

Triumph Over Tears; Our Journey of Endonasal Dacryocystorhinostomy at Tertiary Care HospitalNimeshkumar Patel¹, Rekha Karavadra², Yojana Sharma³, Girish Mishra⁴¹Associate Professor, Department of Otorhinolaryngology, Pramukhswami Medical College, Karamsad, Gujarat²Resident, Department of Otorhinolaryngology, Pramukhswami Medical College, Karamsad, Gujarat^{3,4}Professor, Department of Otorhinolaryngology, Pramukhswami Medical College, Karamsad, Gujarat

Received: 17-01-2024 / Revised: 24-02-2024 / Accepted: 15-03-2024

Corresponding Author: Dr Rekha Karavadra

Conflict of interest: Nil

Abstract:

Chronic dacryocystitis is the indication for Endoscopic Dacryocystorhinostomy. The surgical procedure of diversion of lacrimal flow within nasal cavity through an artificial fistula made at the level of lacrimal sac is called dacryocystorhinostomy. Initially external DCR gained popularity largely due to simplicity of technique and complexity of endonasal approaches. Recently after the advent of endoscopes, endonasal DCR regained popularity. This is largely due to technical advances in the rhinological instrumentations and endoscopes. In the study we comprehensively analyze in detail about the dacryocystitis disease pattern and its endonasal endoscopic surgical management with its 6 months follow up. All the patients underwent dacryocystorhinostomy and were evaluated clinically for the subjective and objective relief of symptoms at three and six months respectively. The study comprises the analysis of 50 patients of chronic dacryocystitis who underwent endonasal endoscopic DCR within a period of 4 year.

Keywords: Endoscopic Endonasal Dacryocystorhinostomy, Nasolacrimal Duct, Lacrimal Apparatus, Chronic Dacryocystitis, Epiphora, Neo-Ostium.

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

The nasolacrimal drainage system serves as a conduit for tear flow from external eye to the nasal cavity. Epiphora (excessive watering) is a common complaint which can be secondary to excessive production of tears or arise from proximal obstruction in drainage system[1,2]. Dacryocystorhinostomy (DCR) is the standard treatment for nasolacrimal duct obstruction[3]. Dacryocystorhinostomy (DCR) is a surgical procedure by which the lacrimal flow is diverted into the nasal cavity by making an artificial fistula in the lacrimal sac when nasolacrimal duct gets blocked. Dacryocystorhinostomy has two approaches one is external or conventional method and the another one is endoscopic endonasal method. External dacryocystorhinostomy (DCR) was first described in 1904 by Toti[4]. In the hands of experienced surgeons, success rates for external DCR are between 90 and 95%[5]. External DCR was previously considered as the best treatment of chronic dacryocystitis but Caldwell firstly introduced endonasal approach which was later modified by West in 1910[6]. Endoscopic endonasal DCR was firstly performed by Rice in 1988 and has several advantage like no facial scar and preservation of lacrimal pump[7,8]. The endoscopic approach also provides the surgeon unprecedented visualization of the lacrimal sac during dissection and marsupialization[9].

The endonasal surgical approach of the lacrimal sac assisted by endoscopy is carried out today with high success rates. Despite the satisfactory results reached with the traditional external approach, but it has the disadvantage of requiring a skin incision and a consequent local scar[10]. With the development and enhancement of the endonasal techniques, the endoscopic approach is increasingly preferred by surgeons. In this study, we describe our experience with conventional endoscopic endonasal DCR without any other assisted technique. Objective of this study is to determine the outcome and success rate in endoscopic DCR in form of reduction in symptom and postoperative patency of sac and also briefly review the lacrimal sac anatomy[11,12].

Material and method:

All Patients, regardless of age and sex, presenting to the ENT department Shree Krishna Hospital, Karamsad during the study period with chronic dacryocystitis undergoing surgery will be included in the study. This will be a retrospective study. The study will include patients treated at Department of ENT, SKH for chronic dacryocystitis, who underwent surgical treatment over the past 40 months period. (January 2020 till June 2023). All

the patients will be selected as per the inclusion & exclusion criteria. Medical records of eligible patients will be reviewed for the following information The patients are followed for a period of up to 6 months for complications and recurrence. The parameters used are-age, sex, sides, Analyse symptomatology results and complications.

Inclusion Criteria: All patients attending outpatient department (OPD) of SKH with chronic dacryocystitis undergoing endoscopic dacryocystorhinostomy including revision cases.

Exclusion Criteria: Patients who had the following criteria were not selected. Those who had Punctal block, Canalicular block, Common canalicular block.

Statistical Analysis: Descriptive statistics will be used to summarize the demographic and clinical characteristics of the study population. The outcomes of surgical treatment for chronic dacryocystitis will be analyzed. This analysis will

provide insights into the effectiveness of surgical interventions.

Ethical issues: Requesting the IEC for waiver of the consent as it is the record-based study.

Results

The above retrospective study reveals that, Among the 50 patients 15(30%) patients were men and 35(70%) Patients were women with a mean age of 55±14.24 years. There Were 27(54%) right side eye and 19(38%) were left. 35(70%) were Complaining of watering and 12 (24%) were watering and swelling In the eye examination 19(38%) were complaining swelling.

