IJIRR

International Journal of Information Research and Review
Vol. 04, Issue, 03, pp.3842-3845, March, 2017

Research Article

A COMPARATIVE STUDY OF ENDOSCOPIC DACRYOCYSTORHINOSTOMY WITH AND WITHOUT SILICONESTENT

***[1]Rashmi Yadav, [2]Dinesh Kumar Yadav, [3]Beni Prasad Rekha and [4]Harshvardan**

[1]MS in Department of Otorhinolaryngology, Head and Neck Surgery, Medical Officer, Government General Hospital, Nasirabad, Ajmer, India
[2]MS in Department of General Surgery, Medical Officer, Government General Hospital, Nasirabad, Ajmer, India
[3]Ex- Professor, Department of Otorhinolaryngology, Head and Neck Department, SMS Medical College and Attached Hospitals, Jaipur, Rajasthan, India
[4] Professor, Department of Otorhinolaryngology, Head and Neck Department, SMS Medical College and Attached Hospitals, Jaipur, Rajasthan, India

ARTICLE INFO

Article History:

Received 07th December, 2016
Received in revised form
26th January, 2017
Accepted 18th Febuary, 2017
Published online 30th March, 2017

Keywords:

Dacryocystorhinostomy,
Endoscopic,
Silicon Stent,
Nasolacrimal
Duct Obstruction,
Neo-Ostium,
Mucosal Flap.

ABSTRACT

Objectives: Neo-ostium closure was considered major factor for surgical failure in endoscopic dacryocystorhinostomy. To overcome this problem many measure like use of mitomycin-C, mucosal flap and silicone stents are used. Present study done to compare long term results in endoscopic dacryocystorhinostomy (DCR) with and without silicone stents
Study Design: Randomized control study
Methodology: The present study was carried out in the department of Otorhinolaryngology and head and neck surgery in SMS Medical College and Hospital, Jaipur during the period Jun2013-Nov2014 for duration of 18months. Total 30 patients selected as control and 30 patients in which stents placed.
Results: Out of the 60 patients, 30 patients in which DCR was done without stent (group A) and 30 underwent silicon stent placement (group B). Out of 30 patients of group A, 27 (90%) showed complete recovery of symptoms. Out of 30 patients of group B 29(96.67%) showed complete recovery of symptoms at three months follow up. Patients with stent placements showed a slightly higher rate of success as compared to patients without stenting (90%/96.67%). Interpretation and conclusion: No statistical significant difference found ((p=0.605) between both the groups, so we preclude routine use of stents.

INTRODUCTION

Dacryocystorhinostomy (DCR) is a procedure performed to drain the lacrimal sac in cases of nasolacrimal duct obstruction or in chronic dacryocystitis. It can be performed externally or endoscopically. Endoscopic DCR has many advantages over external DCR. The main advantages are avoidance of facial scarring, no division of the medial canthal ligament and the preservation of the pump action of the lacrimal sac of the orbicularis oculi muscle (Caldwell, 1893; Benger, 1993). Dacrocystorhinostomy by external approach was first described by "Toti" in 1904 and modified by "Dumpy dutempts and Bourquet" in 1920 (Zeynep *et al*., 2002). First intranasal dacryocystorhinostomy was described by "Caldwell" in 1893 and modified by "West and Halle" in 1914 using microscope for visualization (Caldwell, 1893).

****Corresponding author:*** **Rashmi Yadav**
MS in Department of Otorhinolaryngology, Head and Neck Surgery, Medical Officer, Government General Hospital, Nasirabad, Ajmer, India

"Rice" in 1988 reported cadaver study to demonstrate the feasibility of endoscopic Dacryocystorhinostomy followed by review of surgery in four patients in 1990 (Rice, 1990). "Mc Donough" and "Meering" in 1989 described first clinical study of endoscopic transnasal dacryocystorhinostomy (McDonogh**,** 1989). With the introduction of high resolution endoscopes, endoscopic DCR has begun to gain popularity. Endoscopic DCR is proposed to be an alternative surgery to the external DCR operation in cases of chronic dacryocystitis (Caldwell, 1893). Closure of the rhinostomy opening was considered a major factor for surgical failure. Several methods such as use of silicone stent, application of Mitomycin-C to the rhinostomy opening and suturing of the mucosal flaps have been suggested for providing a permanent rhinostomy opening after completion of mucosal healing. However, in endoDCR insertion of silicone stent is the most commonly preferred procedure. Over the past few years it has become common practice for surgeons to place stents or intubation tubes at the time of DCR. Stents are made of silicone tubing and are placed in the tear drainage system during surgery.

