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Original Research Article

Endoscopic dacryocystorhinostomy and outcomes: our experience

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ABSTRACT

Background: Dacrocystorhinostomy can be done by external or by endoscopic approaches. This paper is a series of 33 cases of endoscopic DCR.
Methods: Prospective study of 30 patients who underwent endoscopic DCR from October 2023 to October 2024.
Results: Out of the 30 patients, 26 were females and 4 males. Majority were in the 61-70 age group. Bilateral DCR was done in 3 out of the 30 patients. 18 patients underwent R DCR and 15 patients underwent L DCR. Primary stenting was done in 1 patient. Stenting was done after 2 weeks in view of regurgitation on lacrimal syringing in 3 patients.
Conclusions: Routine primary stenting is not required in endoscopic DCR. Post operative failure could be due to granulation tissue or inadequate bone removal.

Keywords: Dacryocystorhinostomy, Endoscopic, Nasolacrimal duct

INTRODUCTION

Dacryocystorhinostomy (DCR) is a surgical procedure aimed at restoring normal tear drainage by creating an alternative pathway between the lacrimal sac and the nasal cavity, bypassing an obstructed nasolacrimal duct. Traditionally performed via an external approach first described in the early 20th century by Toti, the procedure remained essentially unchanged for decades, with consistently high success rates among experienced surgeons.[1] The advent of rigid nasal endoscopes and endoscopic sinus surgery in the late 20th century revolutionized DCR by enabling minimally invasive, trans nasal access to the lacrimal sac.

Endonasal DCR was first described in 1983 by Caldwell and was not popular until the 1990s with the availability of rigid nasal endoscopes.[2] The aim of DCR is to create a bypass between lacrimal sac and nasal cavity.[3] Nasolacrimal duct obstruction can be primary or secondary. Primary occurs most commonly in postmenopausal women and occurs due to gradual inflammation and fibrosis of NLD.[4] Secondary NLDO can be due to infection, inflammation, trauma, tumors, immunological diseases.[5] DCR can be external or endoscopic. The advantages of external DCR includes direct visualization of lacrimal sac, absence of need for expensive equipment and ability to form fine sutures between lacrimal sac and nasal mucosa.

Disadvantage is scar formation and eyelid anatomy disruption.[6] The advantages of endoscopic DCR includes absence of external incision, ability to address other nasal pathology and absence of disruption of lacrimal pump pathway. Disadvantages include cost of the equipment, steeper learning curve.[7] Comparative studies reveal that endoscopic DCR achieves anatomical and functional success rates similar to those of the external approach, with added benefits of shorter recovery time and lower complication risk. However, technical challenges, patient selection and stenting practices remain areas of ongoing research and debate, underscoring the need for continued

evaluation and protocol. The objective of the study is to determine the surgical success and complications of endoscopic dacryocystorhinostomy performed for primary dacryocystitis and to determine whether routine primary stenting is necessary for maintaining postoperative patency, by prospectively analyzing clinical outcomes and causes of failure in a series of cases.

METHODS

Study design

A convenience sampling technique was employed, including all eligible patients between October 2023 and October 2024, at Carewell Hospital and Research Centre, Kasaragod, Kerala, India. The sample size reflects the total number of cases presenting during the study period.

Data were analyzed using descriptive statistics (means, standard deviations, frequencies and percentages) with SPSS version X as the primary statistical tool.

Inclusion criteria

Patients of all age groups with primary dacreocystitis were included in the study.

Exclusion criteria

Recurrent cases, patients with coexisting nasal pathologies, post-traumatic cases were excluded from the study.

Ethical approval

Ethical approval has been obtained from the Institutional Ethics Committee and Scientific Research Committee.

Surgical technique

The surgeries were done under general anesthesia. Nasal pledgets soaked in 1:1000 adrenaline is placed in the nasal cavity for decongestion. Local infiltration is given along the lateral nasal wall with 2% lignocaine and 1 in 200000 adrenalines. 0-degree 4 mm nasal endoscope was used.

Incision is made using a No:15 scalpel or Rosen circular knife. Superior incision is made 8-10 m above axilla of middle turbinate, about 3 mm posterior to the axilla, forward around 10 mm along frontal process of maxilla. Vertical incision is made just above the insertion of inferior turbinate and the inferior incision is made, proceeding posterior from the vertical incision.

Posteriorly based flap is raised using suction freers elevator to expose lacrimal bone and frontal process of maxilla. Kerrisons punch was used to remove the bone to expose the lacrimal sac. Adequate bone removal exposes the fundus of the sac superiorly and nasolacrimal duct inferiorly. Sac is incised vertically from superior to inferior and horizontal cuts made superiorly and inferiorly at the tip of the incision. Sac wall is everted and marsupialised. Following this, the inferior and superior puncti and dilated and probe passed, which is visualized in the nasal cavity. Syringing is done using saline and dexamethasone. The nasal mucosal flap is trimmed and repositioned along the inferior region of the sac wall to accurately oppose the nasal mucosa and gel foam placed as a support to the flap.

RESULTS

Out of the 30 patients, 26 were females and 4 males. That is 86.6 % patients were females (Figure 1). Majority were in the 61-70 age group (30%). 31-40 age group included 13.3% patients, 41-50 and 71-80 (Figure 2). Age groups included 20% patients each and 51-60 age group included 16.6% patients.

