

A Comparative Study of Endoscopic Endonasal Dacryocystorhinostomy with or without Stent Placement: A Prospective Study on 50 Cases at Tertiary Centre

Priyanka Verma¹, Aditya Gargava², Nikhila Yadav³, Yogendra Narwariya⁴

¹Assistant Professor, Department of Otorhinolaryngology, Atal Bihari Vajpayee Govt. Medical College, Vidisha, M.P.

²Associate Professor, Department of Otorhinolaryngology, Atal Bihari Vajpayee Govt. Medical College, Vidisha, M.P.

³Assistant Professor Department of Ophthalmology Atal Bihari Vajpayee Govt. Medical College, Vidisha, M.P.

⁴ENT Consultant, The Medicity Hospital Teen Pani Kichha Road Rudrapur, Uttarakhand

Received: 29-05-2023 / Revised: 30-06-2023 / Accepted: 30-07-2023

Corresponding author: Dr Aditya Gargava

Conflict of interest: Nil

Abstract:

Objectives: Comparison of the surgical outcome of Endoscopic Endonasal Dacryocystorhinostomy (DCR) with stent & without stent. Results were evaluated objectively.

Material & Methods: A Prospective categorical study included 50 adults between age group 18-60 years with epiphora, randomly divided into two groups. (Group A) DCR with stent & (Group B) DCR without stent.

Results: Surgical result of the success rate were statistically insignificant between the two groups furthermore the use of stents was found to be associated with complications mainly granulation tissue formation.

Conclusion: Endoscopic Endonasal DCR without stent placement is the treatment of choice in chronic dacryocystorhinostomy because DCR with stent causes persistently discomfort and complications.

Keyword: Dacryocystorhinostomy (DCR), Nasolacrimal duct (NLD).

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

McDonogh and Meiring were the first who used endoscope in trans-nasal dacryocystorhinostomy in 1989. [1] Endoscopic DCR is proposed to be treatment of choice over external DCR in case of chronic dacryocystitis.[2] A fistulous tract is created between the lacrimal sac and the nasal cavity in order to relief epiphora due to nasolacrimal duct obstruction.

Dacryocystitis is inflammation of NLD system leading to obstruction of drainage of pathway. Endoscopic endonasal DCR is the procedure of choice in chronic dacryocystitis because of better illumination.[3] The major advantage of endoscopic endonasal DCR is avoidance of scar and maintenance of pump mechanism of orbicularis muscle. [4]

In external DCR several methods such as use of silicone stents, application of Mitomycin-C to the rhinostomy opening & suturing of mucosal flaps have been suggested for proving a permanent rhinostomy opening after completion of mucosal healing. [5] The reason for failure of endoscopic DCR is because of stenosis of neo-ostium due to

fibrosis at mucosal level. To enhance the success rate of DCR, many intraoperative stents were used to maintain the patency of canaliculi & prevents the postoperative synechiae. [6,7] Some studies suggest that the use of stents may themselves lead to granulations, punctual erosion, slitting of canaliculi, post-operative infections itself is a reason of surgical failure.

The aim of the study is to evaluate success rate of endonasal endoscopic DCR with or without stents.

Material & Methods

A Prospective comparative study was conducted at the Department of ENT Head & Neck Surgery Atal Bihari Vajpayee Govt Medical College Vidisha, from September 2020 to August 2022.

Inclusion Criteria

50 consenting adults of both genders aged 18 to 60 years with symptoms and signs suggestive of chronic dacryocystitis, underwent endoscopic endonasal DCR were included in the study.

Exclusion Criteria

- 1) Chronic sinusitis.
- 2) Nasal polyposis.
- 3) Severe bony deformity of lacrimal fossa (post-traumatic).
- 4) Congenital NLD obstruction.

