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ORIGINAL ARTICLE

Comparison of Endoscopic Dacryocystorhinostomy (DCR) with and without Bodkin Tube (Silicon Tube) at MTI KTH Peshawar Ophthalmology and ENT Department

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ABSTRACT

Background: An effective surgical technique for saccal and postsaccal stenosis or nasolacrimal duct occlusion is endoscopic dacryocystorhinostomy (DCR). Endoscopic DCR with a silicone tube is contentious even now.

Objective: The goal of this research was to determine if endoscopic DCR with or without a silicone stent was more effective.

Methods: Total 20 patients underwent for endoscopic DCR were presented in this study. After getting informed written consent detailed demographics were recorded. Patients were equally divided in two groups. Group I received endoscopic DCR with silicon tube in 10 cases and 10 cases of group II went for endoscopic DCR without tube. Post-operatively outcomes were compared among both groups.

Results: There were 13 (65%) females and 7 (35%) males among all cases. Mean age of the cases was 49.8 years. Left side was the most common found among all cases. Mean operative time in group I was lower as compared to group II with p value <0.004. We found 90% success rate in group I and 80% success in group II with insignificant difference. Frequency of recurrent watering in group I was lower as compared to group II with p value < 0.002.

Conclusion: Results showed no statistically significant benefit to endoscopic DCR with stent compared to endoscopic DCR without stent in this study.

Keywords: endoscopic DCR, silicon tube, success rate, recurrence

INTRODUCTION

Two forms of congenital nasolacrimal duct obstruction (CNLDO) were identified by Jones (1976) and Kushner (1998), based on intraoperative observations during lacrimal probing: simple and complex[1] The amount of force needed to overcome simple CNLDOs encountered by lacrimal probing is limited since these blockages are membrane-based and placed near to the distal end of the NLD. There are several possible abnormalities that can be found in complex CNLDO, including a tight NLD for a Bowman's no. 1 probe, a buried probe variation, an opening of the NLD in the lateral nasal wall or inferior turbinate, a dense bone blockage due to the non-development of NLD, and an impacted inferior turbinate[2,3]. This complex form is associated with craniofacial abnormalities/syndromes, anlages/fistulas, and systemic syndromes (Down, Treacher-Collins, Fraser, Rubinstein-Tyabi).You can treat the simple form of CNLDO at any age, but the complex type is more difficult[4].

Persistent CNLDO (pCNLDO) is the result of an increased risk of complex CNLDO, which increases with age (>24 months) and is linked to more primary probing failures. Nasal endoscopic guiding (NEG) is a useful tool for dealing with children who have had problems with probing or pCNLDO[5,6] It allows for a direct view of the nasal cavity, information on the health of the mucosa, the position and size of the inferior turbinate, and the distal end of the nasal ligament (NLD). In order to diagnose the specific type or subtype of complex CNLDO and to develop individualized treatment plans, this NEG data is essential[7,8].

Adhesions, an enlarged middle turbinate, or an infected ethmoidal sinus are typical intranasal causes of DCR failures; using EnDCR, the surgeon may detect and treat these issues. In instances of revision and unsuccessful external DCR, it plays a decisive role.[9] The insertion of a silicone stent is the treatment that is most often chosen for EnDCR because it enhances the surgical results of the procedure. A silicone stent, looped through the common canaliculus, lacrimal sac, and into the nose, is a popular surgical recommendation. Multiple studies have shown success rates in EnDCR ranging from 70% to 95%[8,9]. When compared to external DCR, the overall results are much better. If you want better results with EnDCR, you need to try to imitate the external technique as much as possible. To achieve success, it is necessary to create mucosal flaps and a big bony neo-ostium. Understanding the nasal architecture and its relationship to the lacrimal sac is crucial for achieving complete lacrimal sac exposure and accurate seating of the neo-ostium1[0]. Because the lower half of the sac is located below the thick bone of the maxilla's frontal recess, the neo-ostium needs to be bigger and higher than before. To perform the procedure successfully, one must have a precise knowledge of the intranasal surgical anatomy. Citations[11,12]

For adults with partial lacrimal system obstruction, Demirci and Elner[13] found that double silicone intubation was an efficient minimally invasive method. In their study of the Indian population, Harugop et al. came to a similar conclusion[14] Silicon intubation in the nasolacrimal route aids in keeping the rhinostomy open. To avoid rhinostomy stenosis and stabilize epithelization between two mucosal surfaces with surgical continuity, silicon stents are nearly always used[14]

MATERIALS AND METHODS

This prospective randomized study was conducted at Khyber Medical College, Peshawar during June 2022 to March 2023 and comprised 20 cases. After getting informed written consent detailed demographics of presented cases were recorded. All patients had to be adults (18 and over) and suffer from either symptomatic epiphora, chronic dacryo- cystitis, or lacrimal sac mucocele. We did not include individuals who were deemed unsuitable for general anesthesia, had canalicular or punctal obstruction, a lacrimal fistula, lower eyelid laxity that was obvious, had undergone prior lacrimal surgery, or had ectropion or entropion.

Included cases were equally divided two groups. Group I received endoscopic DCR with silicon tube in 10 cases and 10

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cases of group II went for endoscopic DCR without tube. Under general anesthesia, the surgery involved elevating a mucosal flap over the frontal process of the maxilla and injecting 1% lidocaine and 1:1,2,000,000 adrenaline. The lacrimal sac was exposed following the removal of bone to a depth of approximately 1.0 to 1.5 cm using straight and curved punches from Kerrison measuring 2 and 3 mm, respectively. A sickle knife incision was produced in the medial wall of the sac, exposing its lumen. The edge of the sac was microflapped open and marsupialized to the mucosa for attachment. Normal saline was syringed into the neo-ostium to test its patency. Stents constructed of silicon tubing were administered to patients in Group I. Stent was passed via lower punctum and put into nose through neoostium. After that, the stent was fastened in place by tying three or four knots in the nostril.