These stents support the healing process and help to construct a new drainage system. It has been claimed that silicone stent improves surgical outcomes of endoscopic DCR. On the other hand, some studies indicate that silicone stent itself is a reason of surgical failure due to granulation tissue formation and complications like punctual erosion and slitting of canaliculi.
The present study was undertaken to compare the surgical results of endoscopic DCR with and without silicone stent.

MATERIALS AND METHODS

Hospital based randomized study of 60 patients was carried out in the department of Otorhinolaryngology, Head & Neck Surgery in SMS Medical College & attached group of hospitals, Jaipur during the period May2013-Nov2014 for duration of 18months. Sixty patients of either sex having symptoms and signs suggestive of nasolacrimal duct blockage were included in the study. Besides a detailed clinical examination and routine blood investigations, all patients underwent a standard rigid nasal endoscopy. This procedure allowed septal deviation and any additional nasal or sinus pathologic conditions to be evaluated and corrected if required. Patients having chronic sinusitis, nasal polyps, granulomatous diseases of nose like atrophic rhinitis, Wegener's granulomatosis, common canalicular blockage and lower canalicular blockage were *excluded* from the study. Patients randomly divided into two groups A and B with 30 patients in each group. In group A patients underwent endoscopic DCR without stent and group B patients endoscopic DCR with stent (figure 1a & figure 1b) alternately after obtaining written informed consent. Initial patient work-up included detailed history including symptoms and their duration. Thereafter, detailed examination including complete ophthalmologic examination, anterior rhinoscopy and throat and ear examination was done.

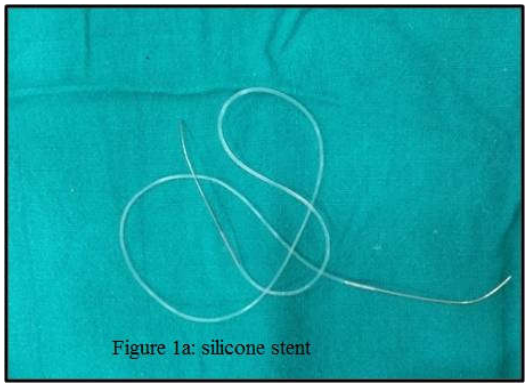

Figure 1a: silicone stent

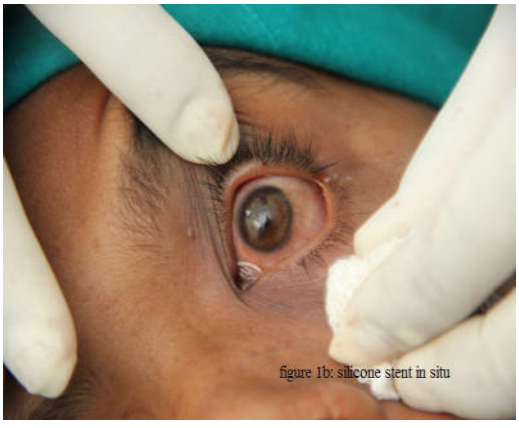

figure 1b: silicone stent in situ

Nasolacrimal duct obstruction was confirmed by syringing and probing. Patients were taken up for the surgery under local or general anesthesia after the routine investigations like complete haemogram, and other relevant investigations. Surgery was performed using 0 and 30 endoscopes. An incision is made in the mucosa overlying the anterior lacrimal crest and a posterior based mucoperichondrial flap is raised. The anterior lacrimal crest identified and is removed using a punch. Just lateral to the uncinate process is the thin lacrimal bone that forms the remainder of the medial aspect of the lacrimal fossa; this bone is paper thin and is easily resected. To create a large rhinostomy also requires excision of the upper part of the anterior lacrimal crest using Kerrison punch or diamond burr. The sac is exposed and divided vertically with either a sickle knife or a 45° beaver scalpel. A probe placed within the sac, tenting it medially, facilitates incision. Microscissors are then used both inferiorly and superiorly. These flaps of sac mucosa are then placed in continuity with the mucosa of the nasal wall. The lacrimal sac is widely exposed and the common canaliculus can be seen. Syringing was done using normal saline to confirm the patency of the rhinostomy made. The lacrimal silicone stent (figures 1a& 1b) was put in group B patients. All patients were discharged on regime of oral antibiotics and anti-inflammatory drugs, nasal decongestant, and local antibiotic eye drops. Regular follow-up of patients was done. Patient's silicone stent was removed at 6th postoperative week. Subjective assessment for symptomatic improvement was done and objective assessment was done by syringing, at 6^{th} and 10^{th} week and 3month after surgery in group B after stent removal and at 1 week, 2 weeks, 6 weeks, 10 weeks and 3month in group A patients. Every case undergo diagnostic nasal endoscopy pre and postoperatively. Then the results compiled.

