

# Is Silicone Intubation Necessary in Dacryocystorhinostomy?

Zia Muhammad, Muhammad Tariq, Mubashir Jalis, Anjum Khalid

*Pak J Ophthalmol 2016, Vol. 32 No. 4*

See end of article for authors affiliations

**Purpose:** To study the results of standard DCR without silicon intubation in patients suffering from chronic dacryocystitis.

**Study Design:** Quasi experimental study.

**Place and Duration of Study:** Mardan Medical Complex Teaching Hospital, from December 2010 to December 2011.

**Material And Methods:** Fifty patients (31 females and 19 males) having chronic dacryocystitis were operated using the standard dacryocystorhinostomy (DCR) procedure at MMC Teaching Hospital Mardan. All patients were followed for at least 6 months post operatively. Success was defined as symptomatic relief of epiphora and a patent nasolacrimal passage on syringing.

**Results:** On first post operative day 47 patients were found to have freely patent passage on syringing done in the ward and rest of 3 patients below 15 years also had patent passage on syringing done in general anesthesia (GA). The success rate after 6 months of follow-up was 98 % without using silicon tubes

**Conclusion:** Standard external DCR is a simple and cost effective procedure for the management of chronic dacryocystitis and routine intubation is unnecessary and probably unjustified.

**Key Words:** Dacryocystorhinostomy (DCR), Epiphora, Silicone tube.

Correspondence to:  
Zia Muhammad  
House No. G- 139  
Sadberg Road  
Sheikh Maltoon Town  
Mardan 23200.  
Email: eyesurgzia@gmail.com

For nearly a century, the gold standard for epiphora and nasolacrimal duct obstruction has been Dacryocystorhinostomy (DCR). Although the high success rate of external DCR continues to be confirmed in the literature, there have been promising advances in other modalities of treatments for DCR namely endocanalicular surgery and endonasal DCR<sup>1</sup>.

Dacryocystitis results from some kind of obstruction in the nasolacrimal duct. This acquired nasolacrimal duct obstruction may be primary where cause for the inflammation is not defined, whereas secondary nasolacrimal duct obstruction is due to a known cause for the inflammation. The causes may be infectious, inflammatory, neoplastic, traumatic or mechanical<sup>2</sup>. Silicone intubation has been used to improve the success rate of DCR in the recent years. It has been reported to cause cheese wiring of canaliculi

and granuloma formation at the ostium<sup>2</sup>. We undertook this study to find out the success rate of DCR without silicone intubation.

## MATERIAL AND METHODS

This study was conducted at Mardan Medical Complex Teaching Hospital (KPK) from December 2010 to December 2011. Fifty patients (31 males 19 females) were included in the study. Patients with acute dacryocystitis lacrimal abscess and stenosed canaliculi were excluded from the study. All patients were recruited from the outpatient department of Mardan Medical Complex teaching Hospital Mardan.

All patients underwent a thorough ophthalmic examination and systemic evaluation for diabetes mellitus and hypertension. Patients having anomalies

of the nasolacrimal puncti, blockage of the upper and lower canaliculi or common canaliculus, previous lacrimal surgery, post-traumatic dacryocystitis and bony deformity were excluded from the study. A written informed consent was taken from all patients undergoing the procedure. Forty seven patients were operated under local anesthesia and three patients under 15 years were operated under general anesthesia.

Standard external DCR was performed on all patients, with suturing of the anterior flaps of the lacrimal sac and nasal mucosa and trimming of the posterior flaps of the lacrimal sac. The first dressing was changed after 24 hours and irrigation of the lacrimal passage was done to ascertain the patency of the newly formed ostium and to wash out any blood clots and debris in the passage. Children below 15 years were syringed under general anesthesia on the next operation day.

Patients were then followed after 7 days, one month and 6 months. Successful outcome was defined as resolution of epiphora and discharge and patency of the passage on syringing.

## RESULTS

Fifty randomly selected patients were operated for DCR during the period from December 2010 to December 2011. Thirty one (62%) were females and 19 (38%) were males. The age range was between 4 to 70 years.

Forty seven patients were operated under local anesthesia while 3 patients were operated under general anaesthesia. Follow-up period was from 6 months to one year. Per-operative complications included severe bleeding in three patients (6%), controlled with pressure packing and the procedure completed successfully.

On first post-operative day all patients (above 15 years of age) the nasolacrimal passage was washed in the ward examination room. The passage was found freely patent in all the 47 patients. In three patients (below 15 years) syringing of the nasolacrimal passage was performed under general anesthesia in the next operation day i.e. on third post-operation day. The passages were found patent in these patients as well.

Subsequently the patients were followed every month. After 6 months of follow-up 49 patients (98%) were found to have patent nasolacrimal passage. Only one patient (2%), a 19 year old male patient had a blocked nasolacrimal passage to syringing.

