

Original Research Article

A comparative study on outcome of endonasal dacryocystorhinostomy with and without silicone intubation-otorhinolaryngology

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ABSTRACT

Background: Epiphora or “tearing eye” is a functionally and socially, bothersome symptom. Dacryocystitis is an inflammatory condition of the nasolacrimal sac caused due to an obstruction within the nasolacrimal duct (NLD). Dacryocystitis can be classified as acute and chronic or acquired and congenital. Chronic dacryocystitis is almost always managed surgically. The present study was undertaken for comparative study of outcomes of endonasal Dacryocystorhinostomy (DCR) done with and without silicone intubation.

Methods: The 50 cases dacryocystitis were selected. The patients were divided in group A cases (with intubation) and group B controls (without intubation) randomly. A detailed history was taken followed by general physical and clinical otorhinolaryngological examination. Patients were evaluated with nasal endoscopy, DCG (Dacrocystogram), through which site of obstruction was located.

Results: In our study, Among the cases 18 subject presented with right dacryocystitis and 7 with left dacryocystitis. Similarly, among the controls, 20 subjects presented with right dacryocystitis and 5 presented with left dacryocystitis. According to modified Likert’s score, at the end of 6 months when a nasal endoscopy was done along with syringing 96% of the cases had patent rhinostomy while only 80% of the controls showed patency. Post operative epistaxis was evident in 6 cases and 4 controls.

Conclusions: Endonasal DCR with and without stenting, had more or less similar results, with equal post op complications. Though, with stenting, success rates were high as shown in our study.

Keywords: NLD, DCR, DCG, Deviated nasal septum

INTRODUCTION

Epiphora or “tearing eye” is a functionally and socially, bothersome symptom.¹ Epiphora can be described as an inundation of tears. The degree of epiphora can vary from slight trickling to a continuous, infuriating overflow. There are a number of causes of epiphora, like allergies, eye lid infection, inflammation, foreign bodies, NLD obstruction (dacryocystitis), etc.^{2,3}

Dacryocystitis is an inflammatory condition of the nasolacrimal sac caused due to an obstruction within the

NLD. This leads to the further stagnation of tears in the lacrimal sac.^{4,5}

Clinically, patients present with signs of periorbital cellulitis, including redness, raised temperature, and swelling around the eye, along with tenderness and purulent discharge from the tear duct. Immediate diagnosis and differentiation from other eye conditions are necessary to prevent complications.⁶

Dacryocystitis can be classified as acute and chronic or acquired and congenital.⁷

Acute infections typically causes dacryocystitis. The most common organisms as described are *Staphylococcus* and *Streptococcus* species, followed by *H. influenzae* and *P. aeruginosa*.^{8,9}

Chronic dacryocystitis results from chronic obstruction of the lacrimal system, due to repeated infection, dacryoliths, and chronic inflammatory debris of the nasolacrimal system.¹⁰

Acquired obstruction are typically due to repeated trauma, surgeries, medications, and neoplasms. Nasoethmoid fractures are the most common cause of traumatic NLD obstruction. Endonasal and endoscopic sinus procedures also have high association. Common topical medications associated with acquired condition are timolol, pilocarpine, dorzolamide, idoxuridine, and trifluridine.^{11,12}

Congenital forms are due to a membranous obstruction in the distal NLD. Before delivery, the nasolacrimal system is filled with amniotic fluid and when it fails to be expressed, it becomes purulent within a few days of delivery.¹³

Chronic dacryocystitis is almost always managed surgically. Probing is the first-line management and can be done in the outpatient setting. Balloon dacryoplasty, nasolacrimal intubation, or NLD stenting have all been attempted with variable success rates. If these therapies fail, external DCR or endonasal dacryocystorhinostomy (EN-DCR) is then opted.^{14,15}

Several methods such as application of mitomycin c to the rhinostomy opening, silicon tube intubation, suturing of the mucosal flaps have been suggested to maintain a permanent opening. Stenting has been the preferred method to prevent the closure of rhinostomy. Silicon intubation is the most common stenting method used for endonasal endoscopic DCR. It not only prevents the closure of rhinostomy opening but also prevents scar formation and stenosis of the common canaliculus after endoscopic DCR.^{16,17}

METHODS

Type of study

This was case-control study.

