Section: ENT

Original Research Article

COMPARISON OF SURGICAL OUTCOMES IN ENDOSCOPIC DACRYOCYSTORHINOSTOMY (DCR) WITH AND WITHOUT SILICONE STENT PLACEMENT

D Senthamarai Kannan[1], K Saravanan[2], G Udaya Chandrika[3], G Suji[4], T Kavya[5]

[1]Professor and Head, Department of ENT, Chengalpattu medical college, Tamilnadu, India
[2]Assistant Professor, Department of ENT, Chengalpattu medical college, Tamilnadu, India
[3]Associate professor, Department of ENT, Chengalpattu medical college, Tamilnadu, India
[4]Senior Resident, Department of ENT, Chengalpattu medical college, Tamilnadu, India
[5]Junior Resident, Department of ENT, Chengalpattu medical college, Tamilnadu, India

Received : 15/09/2025
Received in revised form : 29/10/2025
Accepted : 18/11/2025

Keywords:
Chronic dacryocystitis, Endoscopic dacryocystorhinostomy, Epiphora, Silicone stent, Surgical outcomes.

Corresponding Author:
Dr. G Suji,
Email: drsujigovindarajan@gmail.com

DOI: 10.47009/jamp.2025.7.6.70

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (6); 360-363

ABSTRACT

Background: Chronic dacryocystitis (CDC), caused by nasolacrimal duct obstruction, leads to epiphora, recurrent infections, and discomfort. Endoscopic dacryocystorhinostomy (En-DCR) is the preferred surgical approach due to its minimally invasive and cosmetic advantages. However, the role of silicone stents in maintaining ostium patency and improving outcomes remains uncertain. This study compared the surgical outcomes of En-DCR with and without silicone stent placement. **Materials and Methods:** This prospective comparative study was conducted for 6 months at the Department of ENT. 68 patients diagnosed with CDC were divided into two groups. Group I (n=34) underwent En-DCR with silicone stenting, whereas Group II (n=34) underwent En-DCR without stenting. Preoperative evaluation involved ophthalmic examination and imaging, while postoperative success, symptom relief, and complications were assessed at 1, 3, and 6 months. Data were analysed with $P<0.05$ considered significant. **Result:** Surgical success was achieved in 32 (94.12%) and 29 (84.48%) patients in Groups I and II. Failure occurred in 2 (5.88%) and 5 (15.52%) patients in Groups I and II, respectively. Symptomatic relief was reported in 94.12% and 84.48% of patients in Groups I and II. The complications included irritation (two in each group), synechiae (one in each group), granulation tissue (one in Group II), and rhinostomal closure (one in Group II). The difference in success and failure rates between groups was not significant ($P=0.231$). **Conclusion:** Both stented and non-stented En-DCR achieved high success rates in CDC management. Routine stenting may not be necessary in all cases, although it could be useful in selected or high-risk patients.

INTRODUCTION

Chronic dacryocystitis (CDC) is a frequently encountered lacrimal drainage disorder characterized by persistent inflammation and infection of the lacrimal sac, which clinically manifests as epiphora, recurrent conjunctivitis, and periocular discomfort. The condition most commonly arises from nasolacrimal duct obstruction, leading to impaired tear drainage and a predisposition to secondary bacterial infection.[1] Endoscopic dacryocystorhinostomy (En-DCR) has emerged as a minimally invasive surgical modality for the management of CDC. This technique establishes a direct anastomosis between the lacrimal sac and the nasal cavity, thereby restoring physiological tear outflow and alleviating symptoms.[2] In comparison with the conventional external dacryocystorhinostomy, En-DCR is associated with reduced morbidity, avoidance of cutaneous scarring, and shorter postoperative recovery time.[3]

The role of silicone stents in En-DCR continues to be debated among surgeons. They are used to keep the newly created passage open during healing, which may reduce the risk of narrowing and improve surgical outcomes.[4] Despite this, the routine use of stents is questioned because some studies report little or no difference in results between procedures done with or without stents.[5,6] Several reviews and studies have examined their effect on En-DCR outcomes. A systematic review and meta-analysis suggested that stents offer only small benefits, and long-term results are similar regardless of stent use.[7,8] Similarly, a

randomised clinical trial found that patients who underwent En-DCR with or without silicone stenting had comparable symptom relief and endoscopic findings.[9]

Silicone stents may still be helpful in certain clinical situations. For example, in revision DCR cases, using a stent has been shown to improve outcomes and reduce complications.[2] They can also be useful in patients with anatomical differences or in those at higher risk of surgical failure.[10] Given the ongoing debate and variations in practice, more research on the role of silicone stents in En-DCR is needed. This study was carried out to compare the outcomes of endoscopic DCR with and without silicone stents in patients with CDC over a follow-up period of six months.