RESULTS

All patients diagnosed to have nasolacrimal duct blockade in SMS medical college and hospitals that fulfilled the eligibility criteria, were enrolled for the study. Sixty patients who were planned for endoscopic dacryocystorhinostomy (DCR) procedure were divided into two groups. 30 patients underwent surgery by endoscopic DCR without stent (group A) and other 30 with stent (group B).

Table 1. Sex Distribution Study

Sex	Females	Males
Number	43	17
Percentage (%)	71.67	28.34

Table 2. Intraoperative Findings

On Incising Sac	gpA (%)	gpB (%)
Mucoid discharge	9 (30)	9 (30)
Mucopurulent discharge	15 (50)	17 (56.67)
Purulent discharge	6 (20)	4 (13.34)

Table 3 Follow up in gpA (without stent)
Period of follow-up

Patients Showing	1wk	2wk	6wk	10wk	3mnth
Full patency	24	24	27	27	27
Partial patency	1	3	0	0	0
No patency	5	3	3	3	3

Wk -week; mnth-month

Table 4. Follow up in gpB (with stent) Period of follow-up

Patient Showing	6wk	10wk	3month
Full patency	23	29	29
Partial patency	7	0	0
No patency	0	1	1

Wk-week; mnth-month

Table 5. Endoscopic Finding of Objective Evaluation (at first visit)

	gpA	gpB	P value
Neostium visible			0.754
Patent	24	23	
Stenosed	6	7	
Granulations at rhinostomy site	1	7	
Present	29	23	0.0576
Absent			
Nasal synecheae	4	0	0.121

Table 6. Success or failure

Group	gpA	gpB
No. of cases	30	30
Failure	3	1
Success	27	29
Percentage (%)	90	96.67

P value: 0.605

The findings in both the group analyzed. The same surgeon, to eliminate any operative bias carried all surgeries. The two techniques were compared by observing the number of failure cases, postoperative nasal findings seen during routine endoscopic examination. All patients were subjected to diagnostic nasal endoscopy on follow up. The neo-ostium was inspected by syringing. Subjective evaluation was made of in terms of complete, partial or no relief from symptoms. Objective evaluation was done by syringing. Syringing was performed in group B at 6wk, 10wk and 3 month after removal of stents and in group A at 1wk, 2wk, 6wk, 10wk and 3 month. Syringing was term patent when there was no resistance to flow of fluid through sac to nasopharynx. It was term partially patent when some of fluid regurgitates through upper punctum and some passed into nasopharynx. It was term blocked when whole fluid regurgitates through upper punctum and no fluid passed into nasopharynx. Difficulty in removing the stent was not seen in any of the 30 patients with stent and none of them had spontaneously expulsion.

No major intra operative and post operative complication were seen in the study. It is observed that chronic dacrocystitis is more common in female than male in the ratio of 2.5:1(Table 1). Most of the cases were in the middle age group of 21-50 years with mean age of 37.95+19.16. The disease was slightly more common on the left side (26) compared to right side (22). In both groups maximum patients have complaint of mucopurulent discharge present {32 patients} (table 2). Maximum patients present with symptoms within 1 year (45%) and also we conclude from this study outcome doesn't depend on duration of disease. Most common mode of presentation was chronic dacryocystitis in 55 patients (91.67%) followed by mucocele(5%) and pyocele(3.34%). Endoscopic DCR was found easier in these cases than simple dacryocystitis because of dilated sac, that causing thinning of bone of lacrimal fossa, making exposure of the sac easier, incision and excision of the mucosa of the sac were also found easier in these cases.