Sample

The 50 cases, done via simple random sampling.

Duration and place of study

The study was done from January 2023 to December 2023 in the department of ENT, MGM medical college and MYH hospital, Indore, M. P., after the approval of the ethical society of our college.

Inclusion criteria

Patients with age group 20-50 years, all patients with the complain of excessive lacrimation, not responding to medical management, Crigler massage or probing and syringing, coming to the department of ENT and patients giving consent for study were included in study.

Exclusion criteria

Patient not fit for surgery, immunocompromised patients, uncontrolled systemic diseases, coexisting nasal pathologies which could influence the outcome of the surgery like atrophic rhinitis, chronic granulomatous diseases of the nose, any nasal tumours, etc., other sinonasal disease. History of previous lacrimal surgery. Patients with suspected presacral obstruction including canalicular obstruction and punctual stenosis. Post traumatic and post radiation epiphora were excluded from study.

Data collection

The 50 cases dacryocystitis were selected. The patients were divided in group A cases (with intubation) and group B controls (without intubation) randomly. A detailed history was taken followed by general physical and clinical otorhinolaryngological examination. Patients were evaluated with nasal endoscopy, DCG, through which site of obstruction was located. Pre-anesthetic workup was done.

Statistical methods

Using SPSS software.

RESULTS

As already described the study population was divided into cases (n=25) and controls (n=25).

Table 1 shows that among the cases 15 subjects had right sided deviated nasal septum and 10 had left sided deviated nasal septum. Among controls 16 subjects had right sided deviated nasal septum and 9 had left sided deviated nasal septum. Among the cases 18 subject presented with right dacryocystitis and 7 with left dacryocystitis. Similarly, among the controls, 20 subjects presented with right dacryocystitis and 5 presented with left dacryocystitis.

According to modified Likert's score, at the end of 1 month post operatively 18 subjects had no symptoms and 5 showed significant improvement while only 84% of the subjects in control group showed no symptoms or significant improvement.

At the end of 3 months 92% of the cases and only 88% of the controls showed significant improvement. When the study population was followed to 6 months post

operatively 100% of cases showed either no symptoms or significant improvement from the symptoms while only 92% of the controls showed the same.

At the end of 6 months when a nasal endoscopy was done along with syringing 96% of the cases had patent rhinostomy while only 80% of the controls showed patency.

As we talk about the intra operative bleeding, this was present in 16 cases and 12 controls.

Post operative epistaxis was evident in 6 cases and 4 controls. At the end of 6 months study population with silicon intubation had no sign of synechiae and only 8% of them showed crusting while among controls 36% showed synechiae which did not improve on probing and 64% of them showed crusting.

Table 1: Clinical features of patients.

Clinical features	Case, (n=25)	Control, (n=25)
DNS right	15	16
DNS left	10	9
Right dacryocystitis	18	20
Left dacryocystitis	7	5

Table 2: Subjective (functional) results of endoscopic dacryocystorhinostomy at 1 month.

Modified Likert's score	Cases (with stent)	Control (without stent)	P value
No symptom	18	16	
Significant improvement	5	5	
Slight improvement	1	3	
No improvement	1	1	
Worsening of symptoms	0	0	
Result	23 (92%)	21 (84%)	0.0044

Table 3: Subjective (functional) results of endoscopic dacryocystorhinostomy at 3 months.

Modified Likert's score	Cases (with stent)	Control (without stent)	P value
No symptom	20	16	
Significant improvement	3	6	
Slight improvement	2	2	
No improvement	0	1	
Worsening of symptoms	0	0	
Result	23 (92%)	22 (88%)	0.0038

Table 4: Subjective (functional) results of endoscopic dacryocystorhinostomy at 6 months.