31(62%) were watering. In the nose examination 3(6%) were left & 3(6%) Were right. In the nasal endoscopy findings dns to left were 3(6%) and right 3(6%). There were 47(94%) shown improvement in the post op symptomatic and 4(2%) were not improved. In the post op stringing 49(98%) were free flow and 1(2%) were obstruction.

Table 1: Sex Distribution

Sex	Frequency	Percent
Female	35	70.0
Male	15	30.0
Total	50	100.0

Table 2: Age Distribution

Age(Years)	Frequency	Percent
<= 30	2	4.0
31 - 40	7	14.0
41 - 50	9	18.0
51 - 60	9	18.0
Above 60	23	46.0
Total	50	100.0
Mean ± SD : 55.30 ±14.24		

Table 3: Side

Side	Frequency	Percent
Bilateral	4	8.0
L EFT	19	38.0
RIGHT	27	54.0
Total	50	100.0

Table 4: Distribution of patients complaints.

Patient Complaints	Frequency	Percent
Purulent Discharge	1	2.0
Pus Discharge & Swelling	1	2.0
Watering	35	70.0
Watering And Swelling	12	24.0
Total	50	100.0

Table 5: Eye Exams Results

Eye Examination	Frequency	Percent
No Swelling	31	62.0
Swelling	19	38.0
Total	50	100.0

Table 6: Nose Exams Results

Nose Examination Parameters	Frequency	Percent
NO Significant	44	88.0
DNS to Left	3	6.0
DNS to Right	3	6.0
Total	50	100.0

Table 7: Pre operative patients details.

Preoperative Syringing	Frequency	Percent
Positive	50	100.0
Negative	00	00.00

Table 8: Endoscopic Parameters

Endoscopy findings	Frequency	Percent
Other	43	86.0
DNS to Left	3	6.0
DNS to Right	3	6.0
Synechia DNS to right	1	2.0
Total	50	100.0

Table 9: Surgery Findings

Special points in surgery	Frequency	Percent
.	41	82.0
Bilateral Sx	3	6.0
k/c/o glaucoma	1	2.0
O/C/O B/L Catract SX	1	2.0
o/c/o septoplasty	1	2.0
o/c/o left external DCR	1	2.0
Revision SX	1	2.0
Stent	1	2.0
Total	50	100.0

Table 10: Post op SYMPTOMATIC

Post op Symptomatic	Frequency	Percent
Improved	47	94.0
No Improvement	1	2.0
Partial Improvement	2	4.0
Total	50	100.0

Table 11: Post op Syringing

Post op Syringing	Frequency	Percent
Free Flow	49	98.0
Obstruction	1	2.0
Total	50	100.0

Table 12: Age with post op syringing

Age (Years) N=50	Post op Syringing	
	Free Flow	Obstruction
≤30	2	0
31 – 40	7	0
41 – 50	8	1
51 – 60	9	0
Above 60	23	0
P- value 0.325 Chi-square value – 4.649 p>0.05 not significant		

Table 13: Sex with post op syringing

Sex	Post op Syringing	
	Free Flow	Obstruction
Female	34	1
Male	15	0
P- value - 0.508 Chi-square value – 0.437 p>0.05 not significant		

Table 14: Sex with post op syringing

Sex	Post Op Symptomatic		
	Improved	No Improvement	Partial Improvement
Female	33	1	1
Male	14	0	1
P- value - 0.508 p>0.05 not significant			

Table 15: Age with post op syringing

Age (Years)	Post Op Symptomatic		
	Improved	No Improvement	Partial Improvement
<= 30	1	0	1
31 – 40	7	0	0
41 – 50	8	1	0
51 – 60	9	0	0
61+	22	0	1
P- value - 0.03 Chi-square value – 16.64 P<0.05 significant			

Discussion

A study by Dr.B.Karthikeyan, Comprehensive study of endonasal endoscopic dacryocystorhinostomy, comprehensively analyzes about the dacryocystitis disease pattern and its endonasal endoscopic surgical management. Results were analyzed after 3 months and 6 months respectively. After 3 months in patients who underwent Primary dacryocystorhinostomy 89.4% had complete relief and 10.6% had improvement in symptoms and no patient was without improvement in symptom. In the study conducted by T. Dinesh Singh, Merits of endonasal endoscopic dacryocystorhinostomy: a case series, the efficacy of this procedure as a day case procedure and results of patients undergoing surgery with the 3 months follow-up are assessed. The study comprises the analysis of 20 patients of epiphora or chronic dacryocystitis who underwent endonasal endoscopic DCR within a period of 1 year. Based on the results, it was concluded that endoscopic DCR is a simple, safe and minimally invasive procedure as it is a direct approach to the sac. In the study by Balwant Singh Gendeh, anatomy of the lacrimal system is discussed in detail and indications, technique and complications of Endonasal Dacryocystorhinostomy are discussed[2,3]. Endonasal DCR is far superior than external DCR reason is simple and obvious[13]. Most of patients are females so if in any way a scar can be prevented over face will be a better