MATERIALS AND METHODS

Study design and setting: This prospective comparative study was conducted in the Department of ENT and included 68 patients for six months. The study received approval from the Institutional Ethics Committee, and written informed consent was obtained from all patients before their enrolment.

Inclusion criteria

Patients aged > 18 years with CDC who were planned for En-DCR were included.

Exclusion criteria

Patients who were not suitable for endoscopic DCR or declined to take part in the study were excluded.

Methods: Patients were divided into two equal groups based on the type of surgery. Group I consisted of 34 patients who underwent endoscopic DCR with a silicone stent, while Group II included 34 patients who had the procedure without a stent. Before surgery, all patients received a full eye examination, routine blood tests, and imaging of the paranasal sinuses, such as X-ray or CT scans. The surgery was performed under either local or general anesthesia, depending on the patient's preference and clinical requirements.

To access the lacrimal sac, a curved incision was made in the nasal mucosa, and an osteotomy was performed at the lacrimal fossa. Patients in Group I received silicone stents through both canaliculi to keep the new drainage passage open, whereas those in Group II underwent the procedure without stents. After surgery, all patients received nasal saline irrigation and topical antibiotics and were regularly followed up. Follow-up assessments at 1, 3, and 6 months focused on relief from epiphora, overall surgical outcome, and any complications, including granulation tissue, synechiae, irritation, or closure of the rhinostoma.

Statistical analysis: Data were recorded in Microsoft Excel and analysed using IBM SPSS v24. Continuous data are reported as mean ± standard deviation, and categorical data are shown as numbers and percentages. The chi-square test was used to evaluate relationships between categorical variables, while Student's t-test was applied to compare continuous variables. A P-value < 0.05 was considered significant.

RESULTS

In Group I (DCR with stenting), success was achieved in 32 (94.12%) patients, whereas in Group II (DCR without stenting), success was achieved in 29 (84.48%) patients. Failure occurred in 2 (5.88%) and 5 (15.52%) patients in Groups I and II, respectively. Symptomatic relief was reported in 32 (94.12%) and 29 (84.48%) patients in Groups I and II, respectively. The difference between the success and failure rates in the groups was not significant (P = 0.231) [Table 1].

Table 1: Comparison of surgical outcomes between groups

Surgical outcome	Group I (DCR with stenting)	Group II (DCR without stenting)	P value
Success rate	32 (94.12%)	29 (84.48%)	0.231
Failure rate	2 (5.88%)	5 (15.52%)	
Symptomatic relief	94.12%	84.48%	

Table footer: Data presented as n (%); DCR = Dacryocystorhinostomy. Statistical analysis performed using the Chi-square test. P < 0.05 is considered significant.

In Group I, irritation was observed in two (67%) patients and synechiae in one (33%). No cases of granulation tissue or rhinostomal closure were observed. In Group II, irritation was observed in 2 (40%), synechiae in 1 (20%), granulation tissue in 1 (20%), and rhinostomal closure in 1 (20%) [Table 2].

Table 2: Comparison of postoperative complications between groups

Complication	Group I (DCR with stenting)	Group II (DCR without stenting)
Irritation	2 (67%)	2 (40%)
Synechiae	1 (33%)	1 (20%)
Granulation tissue	0	1 (20%)
Rhinostomal closure	0	1 (20%)

Table footer: Data presented as n (%).

DISCUSSION

In our study, patients who underwent DCR showed good improvement and relief of symptoms after the procedure, with similar outcomes observed whether silicone stents were used or not. There was no notable difference in postoperative outcomes between patients who had stents and those who did not.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Similarly, Nitin et al. conducted a study on 50 patients who underwent En-DCR with and without stenting. They reported that symptom relief was achieved in 96% of patients with stents and 92% of patients without stents at the end of the follow-up period. The failure rates were 4% in the stented patients and 8% in the non-stented patients, showing only a small variation between the two sets.[11] Gupta et al. evaluated patients undergoing DCR and reported that symptomatic improvement was seen in 88.24% of patients in the first set, 80% in the second set, and 70.37% in the third set, with the remaining patients experiencing varying degrees of partial relief. On objective assessment using syringing, 94.12% of patients in the first set and 84.48% of patients in the third set demonstrated patency, while all patients in the second set achieved 100% patency. The differences in outcomes between the sets were not significant.[12]