Modified Likert's score	Cases (with stent)	Control (without stent)	P value
No symptom	22	18	
Significant improvement	3	5	
Slight improvement	0	2	
No improvement	0	0	
Worsening of symptoms	0	0	
Result	25 (100%)	23 (92%)	0.0038

Table 3: Status of rhinostomy.

Rhinostomy	Cases (with stent)	Control (without stent)	P value
Patent	24	20	
Blocked	1	5	
Result	24 (96%)	20 (80%)	0.0016

Table 3: Intra-op and post-op complications.

Complications	Cases (with stent)	Control (without stent)	P value
Intra-op bleeding	16	12	0.026
Post-op epistaxis	6	4	0.044
Synechiae	0	8	0.0018
Crusting	2	16	0.0004

DISCUSSION

Our study shows that among the cases 18 subject presented with right dacryocystitis and 7 with left dacryocystitis. Similarly, among the controls, 20 subjects presented with right dacryocystitis and 5 presented with left dacryocystitis. Overall, right sided dacryocystitis was more prevalent. This is contradictory to the study done by Nitin et al where most of the cases presented with the disease on the left side accounting for 72% of the total cases and 28% had disease on the right side.¹⁸

We evaluated 50 patients, of which 25 patients underwent endonasal DCR with a stent, and 25 patients without a stent. The stent was removed 1 month post surgery. The outcome was evaluated at the end of one month, 3 months, and 6 months.

According to modified Likert's score, at the end of 1 month post operatively 18 subjects had no symptoms and 5 showed significant improvement, while only 84% of the subjects in control group showed no symptoms or significant improvement. At the end of 6 months post operatively 100% of the cases showed either no

symptoms or significant improvement from the symptoms while only 92% of the controls showed the same.

In a study done by Maldhure et al success rates of the endoscopic technique have been reported as 82-95%, with stents being removed from 4-24 weeks postoperatively.¹⁹ There have been cases with a primary success rate of 83 percent for endoscopic DCR with stent and in 17% of cases, the rhinostomy opening was found to be obstructed by granulations or synechia formation. Some cases also report a success rate of 92.6% for endoscopic DCR without a stent, with no patients with major complications reported.

At the end of 6 months when a nasal endoscopy was done along with syringing 96% of the cases had patent rhinostomy while only 80% of the controls showed patency. In a study done by Maldhure et al the final endoscopy at the end of 12 months showed that 93% of patients who underwent stenting had patent rhinostomy opening, while 90% of those who did not undergo stenting had a patent opening.¹⁹

As we talk about the intra operative bleeding, this was present in 16 cases and 12 controls. Post operative epistaxis was evident in 6 cases and 4 controls. At the end of 6 months study population with silicon intubation had no sign of synechiae and only 8% of them showed crusting while among controls 36% showed synechiae which did not improve on probing and 64% of them showed crusting. In a similar study done by Ingale et al there was one case (2.0%) with nasal bleeding during surgery.²⁰ Postoperative complications such as epistaxis were observed in 2 cases (4.0%), nasal synechiae in 3 cases (6.0%) and postoperative crusting in 15 cases (30.0%). Rest of the patients had uneventful postoperative period.

Limitations

Loss of follow up.

Complications

From the previous studies there were controversial results on whether the benefits of use of stents to improve the outcome of DCR outweighs the complications sometimes associated with the stents. As revealed by some studies silicone stent improves surgical outcomes following endonasal endoscopic DCR. On the contrary, some studies claims that silicone stent itself is a reason for failure of surgery due to granulation tissue formation and complications like punctal erosion and slitting of canaliculi.

CONCLUSION

Our case control study showed that patients with chronic dacryocystitis who underwent endonasal DCR with and

without stenting had almost similar results. There was no significant differences in the outcome. The patients who underwent endonasal DCR without stent did equally well clinically and functionally as those who underwent same with nasolacrimal silicon stent. So, we concluded that all the patients can be considered for endonasal DCR without stent except special cases like revision endonasal DCR, lacrimal gland cyst, fistula, patients with sinonasal pathology in whom silicon stents can be preferred, so that there is less invasive intervention dealing with the canaliculi and puncta of the eye, granting better results and less.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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