

IS IT NECESSARY TO INSERT A SILICONE TUBE AFTER ENDOSCOPIC ENDONASAL DACRYOCYSTORHINOSTOMY? AND FOR HOW LONG? A COMPARATIVE PROSPECTIVE STUDY**Ahmed Fadhil Hasan**

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Abstract

This study aimed to evaluate the necessity for silicone tube insertion following endonasal endoscopic dacryocystorhinostomy (DCR), and the optimal time for its removal.

A prospective study was done at Al-sadr Teaching and Al-Shafaa General Hospitals in Basrah, Iraq on seventy two patients with nasolacrimal duct obstruction diagnosed and referred from ophthalmologist to ENT clinic. Preoperative assessment with investigations were done and all patients were subjected to endoscopic endonasal DCR. The patients were divided into three groups; the first group included those with long period stenting (silicone tube removed three months or more), the second group included those patients with short period stenting (tube removed 2-3 weeks after surgery), and the last group included those with no silicone tube stenting. The success rate and complications after surgery were studied in each group for more than one year.

The 72 patients were; 63 females (87.5%) who affected more than males (9, 12.5%). the most common age group was 21-45 years. Left side of disease 41(56.9%) is more than right side 31(43.1%). Sixty eight operations (94.4%) out of 72 were primary surgery while four (5.6%) were revision surgery. Ancillary procedures were done also; 13 (18%) septal surgery and 3(4.1%) endoscopic sinus surgery. Success rate was more among short period stenting group 22 out of 24 (91.6%), then without stenting group 19 (82.6%) and those with long period stenting was only 20 from 25 (80%).

In conclusion, no statistical significant difference (benefit) about the usage or not of the silicone tube and also about how long keeping the tube, but it is preferable to use silicone tube (for 2-3 weeks only) to improve success rate.

Keywords: Silicone tube, Insertion, Endonasal, Endoscopic, Surgery

Introduction

Dacryocystorhinostomy (DCR) could be defined as: a surgical bypass of the lacrimal sac and duct that is mainly indicated to treat a patient with epiphora.

The fistula created in the nasal cavity by this procedure should be used to treat a distal nasolacrimal system obstruction because in presence of proximal obstruction, the failure rate is high¹.

Caldwell initially described endoscopic DCR in the 19th century, while external DCR was described by Toti in the early 20th century. With the development of endoscopic sinus surgery in the late 1980s, endoscopic DCR become more popular but with lower success rate (65-90%) than external procedure, Wormald

in the early 1990s described a wide bone removal to expose the entire lacrimal sac to achieve high success rate upto 95%².

In order to maintain rhinostomy opening, several methods were used like silicone stenting, mitomycin C application to rhinostomy opening and suturing of mucosal flap (in external DCR)^{3,4}.

Inspite of the thought that silicone tube insertion improve surgical success rate, it is still a controversial issue⁵. Allen etal, identified high failure rate among patients with silicone intubation following DCR⁶.

Lacrimal system consist of secretory system which is composed of lacrimal glands and accessory glands, and an excretory system or drainage pathway

which start from upper and lower punctal opening and canaliculi which merge in common canaliculus to enter lacrimal sac (in more than 90% of individuals), then the nasolacrimal duct run inferiolaterally and slightly posteriorly to open in the inferior meatus at lateral nasal wall⁷.

Patients and methods

This prospective study was done in Al-Shafaa General and Al-Sadr Teaching Hospitals in Basrah, when the author was in those hospitals in 2015-2018. The study include seventy two patients complaining from epiphora and recurrent dacryocystitis, they were diagnosed as nasolacrimal duct obstruction by ophthalmologist and referred to ENT department and ENT private clinic.

All patients were subjected to full clinical and preoperative assessment with investigations, and then they underwent an endoscopic endonasal dacryocystorhinostomy by the same surgeon (author) under general anesthesia .

After drapping and positioning the patient in 30 degree head-up supine position, any ancillary procedure was done before DCR (if indicated) and these included septal surgery, endoscopic sinus surgery and turbinate surgery.

A 2mls of 1:200000 xylocaine-adrenaline solution were injected into the lateral nasal wall anterior to the maxillary line at incision site, a U-shaped incision started 1cm above the axilla of the middle turbinate and 1cm anterior to maxillary line till the junction of upper 2/3 and lower 1/3 of middle turbinate.

After elevation of mucoperiosteal flap and reflection of it into the middle meatus, a kerrison bone punch 2mm size and some time drilling was used to remove bone for exposing the lacrimal sac. After that, the upper and lower punctal openings were dilated and probing of the canaliculi was done to locate the site of incision of the sac, then the sac incised from upper part

downward, then marsupialization was done.

The patients were divided into three groups; the first group included those patients with insertion of DCR silicone tube which was removed after 3 months or more and called long period group, the second group included those patients with insertion of silicone tube which was removed after 2-3 weeks and called short period group, the third group included those patients with no silicone tube insertion.

The repositioning of mucoperiosteal flap was done leaving the rhinostomy opened. After completion of operation, a merocel sponge (nasal dressing pack) was inserted into the operated nasal side and removed after 24 hours and the patient was discharged home .

Post operative treatment included; oral antibiotics, analgesia and antibiotic-steroid eye drops with saline nasal wash for one week.

The patients were followed-up weekly for the first month, then monthly for 6 months, and then after one year.

