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Original Research Article **Surgery**

Outcomes of External Versus Endoscopic Endonasal Dacryocystorhinostomy in Chronic Dacryocystitis Management

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Abstract

Background: Chronic dacryocystitis is a common condition caused by an obstruction in the nasolacrimal duct, leading to excessive tearing, recurrent infections, and discomfort. The condition is often managed through dacryocystorhinostomy (DCR), which can be performed via two primary techniques: external DCR and endoscopic endonasal DCR. The external approach, a well-established procedure, requires an incision over the lacrimal sac, while the endoscopic technique offers a minimally invasive alternative with no external incision. The effectiveness, complication rates, and recovery times of these two methods are subjects of ongoing debate. ***Objective:*** This study aims to compare the outcomes of external versus endoscopic endonasal DCR in the management of chronic dacryocystitis. ***Methodology:*** An observational study was conducted at the Department of Ophthalmology, a tertiary hospital in Dhaka, from January 2024 to January 2025. A total of 30 patients diagnosed with chronic dacryocystitis were divided into two groups, with 15 undergoing endoscopic DCR and 15 undergoing external DCR. Demographic data, preoperative complications, and postoperative outcomes were recorded and analyzed using statistical methods to assess the efficacy of both approaches. ***Results:*** No significant differences were found between the two groups in terms of age, gender distribution, or preoperative complications. However, the mean duration of surgery was significantly longer in the endoscopic group (60.5 ± 7.9 minutes) compared to the external group (53.1 ± 6.2 minutes) ($p = 0.042$). Postoperative results revealed that 76.7% of the endoscopic group and 83.3% of the external group had patent drainage systems, with no statistically significant difference in epiphora rates or sac patency between the groups. Bleeding complications were mild to moderate, and no significant differences in severity were observed between the two techniques. ***Conclusion:*** Both external and endoscopic endonasal DCR are effective for treating chronic dacryocystitis, with comparable outcomes in terms of epiphora resolution, sac patency, and complications. While the endoscopic technique showed a longer surgical duration, the two approaches yielded similar results in postoperative follow-ups. The choice of technique should be guided by individual patient factors, surgeon expertise, and patient preferences, as both methods offer satisfactory results in chronic dacryocystitis management.

Keywords: chronic dacryocystitis, dacryocystorhinostomy, endoscopic DCR, external DCR.

INTRODUCTION

Chronic dacryocystitis is a common condition characterized by the inflammation and infection of the lacrimal sac due to an obstruction in the nasolacrimal duct. This condition often results in excessive tearing, recurrent eye infections, and discomfort, which can significantly affect a patient's quality of life [1-3]. The management of chronic dacryocystitis typically involves surgical intervention to restore the normal flow of tears. Over the years, two primary surgical techniques have emerged: external dacryocystorhinostomy (DCR) and endoscopic endonasal DCR. Both procedures aim to bypass the obstructed nasolacrimal duct and provide an alternative pathway for tear drainage, but they differ in approach, technique, and recovery time [4-5].

External DCR is the traditional method, first described in the 19th century, which involves an incision made over the lacrimal sac, followed by direct access to the lacrimal system. This procedure has been widely practiced for decades and is known for its high success rate in treating chronic dacryocystitis. However, it is associated with visible scarring and a relatively longer recovery time due to the external incision [6-7].

In contrast, the endoscopic endonasal approach to DCR has gained popularity in recent years due to its minimally invasive nature. Performed through the nasal passages, this procedure eliminates the need for external incisions, thus minimizing scarring and reducing the risk of postoperative complications [8]. The endoscopic technique involves the use of advanced imaging technology to navigate through the nasal cavity and create a new opening in the lacrimal sac. This method has been associated with a quicker recovery time and improved patient satisfaction, particularly in those concerned about cosmetic outcomes [9].