The patients were randomized into two groups with 25 patients each. Patients in group A underwent endoscopic DCR with stent while those in group B underwent endoscopic DCR without stent. Initial patient work-up included detailed history followed by general & ENT examination including complete ophthalmologic examination, diagnostic nasal endoscopy examination & lacrimal duct syringing. Routine preoperative investigations and evaluation done followed by endoscopic endonasal DCR was performed in all patients. Post-operative care included a regime of I/V antibiotics & anti-inflammatory drugs, nasal decongestant, steroid nasal spray & local antibiotics eye drops. All patients were discharged on 7th post-operative day. Regular follow-up of patients was done at 1st, 2nd, 6th & 10th weeks. Patient of group A stents was removed on 6th week postoperatively and sac syringing was done to confirm patency. On all visits patients were assessed subjectively on the basis of symptomatically improvement as presence or absence of epiphora. Objectively assessment was defined as patency on syringing of the sac to verify the patency of ostium along with nasal endoscopy to remove crusts & debris from ostium, categorized as partial patent, patent, blocked.

Statistical Analysis

Data tabulation & analysis using tests such as unpaired t test for the parametric data and Chi square test and Mann Whitney U test for non-parametric data, along with other statistical tests was applied based on the needs. Based on the tests appropriate conclusion was drawn.

Results

- 1) Age of the patients in study ranged from 18-60 years. Most common age group affected being 25-30 years. (32%) male and (18%) female Male: Female ratio 1.7:1.
- 2) All patient presents with epiphora, additional symptoms were discharge (90%), Swelling over lacrimal area (8%) with mean duration of symptoms 1years to 1.5 years.
- 3) Intraoperatively mucoid discharge- (60%), mucopurulent discharge (20%), purulent discharge (10%), hypertrophic lacrimal sac (10%), atrophic lacrimal sac (5%).
- 4) On follow up complications such as post-operative complications evaluated at 3rd week, 6th week, & 10th week.
- 5) In group A, Out of 25, 23 cases were found sac patent on sac syringing on 6th week postoperatively after stent removal. 1 case found partially blocked due to granulation tissue & 1 case were blocked on sac syringing required revision surgery had already history of DCR few months back.
- 6) In group B, Out of 25, 24 cases were found sac patent on sac syringing on 6th week and only one case were blocked sac syringing.

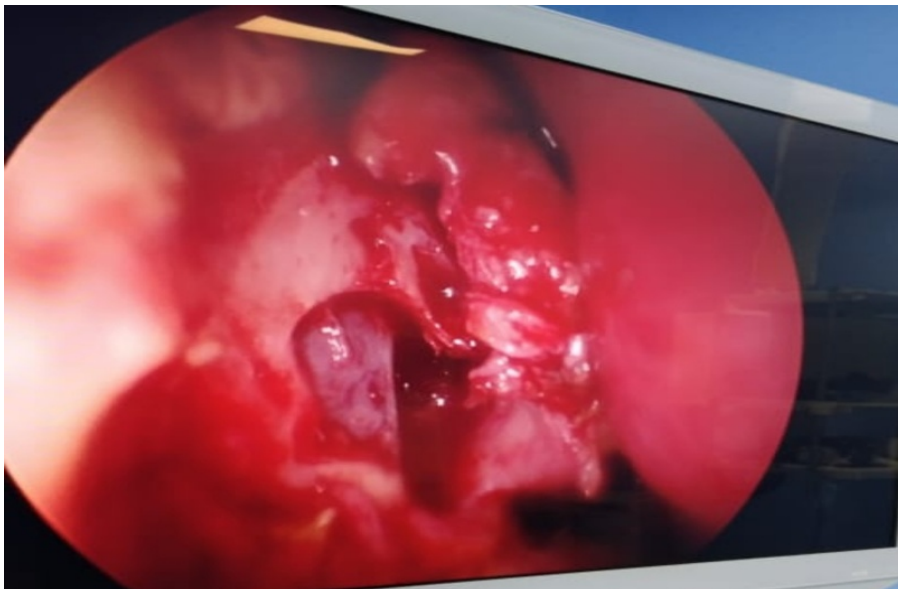


Figure 1: showing opening of lacrimal sac with mucosal flap elevation

Table 1:

Sac syringing		1st week		2ND week		6THweek		10TH week	
		A	B	A	B	A	B	A	B
a	No of patients in sac syringing patent	0	23	0	24	23	24	24	25
b	No of patients in sac syringing partially patent	0	1	0	1	1	1	0	0
c	No of patients in sac syringing blocked	0	1	0	0	1	0	1	0

Table no 1: objective evaluation on 10th week postoperatively group A 24 patients were patent sac on syringing only one patient were found sac blocked, group B all 25 patients were patent sac on syringing.

Discussion

Endoscopic Dacryocystorhinostomy has been popular recently in past few decades compared to external dacryocystorhinostomy. Endoscopic DCR is revolutionized surgery for NLD blockage as it has distinct advantages like it prevents external scars, shorter surgical time, acute dacryocystitis is not the contraindication, less morbidity & additional surgical process can be done along with it in same sitting.[10]

Various newer techniques have been evolved in endoscopic DCR. The use of powered instrument have given excellent results shown by study done in 2007 by Ramakrishnan et al.[11] they showed excellent outcome of endoscopic DCR with preservation of mucosal flap for acquired NLD obstruction. In our study, there is no significant statistical difference in both groups with p value >0.05. Overall success rate were – (80%). Study done by Raghav et al [12], overall success rate 90%. In our study total 50 patients randomly categorise into two groups 25 each with mean age group of presentation-3rd-5th decade with male

predominance with mean duration of symptoms- 1- 1.5 years. All patients were discharged on 5th or 6th post-operative day. Every visit for follow up evaluated objectively by sac syringing patency test. All patients of both the groups were evaluation 1st, 2nd, 6th & 10th week postoperatively. Group B (without stent) found on 1st week POD 23 patients sac was patent one patient were found sac partially obstruction on DNE crusting were present, removed endoscopically & regular follow-up (sac syringing) another one patient DNE suggestive of synchiaie formation removed endoscopically synchiaie release under local anesthesia, by the end of 10th week all 25 patients of group B were sac patent on syringing. Blockage in group-B due to excessive removal of mucosal flap and thus more bone exposure.

Group A DCR(with stents) patients on 6th week POD stents were removed 23 patients were found sac patent on syringing two patients were found mild to moderate granulation tissue removed locally by cautery by the end of 10th week 24 patients were completely relieved & one patient were sac blockage due to granulation tissue need revisional surgery. Overall success rate, DCR with stent 96%, DCR without stent 100% p value= (>0.005), although there was no statistical difference showing one technique is superior to another. Study done by

Success Rate%	Longari et al [12]	Smirnov et al [13]	Smitha S.G et al [14]	Sprekelson et al [15]
DCR with stent	82.2%	78%	85%	85%
DCR without stent	88.6%	100%	90%	98%

In our study, 20% cases showed complication in stent group as compared to 8-10%cases in non-stent group. Study done by Naik et al [16] & Jin et al, Jasdeep Monga et al [17] 28% with stent & 12% nonstent p value @ 12th week=0.149 shows similar results.

Study done by Sham et al [18] shows higher failure due to granulation tissue formation other complication includes corneal abrasion, discomfort & canalicular erosion was seen with stent.

These complications except granulations, nasal crusting, synachie, was not seen in our study.

It has been shown that use of intraoperative topical antiproliferative mitomycin-C may reduce scarring

and improve the success rate in revision endoscopic DCR. [19]

Conclusion

In this study there is no statistical difference between the success rate between stent & non-stent group.

Stent group based on the study has more complications like infections, granulations, s tent displacement etc,& does not influence the long term outcomes and increases the cost of surgery. Hence stents should be reserved for cases with poor local conditions, cases required revision surgery. Endoscopic DCR for chronic dacryocystitis should be preferred.

