DJO

P-ISSN 0972-0200

Original Article

Evaluation of Functional Outcome of Silicone Intubation on Patency of Lacrimal System in Canalicular Obstruction and Revision Surgeries

Rashmi Joshi, Sarita Maharia, Anju Kochar

Department of Ophthalmology, Sardar Patel Medical College, Bikaner, India

Abstract

Purpose:- *The purpose of the present study is to report authors' experience of functional outcome of Silicone intubation on patency of lacrimal system in canalicular obstruction and revision surgeries.*

Materials and Methods:- *This study was conducted at Sardar Patel Medical College from January 2015 to March 2017. A total of 32 cases were enrolled in this study. Twelve patients of canalicular block and 20 patients of various failed DCR techniques were recruited for the study. Two patients had failed DCR twice, and 18 patients had failed DCR once. Twelve of these previous failed DCR were endoscopic DCR, and 6 were external dacryocystorhinostomy (E-DCR). All cases were operated by a single surgeon using the same technique of intubation.*

Results:- *In our study we found that Silicone intubation is an effective method for treating canalicular block and failed DCR. Silicone tube is soft, relatively inert, and flexible, causing minimal injury to the delicate canaliculi and nasal mucosa. It maintained duct patency by maintaining an opening. The main outcome measures were the resolution of epiphora and the anatomical and functional successes by patency on follow up.*

Conclusion:- *The success rates reported for silicone intubation range from 69% to 100% in various studies. The 94.5% success rate noted in the present study is entirely comparable to these previously reported results, with minimal complication.*

Delhi J Ophthalmol 2018;28;26-8; Doi; http://dx.doi.org/10.7869/djo.329

Keywords: *Silicone Intubation, endoscopic DCR, external dacryocystorhinostomy (DCR), epiphora*

Introduction

Epiphora is the main presenting symptom of chronic dacryocystitis and is a common ophthalmic problem.[1] External Dacryocystorhinostomy or DCR is among the common oculoplastics surgeries performed for managing epiphora due to nasolacrimal duct obstruction. Despite meticulous surgery, failures are often met with. Epiphora after Dacryocystorhinostomy (DCR) is a distressing situation for both patient and the surgeon. Failure rate for external DCR has been reported to be 5%–10%[4-6] or less and 35%–40%[7-9] for endonasal DCR.

The most common causes of DCR failure are common canalicular obstruction and obstruction at the rhinostomy site due to reduction in osteotomy size[2], granulation tissue formation[3], fibrosis in anastomosis and defective identification and anastomosis. Silicone intubation has been shown to be successful in the management of failed DCR and canalicular block. Silicone intubation is a simple procedure; the effectiveness of this procedure was assessed. A basic surgical principle is to reach the most successful results with the least possible complication. In the modern surgical era, achieving successful results in a cost effective fashion is also important. The aim of this study to evaluate the success rate of silicone intubation in canalicular block as primary surgery and in failed DCR as revised surgery.

Material and Methods

This study was conducted at Sardar Patel Medical College from January 2015 to March 2017. A total of 32 cases were enrolled in this study. These included 12 patients of canalicular block, that were operated for the first time and 20 patients of various failed DCR techniques. Two patients had failed DCR twice, and 18 patients had failed DCR once. 12 of these previous failed DCR were endoscopic DCR, and 6 were external dacryocystorhinostomy (DCR).

The inclusion criteria for the procedures were patients having epiphora after previous surgery and common canalicular block. Exclusion criteria was patients having absent puncta, suspicion of malignancy, radiation therapy, posttraumatic lids and bony deformity, nasolacrimal duct block (not operated previously).

Age and sex of the patient, history of presenting complaints, history of any acute attack of dacryocystitis, history of previous surgical procedures like dacryocystectomy (DCT), DCR or lacrimal abscess drainage were noted. Patients with acute or chronic dacryocystitis (CDC) were treated with systemic antibiotics for one week. All the patients recruited for the study were thoroughly evaluated. Complete ophthalmic examination was performed including visual acuity; corneal opacities or ulceration and other ocular co-morbidities were looked for. The diagnosis was made on history of epiphora, history of previous surgery, regurgitation test, lids examination, nasal examination, probing and syringing. Simple regurgitation, syringing and probing provided proof of level of blockade in the lacrimal system. All patients were also systemically evaluated for diabetes mellitus and hypertension. Patients were investigated to rule out any bleeding/clotting disorders. A written informed consent was taken from all the patients.