Despite the advantages of endoscopic DCR, the external approach remains a gold standard due to its long-established track record of effectiveness, particularly in cases with complex anatomical variations or recurrent disease. However, the comparison between these two techniques in terms of outcomes, complication rates, and long-term success remains a subject of ongoing research. Evaluating these factors is crucial to determine the optimal approach for managing chronic dacryocystitis.

OBJECTIVE

This study aims to compare the outcomes of external versus endoscopic endonasal DCR in the management of chronic dacryocystitis.

METHODOLOGY

This observational study was conducted at the Department of Ophthalmology, a tertiary hospital in Dhaka, from January 2024 to January 2025. A total of 30 consecutive patients diagnosed with chronic dacryocystitis were selected for DCR surgery. Among them, 15 patients underwent endoscopic endonasal DCR, and 15 patients underwent external DCR. The choice of surgical approach—external or endoscopic DCR—was based on the availability of the scope and patient preference. Detailed patient information, including demographic and clinical data, was recorded.

Diagnosis was confirmed based on a thorough patient history, symptoms, and comprehensive ophthalmological examination. Patients who presented with epiphora, mild to moderate sticky or purulent discharge, and evidence of nasolacrimal duct obstruction on probing and irrigation were included in the study. Exclusion criteria consisted of patients with a history of failed DCR, noticeable lower lid laxity, intranasal pathology (such as a deviated nasal septum or nasal polyps), and those under 14 years of age.

Surgical success was defined as the resolution of symptoms and the patency of the lacrimal drainage system, as confirmed by postoperative irrigation. Failure was defined as the persistence of epiphora and/or the inability to irrigate the lacrimal drainage system after surgery. All surgeries were performed under local anesthesia with sedation, except for one case in the endoscopic group, which required general anesthesia. A silicon tube was inserted during surgery in all patients, and the tube was kept in place for 3 months.

Postoperative follow-up was conducted on the first day, then after 7 days, 3 months, and 6 months. At the 3-month and 6-month follow-ups, a sac patency test was performed after the removal of the silicon tube. Data were analyzed and expressed as mean ± SD for continuous variables and as percentage (%) and frequency (f) for categorical variables. Statistical comparisons between the two groups were made using Student's unpaired t-test for continuous data and Chi-squared tests for categorical data. A p-value of less than 0.05 was considered statistically significant.

RESULTS

In this study, the demographic characteristics of the two groups undergoing endoscopic and external dacryocystorhinostomy (DCR) were compared. The endoscopic DCR group comprised 66.7% males and 33.3% females, while the external DCR group included 40.0% males and 60.0% females, with no statistically significant difference in gender distribution ($p > 0.05$). The mean age of patients in the endoscopic group was 33.4 ± 10.9 years, compared to 36.7 ± 12.2 years in the external group, which was also not statistically significant ($p > 0.05$). However, the duration of surgery was significantly longer in the endoscopic group (60.5 ± 7.9 minutes) compared to the external group (53.1 ± 6.2 minutes), with a p-value of 0.042, indicating a meaningful difference.

Table-1: Demographic status of the study group

Variables	Endoscopic DCR *f (%) / Mean ± SD*	External DCR *f (%) / Mean ± SD*	p-value
Gender			
Male	10 (66.7%)	6 (40.0%)	> 0.05
Female	5 (33.3%)	9 (60.0%)	
Age (years)	33.4 ± 10.9	36.7 ± 12.2	> 0.05
Duration of Surgery (minutes)	60.5 ± 7.9	53.1 ± 6.2	= 0.042

Preoperative complications were assessed in both the endoscopic and external DCR groups. Minimal bleeding was observed in 63.3% of patients in the endoscopic group compared to 56.7% in the external group. Mild bleeding occurred in 20.0% of endoscopic cases and 30.0% of external cases, while moderate bleeding was noted in 16.7% and 13.3% of cases respectively. The differences in bleeding severity between the groups were not statistically significant ($p > 0.05$). Additionally, septoplasty was required in 10.0% of patients undergoing endoscopic DCR, whereas no patients in the external group required this procedure.