On nasal endoscopy rate of granulations found higher in group B (table 5), most probably because of foreign body reaction. Most of cases in our study belong to rural population (58.34%). Follow up was done & tabulated accordingly. There were 3 case failures in gp A out of 30 cases thus success rate was 90% whereas it was 1 case in gp B (tables 3&4) out 30 cases and success rate was 96.67%. Patient with stent do better than without stent (table 6) As p value is 0.604 which is >0.05 that is not statistically significant.

DISCUSSION

Endoscopic DCR is a commonly performed operation in which a fistulous tract is created between the lacrimal sac and the nasal cavity in order to relieve the epiphora due to nasolacrimal duct obstruction (Caldwell, 1893). Silicone stent has been proposed to maintain the patency of fistula during postoperative healing period. Silicone intubation simultaneous with DCR was first described by Gibbs (Gibbs, 1967). The recent study was undertaken to evaluate and compare the results of endoscopic DCR with and without stent. No major intraoperative and postoperative complications seen. Difficulty in stent removal and spontaneous expulsion of stent was not seen in any of our patients. In our study most of the patients were in the age group 21 to 50 year. Youngest patient was of 6 years and eldest was 80 years. Our data correlate well with studies of Young & Hardman (1989), Heikki Seppa (1994); Mortimore (1999), Hesham Ali (2001); (Mantynen, 1997); Woormald (2002).

In our study female and male ratio was found 2.5:1 which correlates well with studies of Heikki (1994), Young and Hardman (1998), Hesham Ali (2001). Male and Female ratio was 1:2 in some studies (Mantynen *et al*. 1997), (Bambuli and Chamero 2001), (Woormald 2002), (Sing *et al*., 2004) and (Naik *et al*., 2011) also reported similar higher incidences of dacryocystitis in females. In our study chronic dacryocystitis was found to be significantly more common in women than men. Chronic dacryocystitis has been reported to be more common in females of lower socioeconomic group due to bad personal habits, long duration of exposure to smoke in kitchen and dust exposure. Congenital and anatomical narrowing of the NLDO in females may also contribute to the higher incidence among women (Naik *et al*., 2011). In our study complete relief from symptoms was seen in 96.67% patients with stent and 90% patients without stent (table 6).

In separate study by Kakkar *et al* reported 85-90% success rate and nearly same success rate without silicone stent (Kakkar, 2008) and Unlu *et al* reported success of 85.7% in patients with use of stent and 87.5% success rate in patients without stent (Unlu, 2002). Similar results were reported by Acharya *et al*. (2011) and Harvinder *et al*. (2008). Sprekelson reported success with endoscopic DCR with stent in 85% patients 21. Allen and Berlin (1989) however reported that silicone intubation at the time of DCR was associated with a statistically significant increase in the failure rate of primary DCR.Vishwakarma *et al*. in a prospective study of 272 patients however reported a higher success rate (98.67%) in patients of DCR with silicon stent placement (Rajesh Vishwakarma, 2004). The success rate of endoscopic DCR without stent reported in the literature varies from 90% to 96% which is comparable to our study.

In endoscopic DCR with stent we observed failure in one case thus the success rate was 96.67% which correlate well with Vishwakarma *et al* (Rajesh Vishwakarma, 2004).

Points to ponder

- Silicone stent stents support the healing process and help to construct a new drainage system.
- Silicone stent itself is a reason of surgical failure due to granulation tissue formation
- As there is no significant benefit of using stents we preclude its routine use.

Conclusion

In our study although the success rate was 96.67% in patients with EndoDCR with stent was higher as compared to 90% in EndoDCR without stent but no statistical significant difference found ((p=0.605). So we preclude routine use of silicone stents.

REFERENCES

Acharya, K., Pradhan, B., Thapa, N. 2011. Comparison of outcome following endoscopic dacryocystorhinostomy with external dacryocystorhinostomy. Nepalese J ENT Head and Neck Surgery2(2):2-3

Allen, K., Berlin, A.J. 1989. Dacryocystorhinostomy failure: association with nasolacrimal silicone intubation. *Ophthalmic Surg.,* 20:486 –489.

Benger, R., Forer, M. 1993. Endonasal dacryocystorhinostomy-primary and secondary. *Aust N Z J Ophthalmol,* 21(3): 157-59.