E-ISSN 2454-2784

DJO

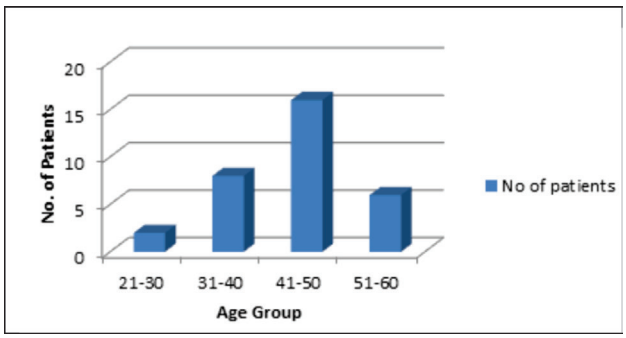
All patients were operated by the same surgeon under local anaesthesia. In all patients, silicone tube intubation was performed. Patients were put on antibiotic eye drops, nasal decongestant drops and systemic anti-inflammatory drugs post operatively. Patients were followed up next day after surgery, at 2 weeks and at the end of 3 months. Syringing was done on the next day and also during follow up visits. Tightness and mobility of the silicone tube was checked. Suture removal was done at the end of 2 weeks and silicone tube removal was done at 3 months and the lacrimal passage was irrigated. The tube was removed by cutting it between the puncta and by either blowing the nose or by extracting the tube from the nose with forceps in anterior rhinoscopy. The procedure was considered as successful when there was resolution of tearing and discharge, and also by lacrimal patency to irrigation. Any tube related complications like slitting of the punctum or canaliculus or granuloma formation were also looked for during follow up visits.

Results

We evaluated the efficacy of intubation technique and the success rate in 32 patients undergoing intubation DCR (Jan 2015 to March 2017). All the patients were successfully intubated. The mean age was 43.31 ± 8.43 years (range 21–60) (Table 1 and Graph-1). There were 18 females (56.25%) and 14 (43.75%) males. Our success rate of initial silicone intubation in relieving signs and symptoms of dacrocystitis in patients with canalicular block among patients undergoing primary surgery was 83% and for patients with failed DCR was 93%. The patency of silicone tube intubation for patients with canalicular block was 100% among patients undergoing primary surgery, for patients with failed DCR, was 100% among patients with failed primary external DCR, and was 91.6% for patients with failed primary endoscopic DCR. (Table 2 and Graph 2 - follow up patency) Among 12 failed endoscopic DCR patients undergoing intubation-DCR we detected excessive granulation tissue in one patient after the surgery. (Table 3 and Graph 3-post operative complication) There were no intraoperative or postoperative complications. in this study. No ophthalmic injuries occurred from planned or unplanned tube removal in the outpatient office. Also, complications associated with the silicone stent such as punctal erosion or corneal erosion, were absent.

Table 1: Age distribution

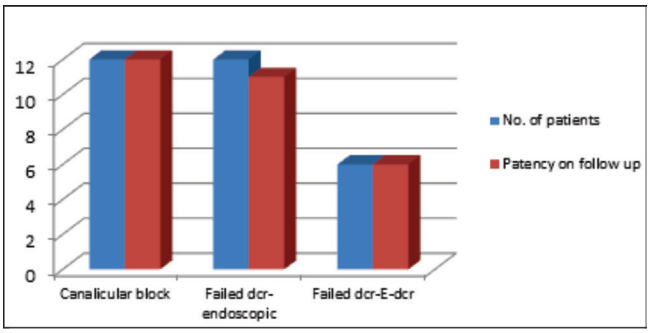
Age Group (in years)	No. of patients
21-30	2
31-40	8
41-50	16
51-60	6



Graph 1: *Age Distribution*

Table 2: Follow up Patency

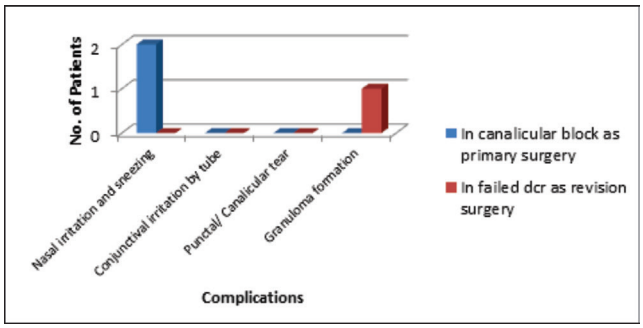
Type of obstruction	No. of patients	Procedure	Patency on
Canalicular block	12	Primary	12 (100%)
Failed DCR-endoscopic	12	Revision	11 (91.6%)
Failed dcr-E-DCR	6	Revision	6 (100%)



Graph 2: *Follow Up Patency*

Table 3: Post Operative Complications (n = 32)

Complications	In Canalicular Block as Primary Surgery	In Failed DCR as Revision Surgery
Nasal irritation and sneezing	2	0
Conjunctival irritation by tube	0	0
Punctal/ Canalicular tear	0	0
Granuloma formation	0	1