**Table 1:**

Age	Male	Female	Total
	5	3	8
21-40 Years	5	11	16
40-70 Years	9	17	26

## DISCUSSION

Dacryocystitis is defined as inflammation of the lacrimal sac usually caused by some kind of obstruction in the nasolacrimal duct<sup>1</sup>. The condition is commonly seen in infants and people over 40 years of age. There are two types of acquired nasolacrimal duct obstructions, primary or secondary. Primary nasolacrimal duct obstruction is caused by inflammation without any known cause whereas, the secondary acquired nasolacrimal duct obstruction is caused by a known cause of inflammation or fibrosis. These causes could be infectious, inflammatory, neoplastic, traumatic or mechanical.

Galen<sup>3</sup> originally described the anatomy, pathology of the lacrimal drainage system and etiology of tearing. His treatment for dacryocystitis was dacryocystectomy. In 1904, Toti developed the first modern external DCR. In 1921 Dupuy Dutemps and Bourguet<sup>4</sup> described the methods of forming the mucosal flaps. Since that time, silicon intubation has been the only major advance in the technique.

For nearly a century the gold standard treatment for epiphora and nasolacrimal duct obstruction has been dacryocystorhinostomy (DCR). In spite of the high success rate of external DCR, there have been advances in alternative procedures like endonasal DCR and endocanalicular surgery. External DCR has the advantages of ease of performance and lower economic impact<sup>2</sup>.

The success rate of dacryocystorhinostomy (DCR) has been reported from 69% to 99%<sup>5</sup>. Factors influencing the outcome of the procedure include the surgical approach (endonasal DCR vs. external DCR), the presence of preoperative acute dacryocystitis or postoperative soft tissue infection, a history of trauma to the lacrimal apparatus and the use of silicone tubes<sup>6</sup>. Other factors attributable to DCR failure include membranous occlusion of the rhinostomy site, common canicular obstruction and an inappropriate size or location of the bony ostium. The most common cause of primary DCR failure, according to many

authors, is the soft tissue scarring at the rhinostomy site<sup>7</sup>.

External DCR is a technically challenging procedure. It needs considerable experience and atraumatic handling of the soft tissues, careful dissection of the lacrimal sac, proper size and location of the osteotomy for a successful outcome<sup>8</sup>.

We operated on 50 patients (31 females and 19 males) having chronic dacryocystitis. Patients with lacrimal abscess in the recent past, stenosed canaliculi, were excluded from the study. Chronic dacryocystitis was more common in females 31 (62%) in our study as compared to males 19 (38%). Similar female preponderance has been noted by other observers as well<sup>1,7,8</sup>.

We followed the technique of Dutemps and Bourguet<sup>10</sup>, suturing only the anterior flaps of the lacrimal sac and the nasal mucosa. The posterior flaps were trimmed only like other surgeons<sup>11,12</sup>. Some surgeons<sup>12</sup>, suture the posterior flaps as well. We did not use silicone tube in any patient.

To enhance the success rate of the procedure and prevent postoperative cellulitis, we routinely use systemic antibiotics in all patients. It has been observed that there is a significant reduction in postoperative cellulitis after DCR with either intra-operative intravenous antibiotics or postoperative oral antibiotics compared with intra-operative saline wash without antibiotics<sup>13,14,15</sup>. The cellulitis rate was approximately 1% in both antibiotic groups compared with 18% in the non antibiotic group.

Raj Kumar Advani et al<sup>16</sup>, has reported a success rate of 95% in their series without intubation. Gibbs<sup>17</sup> in 1967 described a technique of inserting a silicone rubber tube when performing DCR, however, there is no significant difference between the success rates of routine external DCR irrespective of silicone intubation<sup>18</sup>.

Silicone intubation may be beneficial in complicated cases with distal and common canaliculus obstruction and repeat DCR procedures<sup>19</sup>. We achieved a success rate of 98% in our patients after one year of follow-up. In one patient, a 19 years old male, the passage remained patent for two months and reported with epiphora 5 months after the operation. In experienced hands, external dacryocystorhinostomy is a highly successful procedure without silicone tubes even in children<sup>14,15</sup>. Saiju et al in their prospective randomized study found no statistically significant difference in the success rate between the groups of

patients undergoing DCRs with and without silastic intubation. Silicone tubes increased the surgical cost by 20% in their study<sup>20</sup>. Based on the meta-analysis that included 5 randomized controlled trials and 4 cohort studies, no benefit was found for silicone tube intubation in primary DCR<sup>21</sup>.