Bibliography

1. Mc Donogh M, Mering JH. Endoscopic transnasal dacryocystorhinostomy. *J Laryngol otol.* 1989; 103(6):585-587.
2. Rice DH. Endoscopic intranasal dacryocystorhinostomy result in 4 patients. *Arch Otolaryngol Head Neck Surgery.* 1990;116(6):1061.
3. Unlu HH, Toprak B, Aslan A, Guler C. Comparison of surgical outcome in primary endoscopic dacryocystorhinostomy with and without silicone intubation. *Ann Otol Rhino Laryngo.* 2002; 111:704-9.
4. Leong SC, Macewen CJ, White PS. A systematic review of outcomes after dacryocystorhinostomy in adult. *Am J. Rhinol Allergy.* 2010; 24:81-90.
5. Onerci M, Orhan M, Ogretmenoglu O, Irucc M. Long term result and reason for failure of intranasal endoscopic dacryocystorhinostomy. *Acta Otolaryngol.* 2000;120:319-22.
6. Guz, Caoz. Silicone intubation and endoscopic dacryocystorhinostomy: A meta-analysis. *J. otolaryngol Head Neck Surg.* 2010;39:710-3.
7. Okuyucu S, Gorur H, Oksuz H, Akoglu E. Endoscopic dacryocystorhinostomy with silicone, polypropylene and T-tube stents; Randomized controlled trial of efficacy and safety. *Am J Rhinol Allery.* 2015; 29: 63-8.
8. Jin HR, Yeon JY, Choi MY. Endoscopic dacryocystorhinostomy: Creation of a large manualized lacrimal sac. *J. Korean Med Sci.* 2006; 21: 719-23.
9. Singh M, Jain V, Gupta SC, Singh SP. Intranasal endoscopic DCR(END-DCR) in case of dacryocystitis. *Ind J. Otolaryngology Head Neck Surg.* 2004; 56(3):177-83.
10. Nayak DR, Sathish KR, Shah P, Pujary K, Balakrishnan R. Endoscopic Dacryocystorhinostomy and retrograde nasolacrimal duct dilation with canaliculation: Our experience. *Indian J. Otolaryngol Head Neck Surg.* 1999; 52(1):23-27.
11. Ramakrishnan VR, Hink EM, Durairaj VD. Outcomes after endoscopic dacryocystorhinostomy without mucosal flap preservation. *Am J Rhinol.* 2007; 21(6): 753-757.
12. Raghav MG, Naga R, Raghavan D. A comparative study of the results of endoscopic dacryocystorhinostomy with and without stent placement. *J Med Soc.* 2018; 20:135-7.
13. Smirnov G, Tuomilehto, Terasvirta M, Nuutinen J, Seppa J. Silicone tubing is not necessary after primary endoscopic dacryocystorhinostomy: a prospective randomized study. *Am J. Rhinol.* 2008; 22(22): 214-217.
14. Smitha. S.G, Jagannath. B, Shazia. Endoscopic dacryocystorhinostomy with and without stent: A comparative study. *JMSCR.* 2016; 04(09): 12861-12864.
15. Sprekelson MB. Endoscopic dacryocystorhino Surgical technique and result. *Laryngoscope.* 1996; 106; 187-9.
16. Naik, S.M, Mushannavar, A.S., Ravishankankala, S., Appaji, M.K, Goutham, M.k., Devi, N.P., & Naik, S.S. 2012.
17. Jasdeep Monga, Yojana Sharma, Girish Mishra, Mehul Patel. Resolving perplexity: Comparison of endoscopic dacryocystorhinostomy with and without stent. *Indian J Otoloaryngol Head Neck Surg.* 2019; 71(S3):S1843-1848.
18. Sham CL, Van Hasselt CA. Endoscopic terminal dacryocystorhinostomy *Laryngol.* 2000; 110:1045-9.
19. Penttila E, smornov G, Seppa J et al. Mitomycin C in revision endoscopic dacryocystorhinostomy: A Prospective randomized study. *Am J. Rhinlolol Allergy.* 2011; 25:425-428.