Caldwell, G.W. 1893. Two new operations for obstruction of the nasal duct, with preservation of the canaliculi, and with an incidental description of a new lacrimal probe. *Am J Ophthalmol,* 10: 189-93.

Endoscopic guided trephination dacryocystorhinostomy (Hesham DCR): technique and pilot trial; Ibrahim HA, Noble JL, Batterbury M, Johnson CP, William R; Opthalmology (2001,108(12):2337-45;discussion 2345-6.

Gibbs, D.C. 1967. New probe for the intubation of lacrimal canaliculi with silicone rubber tubing. *Br J Opthalmol,* 51:198

Harvinder, S., Rosalind, S., Philip, R. 2008. Powered Endoscopic Dacryocystorhinostomy with Mucosal Flaps Without Stenting. *Med J Malaysia.,* 63(3):237-238.

HeikkiSeppa, Reidar Grenman, Jouko Hartikainen. 1994. Endonasal Co_2 Nd YAG laser. DCR Acta Ophthalmologica. 1994; 72:703–6. doi: 10.1111/ j.1755-3768.

Kakkar, V., Chugh, J., Sachdeva, S., Sharma, Ramesh. N 2008. Endoscopic Dacryocystorhinostomy With And Without Silicone Stent: A Comparative Study. *The Internet Journal of Otorhinolaryngology.* Volume 9 Number 1.

Mantynen, J., Yoshitsugu, M. and Rautiainen, M. 1997. Results of dacryocys-torhinostomy in96 patients, vol117,No.s529, Pages 187-189.

McDonogh, M., Meiring, J.H. 1989. Endoscopic Transnasal Dacryo-cystorhinostomy. *The journal of Laryngology and otology*. 103:585-587.

Mrtimore, S., Banhegy, G.Y., Lancaster, J.L., Karkanevatos, A.1999. Endoscopic dacryocystorhinostomy without silicon stenting. *JR Coll Surg Edinb.*44:371-3.

Naik, S., Naik, S. 2011. Comparative Study of Prolene Wire Stent & silicon Tube Stent used in 150 Cases of Endonasal Dacryocysto- Rhinostomies. *Pakistan J Otolaryngol,* 27:42-45

Rajesh Vishwakarma, Neeraj Singh, Ratandeep Ghosh. 2004. A study of 272 cases of endoscopic dacryocystorhinostomy with silicone intubation. Indian Journal of Otorhinolaryngology and Head and Neck Surgery Vol 56 No. Octomber-December.

Rice, D. 1990.Endoscopic intranasal dacryocystorhinostomy result in fourpatients. *Arch Otolaryngol Head Neck Surg.,* 116:1061.

Salah Zuhair Al-Aradi, Ahmed Muhammed Al-Abbasi; Transcannalicular Dacryocystorhinostomy is anew procedure in Bambuli and chamaro 2001; Gomel Journal of MedicAL Sciences July- December 2011, Vol 9, No.2.

Sing, M., Jam, V., Gupta, S.C., Sing, S.P. 2004. Intranasal endoscopic DCR in cases of dacryocystitis: *Ind J Otolaryngolol, Head Neck Surg.,* 56-57

Sprekelson, M.B. 1996. Endoscopic dacryocystorhinostomy - surgical techniques and results. Laryngoscope; 106: 187-9.

Unlu, H.H., Toprak, B., Aslan, A., Guler, C. 2002.Comparision of surgical outcome in primary endoscopic dacryocystorhinostomy without silicon intubation. *Ann Otolrhinollaryngol.*111:704-9.

Wormald, P.J. 2002. Powered endoscopic Dacryocystorhinostomy, Laryngoscope 112(1): 69-72

Yung, M.W. Hardman-Lea. S 2002. Analysis of the result of surgical endoscopic dacryocystorhinostomy: effect of level of obstruction. *British journal ophthalmol*.86:792-4.

Yung, M.W., Hardman-Lea. S 2002. Analysis of the result of surgical endoscopic dacryocystorhinostomy: effect of level of obstruction. *British journal ophthalmol.* 86:792-4.

Zeynep, Y., Bülent, Y., Müfit, P., *et al*. 2002. Treatment of Nasolacrimal Duct Obstruction with Polyurethane Stent Placement: Long- Term Results. AJR.179; 491-492

****