After taking the ointment ribbon pack out of the nose, wait 24 hours. Patients were discharged with a full complement of treatments, including anti-inflammatory drugs, antibiotic eye drops, xylometazoline nasal sprays, and oral antibiotics. It was standard practice to check in with patients at1,2,6,10, and 6 months. The silicone stents were removed six weeks following surgery. At the 10-week postoperative mark, patients self-reported their level of symptom relief, and at the 6-month follow-up, they used syringing to objectively measure their progress.

RESULTS

There were 13 (65%) females and 7 (35%) males among all cases. Mean age of the cases was 49.8 years. Left side was the most common found among all cases. (Table 1).

Table-1: Demographics of the presented all cases.

Variables	Frequency/%age
Gender	
Male	7 (35%)
Female	13 (65%)
Mean age (years)	49.8
Affected Side	
Left	12 (60%)
Right	8 (40%)

Mean operative time in group I was lower as compared to group II with p value <0.004. (Table 2).

Table-2: Comparison of operative time among both groups

Variables	Group I	Group II	P value
Mean operative time (minutes)	52.13±10.71	48.9±7.68	0.004

We found 90% success rate in group I and 80% success in group II with insignificant difference. Frequency of recurrent watering in group I was lower as compared to group II with p value < 0.002. (Table 3).

Table-3: Post-operative comparison of outcomes among both groups

Variables	Group I (10)	Group II (10)	P value
Success Rate			
Yes	9 (90%)	8 (80%)	-
No	1 (10%)	2 (20%)	-
Recurrence			
Yes	1 (10%)	4 (40%)	0.002
No	9 (90%)	6 (60%)	

DISCUSSION

Nasal duct obstruction (NLDO) can be either congenital or acquired, in which case EnDCR is the treatment of choice. The majority of patients who experience blockage of the nasolacrimal drainage system undergo this open surgical surgery.16 It is both cost-effective and has a high success rate with minimal follow-up.[15] Epiphora, in which one has persistent watering of the eyes as a result of NLDO, is a distressing condition. In addition to causing the patient cosmetic distress, this scenario also leads to recurring infections[16]

Because of their poor lifestyle choices, extended exposure to secondhand smoke in the home, and environmental dust, women from lower socioeconomic backgrounds are at increased risk for developing chronic dacryocystitis. Anatomical and congenital constriction of the nasolacrimal drainage system in females relative to males are other potential explanations[17] It is estimated that between 6 and 20% of newborns are born with congenital NLDO.19 Of such, 80–96% resolve on their own within the first year, with the remaining 1–2% taking place in the second[18] In current study, 13 (65%) females and 7 (35%) males among all cases. Mean age of the cases was 49.8 years. Left side was the most common found among all cases.

Like any other field, endonasal endoscopic DCR has progressed since its inception. In endoscopic DCR, a number of more recent methods have emerged. Powered endoscopic dacryocystorhinostomy, which does not involve the preservation of mucosal flaps, has proven to be an effective method for managing acquired nasolacrimal duct obstruction, according to a 2007 study by Ramkrishnan et al.[19]. The use of lasers to endoscopic DCR has recently been a successful development. Massaro et al.[20] laid up the first description of stoma creation utilizing argon laser in 1990. In a study of forty patients, Metson et al. [21] initially utilized the holmium-YAG laser. The study conducted by Allen and Berlin found that the use of silicone intubation during DCR significantly increased the failure rate of primary DCR [22].While, we found 90% success rate in group I and 80% success in group II with insignificant difference. Frequency of recurrent watering in group I was lower as compared to group II with p value < 0.002. A success rate of 92.6% of endoscopic DCR without stent with no major complications was reported by Singh et al. [23], which is consistent with high success rates in cases without stent, similar to other studies. In a randomized trial, Unlu et al. [24] found comparable results; 84.2% of patients in the stented group and 94.7% of patients in the non-stented group were successful. The authors cautioned against making stenting a requirement for endoscopic DCR, even if there was no statistical evidence to suggest a better method.

Smirnov demonstrated in a prospective randomized trial of patients undergoing endoscopic DCR that stenting with silicone is unnecessary, as the success rate was 78% with the stent and 100% without it[25]. The success rate of powered endoscopic DCR employing mucosal flaps instead of stents was shown to be comparable to that of stents, according to Harvinder et al.[26]. Longari et al.[27] conducted a study in 2016 that concluded endoscopic DCR without silicone stent intubation should be the preferred approach. Stent intubation should only be used in rare situations if the local circumstances were found to be poor both before and during the operation. There were no statistical differences between the stent and non-stent groups in terms of success rate at 18 months of follow-up; both groups achieved 88.6%. Although endoscopic DCR with and without stents are showing good success rates[28], no procedure is risk-free, particularly revision surgeries. Formation of scar tissue or granulation tissue at the site of the rhinostomy is the leading cause of failure in this procedure. Applying antiproliferative mitomycin C topically during surgery may improve the chances of a successful revision endoscopic DCR and reduce the possibility of postoperative scarring, according to research[29].

CONCLUSION

Results showed no statistically significant benefit to endoscopic DCR with stent compared to endoscopic DCR without stent in this study.

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