Graph 3: *Post Operative Complications*

DJO

P-ISSN 0972-0200

Discussion

Silicone intubation is an effective method in treating canalicular block and failed DCR. Silicone tube is soft, relatively inert, and flexible. It causes minimal injury to the delicate canaliculi and nasal mucosa. It maintained duct patency by maintaining an opening. The success rates reported for silicone intubation range from 69% to 100% in various studies.[13-16] The 94.5% success rate noted in the present study is entirely comparable to these previously reported results. (Table 4-comparison of success rate)

Table 4: Comparison of Success Rate

Author	Year of Study	Success Rate
Current study	2017	97.2%
Zaman et al[10]	2005	95%
Advani et al[11]	2004	95%
Dareshani et al[12]	1996	94-98%

Conclusion

Silicone intubation can be useful to improve the outcome in repeat surgeries. The present study shows significantly better results with silicone tube intubation. The mechanism of higher success rate may be related to a constant flow of fluid around the tube induced by capillary action. A solid tube marginally lesser in diameter than the tube within which it is put induces this action.

References

1. Mirza SAB, Sheikh ZDA, Aziz M. External DCR with silicon tube intubations. *Pak J Ophthalmic* 2002; 16:90-3.
2 Andersn RL. Study of Linbargv: Intranasal ostium in external dacryocystorhinostomy. *Arch Ophthalmol* 1982; 100:1758-62.
3 Picó G. A modified technique of external dacryocystorhinostomy. *Am J Ophthalmol* 1971; 72:679-90.
4. McMurray CJ, McNab AA, Selva D. Late failure of dacryocystorhinostomy. *Ophthal Plast Reconstr Surg* 2011; 27:99-101.
5. Hartikainen J, Antila J, Varpula M, Puuka P, Seppa H, Grenman R. Prospective randomized comparison of endonasal endoscopic dacryocystorhinostomy and external dacryocystorhinostomy. *Laryngoscope* 1998; 108:1861
6. Hartikainen J, Grenman R, Puukka P, Seppa H. Prospective randomized comparison of external dacryocystorhinostomy and endonasal laser dacryocystorhinostomy. *Ophthalmology* 1998; 105:1106–13.
7. Tarbet KJ, Custer PL. External dacryocystorhinostomy: surgical success, patient satisfaction and economic cost. *Ophthalmology* 1995; 102:1065–70.
8. Yung MW, Hardman-Lea S. Analysis of the results of surgical endoscopic dacryocystorhinostomy: effect of the level of obstruction. *Br J Ophthalmol* 2002; 86:792–4.
9. Durvasula V, Gatland DJ. Endoscopic dacryocystorhinostomy: long-term results and evolution of surgical technique. *J Laryngol Otol* 2004; 118:628–32.
10. Zaman M, Babar TF, Abdullah A. Prospective randomized comparison of Dacryocysto Rhinostomy (DCR) with and without intubation. *Pakistan Med. Res* 2005. Vol.44, No.2.
11. Advani RK, Halepota FM, Shah SIA, Kardi WM. Comparative results of dacryocysto Rhinostomy with and without silicone tube intubation. *Pak J Ophthalmology* 2004; 20:29-34.
12. Dareshani S. Niazi JH, Saeed M, Momen MS. Muhammad T. Dacryocystorhinostomy. Importance of anastomsis between anterior and posterior flaps. *Pak J Ophthalmol* 1996; 12:129-31.
13. Pashby RC, Rathbun JE. Silicone tube intubation of the lacrimal drainage system. *Arch Ophthalmol* 1979; 97:1318-22.
14. Durso F, Hand SL Jr, Ellis FD, Helveston EM. Silicone intubation in children with nasolacrimal obstruction. *J Pediatr Ophthalmol Strabismus* 1980; 17:389-93.
15. Dortzbach RK, France TD, Kushner BJ, Gonnering RS. Silicone intubation for obstruction of the nasolacrimal duct in children. *Am J Ophthalmol* 1982; 94:585-90.
16. Pe MR, Langford JD, Linberg JV, Schwartz TL, Sondhi N. Ritleng intubation system for treatment of congenital nasolacrimal duct obstruction. *Arch Ophthalmol* 1998; 116:387-91.

Cite This Article as: *Joshi R, Maharia S, Kochar A. Evaluation of Functional Outcome of Silicone Intubation on Patency of Lacrimal System in Canalicular Obstruction and Revision Surgeries.*

Acknowledgements: Nil

Conflict of interest: None declared

Source of Funding: None

Date of Submission: 27 July 2017
Date of Acceptance: 26 November 2017

Address for correspondence

Rashmi Joshi MS
Assistant Professor
Department of Ophthalmology,
Sardar Patel Medical College, Bikaner, India
Email id: drashishrashmi@yahoo.co.in

Quick Response Code