Naga et al. studied 50 patients who underwent endoscopic DCR with and without stenting. At the end of follow-up, improvement was seen in 92% of patients with stents and 88% of those without stents. Patency was maintained in 100%, 96%, and 92% of patients with stents at 6 weeks, 3 months, and 6 months, respectively, while in patients without stents it was 100%, 92%, and 88% at the same time points.[13] Similarly, Monga et al. evaluated 50 patients with CDC undergoing En-DCR with and without stenting. At 12 weeks, 92% of patients with stents and all patients without stents showed improvement. During the early follow-up period, functional relief was slightly lower in patients with stents (68–76%) compared to those without stents (80–88%), but by 12 weeks, both sets achieved high patency and satisfactory symptom relief.[14]

Shah et al. conducted a retrospective study of 129 patients who underwent endonasal DCR with and without stenting. At six months follow-up, improvement was observed in 93.33% of patients with stents and 92.30% of those without stents, with no notable difference between the two sets.[15] Similarly, Shashidhar et al. studied 62 patients undergoing endonasal DCR with and without stenting. Improvement was seen in 93.75% of patients with stents and 86.7% of patients without stents, resulting in an overall improvement of 90.3%. The outcomes between the two sets were comparable.[16] Overall, the findings from multiple studies, and ours indicate that both stented and non-stented DCR achieve high success and symptom relief, with no significant difference between the two approaches.

In the present study, postoperative complications were observed more frequently in patients without stents, whereas those with stents experienced fewer issues such as irritation, synechiae, granulation, and rhinostomal closure. Nitin et al. reported that intraoperative complications in patients with stents included punctal trauma in 2 cases and difficulty with stent intubation in 1 case. Postoperative complications were more common in patients without stents, including synechiae (2 cases), rhinostomy closure (2 cases), and minor bleeding (2 cases).[11] Similarly, Shah et al. documented both intraoperative and postoperative complications. In patients with stents, inadequate stoma occurred in 7.77%, haemorrhage in 13.33%, orbital fat exposure in 1.11%, stent granuloma in 4.44%, and minor adhesions in 4.44%. In patients without stents, inadequate stoma occurred in 10.25%, haemorrhage in 5.12%, orbital fat exposure in 2.5%, no cases of stent granuloma, and minor adhesions in 7.6%.[15]

Shashidhar et al. reported minor postoperative complications in both sets. In patients with stents, complications included synechiae (3 cases), granulation (3 cases), punctal trauma (3 cases), and lid edema (5 cases). In patients without stents, complications were synechiae (2 cases), granulation (1 case), and lid edema (2 cases).16 Similarly, Longari et al. observed no major intraoperative complications in either set. Minor complications were not specifically described, and there were no notable differences between patients with and without stents.[17] Findings from our study and other reports indicate that both stented and non-stented DCR can be associated with minor complications, but the differences between the two approaches are not significant.

Limitations: This study was carried out at a single centre with a limited number of patients, which may affect how widely the results can be applied. Furthermore, the follow-up period of six months was relatively short and did not permit assessment of long-term surgical outcomes.

CONCLUSION

Both endoscopic DCR with and without silicone stenting achieved high success rates in managing CDC. Although the stented group showed a slightly higher success rate and fewer complications, the difference between the two groups was not significant, suggesting that routine stenting may not be essential for primary cases of En-DCR. Future studies with larger multicentre cohorts and longer follow-ups are needed to better define the role of silicone stenting, particularly in high-risk or revision cases.

REFERENCES

1. Liu S, Zhang H, Zhang Y-R, Chen L-J, Yu X-Y. The efficacy of endoscopic dacryocystorhinostomy in the treatment of dacryocystitis: A systematic review and meta-analysis. Medicine (Baltimore) 2024;103:e37312. https://doi.org/10.1097/MD.0000000000037312.
2. Lan S, Yu J-Q, Ke F, Li D-K, Yu B, Liu Z-K. Endoscopic dacryocystorhinostomy with bicanalicular silicone tube intubation for treating chronic dacryocystitis secondary to nasolacrimal duct stent incarceration. Int J Ophthalmol 2023;16:1218–23. https://doi.org/10.18240/ijo.2023.08.05.
3. Basak B, Biswas KD, Biswas S, Choudhary A. Endoscopic dacryocystorhinostomy: Advantage over external approach. Bengal J Otolaryngol Head Neck Surg 2019;27:161–6. https://doi.org/10.47210/bjohns.2019.v27i2.244.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