#### Author's Affiliation

Prof. Zia Muhammad  
Prof. and Head Dept. of Ophthalmology  
Bacha Khan Medical College  
Mardan

Dr. Muhammad Tariq  
Assistant Prof. of Ophthalmology  
Bacha Khan Medical College  
Mardan

Dr. Mubashir Jalis  
Associate Prof. of Ophthalmology  
Islamabad Medical and Dental College  
Islamabad

Dr. Anjum Khalid  
Community Ophthalmologist  
Mardan Medical Complex, Mardan.

#### Role of Authors

Prof. Zia Muhammad  
Operating on some of the selected patients. Writing and composing the article.

Dr. Muhammad Tariq  
Searching the literature and collecting the references.

Dr. Mubashir Jalis  
Proof reading and editing the paper.

Dr. Anjum Khalid  
Operating on the selected patients and follow-up

#### REFERENCES

1. Babar TF, Masud MZ, Nasir Saeed, Khan MD. An Analysis of Patients with Chronic Dacryocystitis. Pak J Ophthalmol. 2003; 19: 77-82.
2. T. Duffy MT. Advances in Lacrimal Surgery. Current Opinion in Ophthalmol. 2000, 11: 352-6.
3. Hughes SM: The history of lacrimal surgery. Adv Ophthalmic Plast Reconstr Surg. 1986, 5: 139-68.
4. Werb A: The history and development of lacrimal surgery in England and Europe. Adv Ophthalmic plast Reconstr Surg. 1986, 5: 233-40.
5. Use of Mitomycin C in Repeat Dacryocystorhinostomy. Ophthalmic Plastic and Reconstructive Surgery, Vol. 15:

- 19-22.
6. **Walland MJ, Rose GE.** Factors affecting the success rate of open lacrimal surgery. *Br J Ophthalmol.* 1994; 78: 888-91.
  7. **Welham RAN, Wulc AE.** Management of unsuccessful lacrimal surgery. *Br J ophthalmol.* 1987; 71: 152-7.
  8. **Zaman Shah, Ibrar Hussain, Naeem Khattak, Mustafa Iqbal.** A Review of 144 cases of Dacryocystorhinostomy. *Pak J Ophthalmol.* 2009; 25: 89-92.
  9. **Boobak SM.** Results and Complications of External Dacryocystorhinostomy at Tertiary Referral Centre. *Ophthalmology Update,* 2011; 9: 82-5.
  10. **Dupuy-Dutemps L, Bourguet J.** Procède plastique de Dacryocystorhinostomie et ses resultantants. *Ann Ocul J.* 1921; 158: 241-61
  11. **Serin D, Alagoz G, Karsloglu S, et al.** External dacryocystorhinostomy: Double flap anastomosis or excision of the posterior mucosal flaps? *Ophthal plast Reconstr Surg.* 2007; 23: 28-31.
  12. **Elwan S.** A randomized study comparing DCR with and without excision of the posterior mucosal flaps. *Orbit.* 2003; 22: 7-13.
  13. **Vardy SJ, Rose GE:** Prevention of cellulitis after open lacrimal surgery; A prospective study of three methods. *Ophthalmology,* 2000, 107: 315-7.
  14. **Barnes EA, Rayyah YA, Rose GE.** Pediatric Dacryocystorhinostomy for Nasolacrimal Duct Obstruction. *Ophthalmology,* 2001; 108: 1562-4.
  15. **Nawas M, Sultan M, Hanif Q, Sadiq M.** Dacryocystorhinostomy; A Comparative Study of the Results with and without Intubation in Pakistani patients of Chronic Dacryocystitis. *Professional Med j Mar.* 2008; 15: 81-6.
  16. **Advani RK, Halepota FM, Shah SIA, Qadri WM.** Comparative Results of Dacryocystorhinostomy with and without Silicon Intubation. *Pak J. Ophthalmol.* 2004; 20: 29-34.
  17. **Pakdel F.** Silicone Intubation Does not improve the Success of Dacryocystorhinostomy in Primary Acquired Nasolacrimal Duct Obstruction. *J Ophthalmic Vis Res.* 2012; 7: 271-3.
  18. **Buttanri IB, Serin D.** Silicone intubation Indications in External Dacryocystorhinostomy. *Med Hypothesis, Medical Hypothesis, Discovery and Innovation in Ophthalmology.* Winter, 2014; 3: 101.
  19. **Monka A, Zhungli S.** Silicone Intubation in External Dacryocystorhinostomy. *International J of Science and Research,* Volume 4 Issue 12, December 2015. Pp 1814-1816.
  20. **Saiju R, Morse LJ, Weinberg W, Shrestha MK, Ruit S.** Prospective randomized comparison of external dacryocystorhinostomy with and without silicone intubation. *British J of Ophthalmology,* 2009; 93: 1220.
  21. **Feng YF, Cai JQ, Zhang JY, Han XHA.** Meta-analysis of primary dacryocystorhinostomy with and without silicone intubation. *Can J Ophthalmol.* 2011; 46: 521-7.