Table-2: Preoperative complications

Variables	Endoscopic DCR (%)	External DCR (%)	p-value
Bleeding			
Minimum	63.3%	56.7%	
Mild	20.0%	30.0%	
Moderate	16.7%	13.3%	> 0.05
Septoplasty	10.0%	0.0%	–

Postoperative outcomes regarding epiphora and sac patency were evaluated in both groups. Persistent epiphora was reported in 23.3% of patients who underwent endoscopic DCR and in 16.7% of those who underwent external DCR, with no statistically significant difference between the groups ($p > 0.05$). Sac patency tests revealed that 76.7% of endoscopic DCR patients had patent drainage systems, compared to 83.3% in the external DCR group. Non-patency was observed in 23.3% of the endoscopic group and 16.7% of the external group. Again, these differences were not statistically significant ($p > 0.05$), indicating comparable effectiveness between the two surgical approaches.

Table-3: Presence of epiphora and sac patency test

Variables	Endoscopic DCR (%)	External DCR (%)	p-value
Epiphora	23.3%	16.7%	> 0.05
Sac Patency Test			
Patent	76.7%	83.3%	> 0.05
Not-patent	23.3%	16.7%	> 0.05

DISCUSSION

In the present study, we compared the outcomes of endoscopic and external dacryocystorhinostomy (DCR) in managing chronic dacryocystitis. The demographic characteristics between the two groups were similar, with no statistically significant differences in age or gender distribution. This aligns with the findings of previous studies, where demographic variables did not significantly influence surgical outcomes [10-11]. However, our study observed a significantly longer mean surgical time in the endoscopic group, which is also supported by research indicating a steeper learning curve and more time-intensive preparation in endoscopic DCR [12].

Preoperative complications, particularly bleeding, were mild to moderate across both groups and not significantly different. A slightly higher rate of mild bleeding was noted in the external DCR group, while the endoscopic group experienced more moderate cases. This corresponds with the findings who highlighted that while endoscopic DCR offers a scarless approach, intraoperative visualization challenges can lead to variability in bleeding [13]. Interestingly, septoplasty was required in 10% of endoscopic DCR cases in our study due to intranasal anatomical variations, a necessity that has been noted in similar proportions by studies reinforcing the importance of individualized surgical planning [14].

Postoperative outcomes in terms of symptom resolution and sac patency were found to be comparable between the two techniques. In our study, the sac remained patent in 76.7% of endoscopic and 83.3% of external DCR patients, while the persistence of epiphora was slightly more in the endoscopic group (23.3% vs. 16.7%). These findings are consistent with comparative studies who also reported similar success rates between the techniques, with a slightly higher anatomical patency rate for external DCR but better cosmetic outcomes in the endoscopic group [15].

Although the differences in outcomes were not statistically significant, it is worth noting that patient satisfaction and cosmetic concerns often drive the choice of surgical method. Endoscopic DCR is increasingly preferred due to its non-invasive approach, absence of external scarring, and faster recovery time, as supported by many contemporary studies. However, as our findings and those in the literature suggest, proper case selection is crucial since external DCR may still be superior in complex cases or where intranasal anomalies are present.

CONCLUSION

In conclusion, our study demonstrates that both endoscopic and external dacryocystorhinostomy (DCR) are effective surgical options for the management of chronic dacryocystitis, with comparable outcomes in terms of postoperative epiphora resolution, sac patency,

and bleeding complications. Although the endoscopic approach showed a longer surgical duration, the differences between the two methods were not statistically significant in terms of gender distribution, age, preoperative complications, or postoperative results. These findings suggest that both techniques offer similar efficacy, and the choice between endoscopic and external DCR should be based on individual patient factors, surgeon expertise, and patient preference, with both procedures providing satisfactory results for chronic dacryocystitis management.

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