4. Kang MG, Shim WS, Shin DK, Kim JY, Lee J-E, Jung HJ. A systematic review of benefit of silicone intubation in endoscopic dacryocystorhinostomy. Clin Exp Otorhinolaryngol 2018;11:81–8. https://doi.org/10.21053/ceo.2018.00031.
5. Dalmia D, Sapre A, Katakdhond HN, Patni P, Davange N, Goyal R, et al. Is stenting really necessary in primary endonasal DCR-our experience. Indian J Otolaryngol Head Neck Surg 2022;74:1210–5. https://doi.org/10.1007/s12070-020-02288-9.
6. Bahner L, Zebralla V, Dietz A, Otto M, Pirlich M. Prospective, randomised clinical trial on the necessity of using a silicone intubarium in the context of endonasal-endoscopic dacryocystorhinostomy (EN-DCR) in patients with postsaccal lacrimal duct stenosis. Int Ophthalmol 2024;44:293. https://doi.org/10.1007/s10792-024-03205-7.
7. Kim DH, Kim SI, Jin HJ, Kim S, Hwang SH. The clinical efficacy of silicone stents for endoscopic dacryocystorhinostomy: A meta-analysis. Clin Exp Otorhinolaryngol 2018;11:151–7. https://doi.org/10.21053/ceo.2017.01781.
8. Massoud OM, Elbakary MA, Shalaby OE, Hashish AA. Evaluation of the role of silicone intubation in non-complicated External dacryocystorhinostomy. Open Ophthalmol J 2020;14:21–4. https://doi.org/10.2174/1874364102014010021.
9. Dutta M, Ghatak S, Bandyopadhyay S. Should silicone lacrimal stenting be a better choice for primary endoscopic powered dacryocystorhinostomy? Indian J Otolaryngol Head Neck Surg 2023;75:496–502. https://doi.org/10.1007/s12070-022-03299-4.
10. Maldhure SV, Golhar PS, Moon PP. Endonasal dacryocystorhinostomy: Results with or without stenting Cureus 2023;15:e33470. https://doi.org/10.7759/cureus.33470.
11. Nitin T, Uddin S, Paul G. Endonasal endoscopic dacryocystorhinostomy with and without stents-A comparative study. Indian J Otolaryngol Head Neck Surg 2022;74:1433–41. https://doi.org/10.1007/s12070-021-02561-5.
12. Gupta R, Mohindroo NK, Sharma D, Azad R. Comparison of surgical outcome in endoscopic dacryocystorhinostomy with and without silicone Stent placement: Comparative case analysis. Otorhinolaryngol Clin - Int J 2018;10:13–6. https://doi.org/10.5005/jp-journals-10003-1282.
13. Naga R, Raghav M, Raghavan D. A comparative study of the results of endoscopic dacryocystorhinostomy with and without stent placement. J Mar Med Soc 2018;20:135. https://doi.org/10.4103/jmms.jmms_31_18.
14. Monga J, Sharma Y, Mishra G, Patel M. Resolving perplexity: Comparison of endoscopic dacryocystorhinostomy with and without Stent. Indian J Otolaryngol Head Neck Surg 2019;71:1843–8. https://doi.org/10.1007/s12070-017-1241-z.
15. Shah H, Sharma S, Suri N, Patel A. Comparison of surgical outcome in endoscopic dacryocystorhinostomy with and without silicon stent placement. Natl J Med Res 2013;3(1):34–7. https://njmr.in/index.php/file/article/view/569
16. Shashidhar K, Nagalotimath U, Dixit D. Endoscopic dacryocystorhinostomy with and without silicone stenting: a comparative study. Al Ameen J Med Sci 2014;7(3):244–7. https://core.ac.uk/download/pdf/26814034.pdf
17. Longari F, Dehgani Mobaraki P, Ricci AL, Lapenna R, Cagini C, Ricci G. Endoscopic dacryocystorhinostomy with and without silicone intubation: 4 years retrospective study. Eur Arch Otorhinolaryngol 2016;273:2079–84. https://doi.org/10.1007/s00405-015-3876-2.

ISSN (O): 2687-5365; ISSN (P): 2753-6556