option[14]. Females have significantly smaller dimensions in the lower nasolacrimal fossa and middle nasolacrimal duct. Hormonal changes that bring about a generalized de-epithelization in the body may cause the same within the lacrimal sac and duct. An already narrow lacrimal fossa in women predispose them to obstruction by the sloughed off debris [16]. Moreover an injudicious use of kaajal and adulterated cosmetics applied on the wrong side of eyelashes can also play important role in obstruction of nasolacrimal system. Female to male ratio advocated in one study recently was 10:1 in a study of 800 DCR cases[14]. Anatomical variation of sac is dependent on anatomy of lateral wall of nose which is the sole reason of direct visualization under endoscopic guidance helps in achieving 100% success. Adequate removal of bone during procedure is the only root for success for surgery. In follow up patient should be strictly instructed to clear nose proper by using buffered saline solution to clear crusts/clots overlying endonasal sac ostia.

Conclusions

Endoscopic endonasal DCR is gaining grounds in recent era because of comparable success rate, no skin scar, less tissue dissection less intraoperative hemorrhage and decrease postoperative morbidity. So that endoscopic DCR technique is much more to treat the disorder of lacrimal system successfully. Endoscopic endonasal dacryocystorhinostomy is preferred technique and best surgical management

of chronic dacryocystitis with nasolacrimal duct obstruction.

Contribution of the research project

The research project focusing on the surgical management of chronic dacryocystitis which holds the promise of making profound contributions to the field of endoscopic endonasal dacryocystorhinostomy and healthcare as a whole. This project's significance lies in its potential to enhance clinical understanding of symptoms, patient care, and overall surgical management and results. The project may lead to improved patient outcomes, reduced complications, and shorter recovery times, directly impacting the quality of care provided. As a valuable addition to medical literature, this research project will serve as a resource for both current and future healthcare professionals. It can guide clinical practice, medical education, and further research in the field of endoscopic dacryocystorhinostomy. The findings may also inform the development of hospital policies, treatment protocols, and regional or national guidelines, ensuring a higher standard of care within the healthcare institution and beyond.

References

1. T. Dinesh Singh¹, Jyothi Ramakrishna², Sara Shreen³, Nazima Begum⁴, SandeepK. Vishwakarma⁴, Aleem A. Khan. Doi: Doi.Org/10.47363/Amr/2015(2)123
2. Balwant Singh Gendeh [Http://Dx.Doi.Org/10.5772/Intechopen.81831](http://dx.doi.org/10.5772/intechopen.81831) Provisional Chapter Doi: 10.5772/Intechopen.81831 © 2016 The Author(S).
3. "Comprehensive Study of Endonasal Endoscopic Dacryocystorhinostomy" Is A Work Done By Dr. B. Karthikeyan
4. Presutti L. Endonasal Dacryocystorhinostomy. *Acta Otorhinolaryngol Ital.* 1995; 15:449-53.
5. Thawley Se. The Otolaryngologist- Ophthalmologist Relationship: An Historic Perspective *Otolaryngology Clin North Am*, 2006; 39(5): 845- 853.
6. Toti A. Nuovo Metodo Conservatore Dicura Radicale Delle Suppurazione Croniche Del Saccolacrimale. *Clin Moderna*
7. Hartikainen J, Antila J, Varpula M, Puukka P, Seppä H, Grénman R. Prospective Randomized Comparison of Endonasal Endoscopic Dacryocystorhinostomy and External Dacryocystorhinostomy. *Laryngoscope.* 1998; 6:1861–1866.
8. Zilelioglu G, Tekeli O, Ugurba Sh, Akinerm, Akturk T, Anadolu Y. Results of Endoscopic Endonasalnon-Laser Dacryocystorhinostomy. *Doc Ophthalmol.* 2002; 105:57-62.
9. Jin Hr, Yeon Jy, Choi My. Endoscopic Dacryocystorhinostomy: Creation of A Large Marsupialized Lacrimal Sac. *J Korean Med Sci.*2006; 21:719-23.
10. Wormald P J, Kew J, Van Hasselt A. Intranasal Anatomy of The Nasolacrimal Sac In Endoscopic Dacryocystorhinostomy. *Otolaryngol Head Neck Surg.* 2000; 6:307–310.
11. Sprekelson Mb. Endoscopic Dacryocystorhinostomy-Surgical Techniques And Results. *Laryngoscope.* 1996;106(2):187-9
12. Singh M, Jain V, Gupta Sc, Singh Sp. Intranasal Endoscopic Dcr (End-Dcr) In Cases of Dacryocystitis. *Ind J Otolargngology Head Neck Surg.* 2004;56(3):177-83.
13. David S, Raju R, Job A, Richard J. A Comparative Study of External and Endoscopic Endonasal Dacryocystorhinostomy—A-Preliminary Report. *Indian J Otolaryngol Head Neck Surgery.* 1999; 52:37–39.
14. Anniko M, Bernal-Sprekelsen M, Bonkowsky V. Otorhinolaryngology, Head and Neck Surgery, 2009; 266–269.