Correspondence:**
Dr. Nitika Gupta, Assistant Professor, Department of ENT, Government medical college, Kathua, Jammu, Jammu and Kashmir, INDIA.
Email: nitikagupta5949@gmail.com

Received Date: 11/01/2019 Revised Date: 04/02/2019 Accepted Date: 22/02/2019
DOI: https://doi.org/10.26611/1016928

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 26 February 2019

INTRODUCTION

Chronic dacryocystitis is the commonest form of dacryocystitis, which arise from nasolacrimal duct occlusion. The occlusion may be caused by congenital abnormality, chronic sinus disease, naso-orbital trauma and involutional stenosis. Dacryocystorhinostomy (DCR) is an operation that creates a lacrimal drainage pathway into the nasal cavity to facilitate drainage of the previously obstructed excreting system and is the gold standard in treating patients who have nasolacrimal duct obstruction. The classical external approach to DCR was described by Addeo Toti in 1904[1], however Caldwell in 1893 had described an alternative pathway of doing DCR i.e. via intranasal route.[2] With the introduction of endoscopic surgery, endonasal endoscopic DCR was introduced by Mc Donogh and Meiring in 1989.[3] In 2002, with further advancement in the field, Wormald PJ[4] described powered endoscopic DCR with full sac exposure and primary mucosal anastomosis. Endolaser dacryocystorhinostomy with holomnium YAG laser[5,6] is also being performed for NLD obstruction, but the results are not that promising and encouraging. The reported success rate for Endonasal and External DCR procedures ranges from 63% to 97%.[7]The wide range of success rate is likely due to various factors including surgical variability, patient demographics and lack of standardized outcome measures.[8] This study was

How to cite this article: Aalok Kumar, Nitika Gupta, Rohan Gupta, Vipin Singh. External versus endonasal endoscopic DCR: A comparative study. *MedPulse International Journal of ENT*. February 2019; 9(2): 73-75. https://www.medpulse.in/ENT/

done to compare external and endonasal endoscopic DCR, in terms of results and to know the technique with better outcomes.

MATERIALS AND METHODS

The present study was conducted in the department of Ophthalmology and Otorhinolaryngology, KGMU, Lucknow for a period of 2 years, wherein a total of 150 patients with symptomatic nasolacrimal duct obstruction were enrolled. All the patients included had symptomatic epiphora of more than one year with nasolacrimal duct obstruction confirmed by syringing. Patients with history of trauma, canalicular blocks, nasal polyps, previously failed dacrocystorhinostomy, and children below 3years were excluded. Out of the total 150 patients, 70 underwent endonasal DCR while 80 underwent external DCR. The mean age of the patients was 37.45 years and female to male ratio was 4:1. For endonasal approach, infiltration was given along the lateral wall of nose, just anterior to the axilla of middle turbinate. Punctal dilatation if required was done with nettle ships punctal dilator. U shaped flap was elevated along the frontal process of maxilla and part of nasal process of maxilla was removed, making an ostium of about 8mm. Lacrimal sac was visualized and opened after removing lacrimal bone thereby bypassing the blocked nasolacrimal duct in the drainage of tears. External DCR was performed by the standard technique. All patients received topical antibiotic and steroid drops three times a day for three weeks. Patients were followed up at 1week, 3 weeks, and 3months. Symptoms were assessed and syringing with distilled water was performed at each visit. Success was defined as an asymptomatic patient or freely patent syringing at last follow up while any symptomatic patient with regurgitation on syringing was considered as a failure.

RESULTS

We considered the last follow up of each patient, for the purpose of analysis. The outcomes are summarized in table 1 and 2. Success rate was comparable in both the groups, 60 patients out of the 70, were patent after 3 months of postoperative evaluation in the endonasal group, 10 patients continued to be symptomatic and were regarded as failures. Similarly 16 patients were reported as failure in the external group out of the total 80 patients.

Table 1: Surgical results of external and endo DCR in the present study

Surgical results	External DCR (%)Group I	Endonasal DCR (%) Group II	Total (%)
Syringing day 1	54 (67.5%)	58 (82.86%)	112 (74.67%)
Syringing day 7	60 (80%)	62 (88.57%)	122 (81.33%)
Syringing day 21	62 (77.5%)	60(85.71%)	122 (81.33%)
Syringing 3rd month	64(80%)	60(85.71%)	124 (82.67%)

Table 2: Showing secondary outcomes in the present study

Secondary outcomes	External DCR Group I	Endonasal DCR Group II	Total
Haemorrhage requiring intervention	10	7	17
Infection	2	2	4
Wound dehiscence	9	0	9
Total	21	9	30
% sec outcomes	21/80 (26.25%)	9/70 (12.86%)	30/152 (20%)

In the external DCR group, secondary outcomes were seen in 21 patients, out of which 10 patients had haemorrhage requiring intervention, 2 patients had infection and 9 patients had wound dehiscence, figuring 26.25% complication rate which is significant as compared to the complication rate in endonasal DCR which attributes to 12.5%.