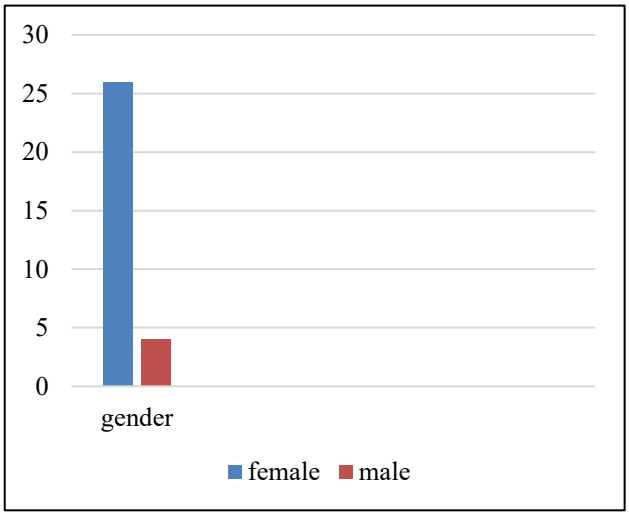

Figure 1: Gender distribution.

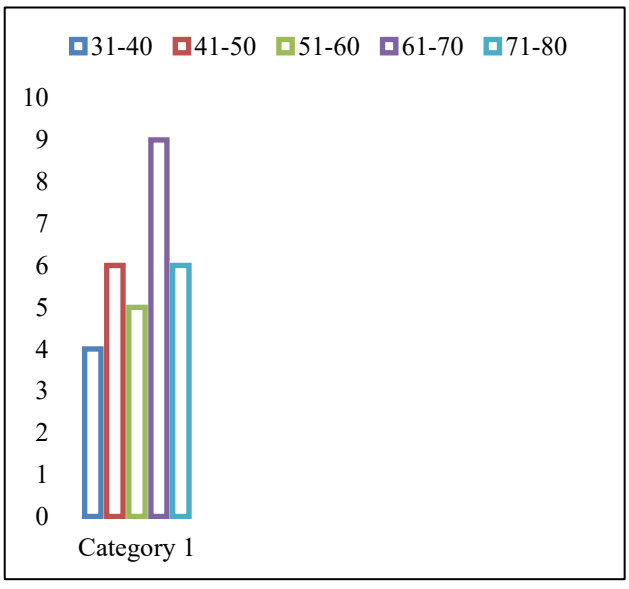

Figure 2: Age distribution.

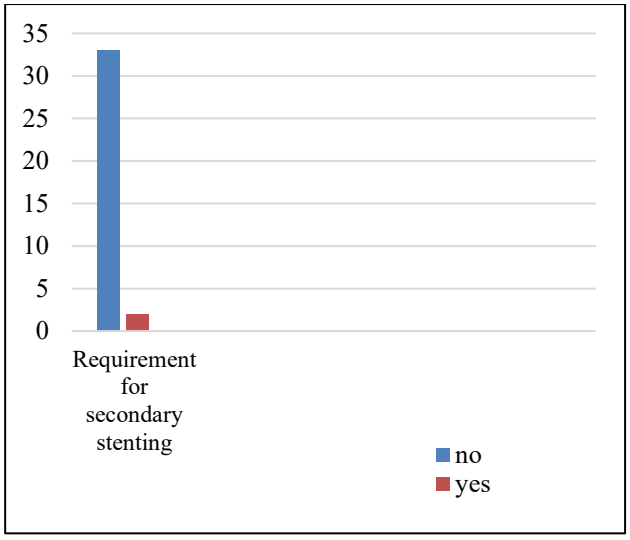

Figure 3: Need for secondary stenting.

Bilateral DCR was done in 3 out of the 30 patients, that is 10% of total patients. 18 patients underwent R DCR and 15 patients underwent L DCR. Primary stenting was done in 1 patient (3%). Stenting was done after 2 weeks in view of regurgitation on lacrimal sac syringing in 3 patients (9%) (Figure 3).

DISCUSSION

Majority of patients in this study were females that is 26 out of 30 patients (86.6%) and 4 males (13.3%). Most of the women were post-menopausal. This female predominance could be due to significant smaller dimensions in the lower nasolacrimal fossa and middle nasolacrimal duct. In post-menopausal females, generalized de-epithelialization can cause de-epithelialization in lacrimal sac and duct.[9] Sung et al in a sample of 441 endoscopic DCR patients, reported 83.7% females and 16.3% males, also noting predominance in elderly and postmenopausal women.[10] 10% patients underwent bilateral DCR in this study. Sung et al found 22.4% bilateral DCR, with right and left procedures almost equally split (47.6% right, 52.4% left).[10]

The need for primary stenting is controversial. There are studies showing that stenting helps in maintaining the patency of the fistula and other studies showing that stenting itself can cause granulation and stenosis. In this series only one patient underwent primary stenting with silicone stents due to abnormal anatomy and presence of granulation tissue. Only 10% patients required stenting post operatively in view of failure, indicating routine primary stenting is not required.

In the study by Deepak Dalmia et al the overall success rate in our study with silicone stent was 92% and without stent was 88%, showing no statistically significant difference between the two groups.[11] Monga et al observed almost equal surgical success with or without stenting, recommending against routine stent use to reduce cost and complications.[12]

This study has few limitations. This is a single centre study with a small sample size of 30 patients. Comparative arm with external DCR is unavailable. The follow up period is short to assess the long-term patency and recurrence rates.

CONCLUSION

Endoscopic dacryocystorhinostomy offers a safe and effective alternative to external DCR with the advantage of avoiding external scars and preserving lacrimal pump function. This study supports that routine primary stenting is not required, as most patients maintained surgical success without it. Postoperative failures were primarily related to factors such as granulation tissue or inadequate bone removal rather than the absence of a stent. Larger, multicenter studies with longer follow-up and comparative analysis against external DCR are needed to further validate these findings and refine patient selection criteria.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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