DISCUSSION

Chronic Dacryocystitis, a smoldering low grade infection, ultimately leading to total nasolacrimal duct (NLD) obstruction, has Dacrocystorhinostomy (DCR) as the treatment of choice[9]. External DCR surgery, regarded as the gold standard in the treatment for nasolacrimal duct obstruction has advantages in terms of predictability of success and direct visualization of the anatomy. Its disadvantages include cutaneous scar, potential for injury to the medial canthal structures, risk of cerebrospinal fluid rhinorrhea, and functional interference with the physiological action of the lacrimal pump[10]. Endoscopic DCR technique has equally promising results for long-term success in maintaining patency of nasolacrimal duct, along with the benefits of minimally invasive surgery. In Endoscopic DCR we can also directly inspect the lacrimal

sac for the underlying pathology. The advantage of Endoscopic approach compared to external DCR is that there is reduced risk of interfering with the medial canthal tendon, and the physiology of the lacrimal pump mechanism. It also has the benefit of no external scar, providing a desired cosmetic effect for patients[11,12]. More importantly Endoscopic Endonasal DCR surgery has been shown to have earlier postoperative recovery time and rehabilitation, as also seen in our study. In present study, 47.37% patients had right eye involved and 52.63% had left eye involved. Our findings correlate with other studies[13,14] which also show left side to be involved in more number of cases but do not correlate with studies by Nichlani *et al.*[15] and Saha R *et al.*[16] In the present study Epiphora was the most common mode of presentation, as seen in various other studies[14,15]. Tsirbas and Wormald with the endoscopic procedure reported a success rate of 89%[16] while Hartikainen *et al.* [17] recorded a success rate of external DCR between 80-99%. The success rate for both the procedures in the present study were compared with various studies. 80% patients who underwent external DCR showed patent passage at end of 3months, whereas, in endoscopic DCR surgical success was seen to be 85.71%. The results are in correlation with other studies[13,14,15,16]. Karim *et al.*, has also found similar success rate in both the approaches (endoscopic DCR 82.4% versus external DCR 81.6%; P = 0.895)[18] while Khan *et al.*, showed that success rate was 73.3% with endoscopic approach and 80% with external approach[8]. The present study had a female predominance in the ratio of 4:1 which corroborates with other studies [13]. This predilection of females can be explained by narrower lumen of the bony naso-lacrimal canal. It is also possible that endocrine factors may be playing a role in the etiology of chronic dacrocystitis.

REFERENCES

1. Hughes SM. The history of lacrimal surgery. Adv Ophthalmic Plast Reconstr Surg. 1986; 5: 139–68.
2. Caldwell GW. Two new operations for obstruction of the nasal duct, with preservation of the canaliculi, and with an incidental description of a new lacrimal probe. Am J Ophthalmol. 1893; 10: 189–93.
3. McDonogh M, Meiring H. Endoscopic transnasal dacryocystorhinostomy. J Laryngol Otol. 1989;103: 585–7.
4. Wormald PJ. Powered endoscopic dacryocystorhinostomy. Laryngoscope. 2002; 112: 69–72.
5. Sadiqu SA, Hugkulstone DE, Jones NS, downes RN. Endoscopic holmium YAG laser dacryocystorhinostomy. Eye, 1995; 10(P1): 43-6
6. Tutton MK, O'Donnell NP. Endonasal laser dacryocystorhinostomy under direct vision. Eye, 1995; 9(P 4) : 485-7.
7. Durvasula V, Gatland DJ. Endoscopic dacryocystorhinostomy: Long-term results and evolution of surgical technique. J Laryngol Otol. 2004; 118: 628–32.
8. Khan MK, Hossain MA, Hossain MJ, Al-Masud A, Rahman MZ. Comparative study of external and endoscopic endonasal dacryocystorhinostomy for the treatment of chronic dacryocystitis. JAFMC Bangladesh. 2011; 7: 15–7.
9. Woog JJ. The incidence of symptomatic acquired lacrimal outflow obstruction among residents of Olmsted County, Minnesots, 1976-2000 (an American Ophthalomological Society thesis). Trans Am Ophthalmol soc 2007; 105: 649-66
10. Parsons' diseases of the eye. Twenty- first edition. Page 464-468. Editors Ramanjit Sihota, Radhika Tendon. Handbook of Ophthalmologh edited by Amar Agarwal.
11. Welham, R A N, Wulc A E. Management of unsuccessful lacrimal surgery. British Journal of Ophthalomology. 1987; 71:152-157.
12. Duke Elders S. Disease of lacrimal passages; system ofophthalmology. Vol. XIII part-II, Mosby Publication, 1974, 675-724 pp.
13. Moras K, Bhat M, Shreyas CS, Mendonca N, Pinto G. External dacryocystorhinostomy versus endoscopic dacryocystorhinostomy: A comparison. J Clin Diagn Res. 2011; 5: 182–6.
14. Vishwakarma R, Singh N, Ghosh R. A study of 272 cases of endoscopic dacryocystorhinostomy. Indian J Otolaryngol Head Neck Surg. 2004; 56: 259–61.
15. Nichlani SS, Jagade MV, Ganeshan A. A comparative study between endoscopic and external approach dacryocystorhinostomy. Bombay Hosp J. 2010; 52: 189–96.
16. Tsirbas A, Wormald PJ. Endonasal dacrocystorhinostomy with mucosal flaps. Am J Ophthalmol 2003 Jan; 135(1): 76-83
17. Hartikainen J, Antila J, Varpula M, Puukka P, Sepp H, Grénman R. Prospective randomized comparison of endonasal endoscopic dacryocystorhinostomy and external dacryocystorhinostomy. Laryngoscope. 1998; 108: 1861–6.
18. Karim R, Ghabrial R, Lynch TF, Tang B. A comparison of external and endoscopic endonasal dacryocystorhinostomy for acquired nasolacrimal duct obstruction. Clin Ophthalmol. 2011; 5: 979–89

Source of Support: None Declared
Conflict of Interest: None Declared