The follow-up included three things: firstly asking the patients about freeing from epiphora and recurrent infection, second thing is a pressure test which was done on the sac to see if any regurgitation of tear noticed, also the eyelid was examined for any lid adhesion, and finally endoscopic examination of nasal cavity was done to see the rhinostomy opening and flow of tear into the nasal cavity, also for looking for any synechia or rhinostomy opening closure.

Results

The data in this study was analyzed using IBM SPSS soft ware version 23 .

Total number of patients were seventy two, female patients were 63 (87.5%) much more than male patients 9 (12.5%). Age is divided into three groups with the second group (21-45 years) is the commonest as shown in table I.

Table I: Distribution of frequency of patients according to age.

Age group	Frequency	Percent %
5 – 20	8	11.1
21 – 45	45	62.5
Above 45	19	26.4
total	72	100

The nasolacrimal duct obstruction in the left side was more (41, 56.9%) in comparison to the right side (31, 43.1%) as shown in figure 1.

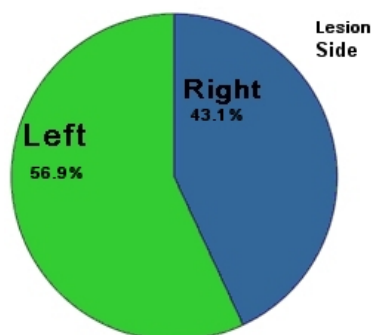


Figure 1: Frequency of lesion side

Sixty eight (94.4%) operations out of 72 was primary surgery while only four (5.6%) was revision surgery.

Nasal septal surgery was done in 13 patients as an ancillary procedures while only 3 patients were subjected to endoscopic sinus surgery before DCR at the same session.

Patients were divided into three groups according to insertion of silicone tube and the time of removal, 25 patients; long period group (silicone tube removed 3 months or more), 24 patients short period group (silicone tube removed 2-3 weeks), and 23 patients without silicone tube insertion. The success rate depends on

three things; firstly the patient freeing from the symptom, secondly regurgitation on pressure test (flow of tear observed during pressure on lacrimal sac externally), and finally endoscopic examination (to visualized rhinostomy opening and flow of tear from it).

Success rate among those patients with short period DCR silicone tube insertion was more 22 out of 24 subjects (91.6%), while those patients without silicone tube insertion having success rate 82.6% (19 out of 23 subjects), those patients with long period silicone tube insertion having only 80% success rate (20 from 25 subjects) as shown in table II.

Table II : results of success of operation according to silicone tube insertion groups

		success of operation		Total
		success	failed	
silicone tube insertion	long period	20	5	25
	short period	22	2	24
	Without	19	4	23
Total		61	11	72

The most common postoperative complication was synechia which occurred in 15 (20.8%) patients in all

groups, followed by eye lid adhesion which occur only in long period group as shown in table III & figure 2.

Table III: Postoperative complications according to silicone tube insertion groups

		Post op complications			Total
		synechia	eye lid problem	non	
silicone tube insertion	long period	5	2	18	25
	short period	5	0	19	24
	Without	5	0	18	23
Total		15	2	55	72

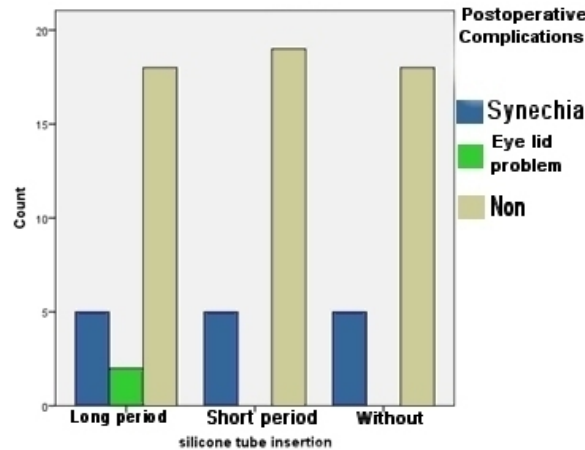


Figure 2 : Postoperative complication according to silicone stenting groups

Discussion

This study aimed to answer the question about the importance of putting a silicone tube after endoscopic endonasal DCR, and the optimal time for removal of the tube. The success rate and complications were studied among three groups of patients: those with long period stenting (tube removal 3 months or more), those with short period stenting (tube removed 2-3 weeks after operation), and those patients with no silicone tube insertion.

In this study, the most common age group is the 3rd and 4th decade (21-45 years), this is in agree with many studies like that of Shahzad Ahmad et al⁸, Hardik Shah et al⁹, V Kakkar et al¹⁰, and Smitha et al¹¹.

Females were more common in this study as in all previous studies, it was 87.5% in this study while males were only 12.5%. Success rate was more among patients with short period stenting (silicone tube removed 2-3 weeks) after surgery, it was 91.6%. Those without silicone tube insertion had 82.6% success rate, and those patients with long period stenting

(tube removal 3 months or more) had only 80% success rate. There was no statistical significant difference between the success rate of the three groups (p value>0.05). Up to my knowledge, there is no study regarding the silicone stenting for a period of 2-3 weeks, so my comparison will take the nearest period of 6 weeks stenting as it available in the literature.

This study, is nearly compatible with Shahzad Ahmad et al study⁸, and with the study of K.Shashidhar et al¹² where they found that 6 weeks period of stenting had higher success rate than patients without tube insertion. Also the studies of Rashmi Yadav et al¹³, and Yalaka Jayapal Reddy et al¹⁴ had the same results of 6 weeks period of stenting had better success than those without stent insertion. Mortimore S et al¹⁵ studied 15 DCR without stenting and they found that overall success rate 87% which is near to this study, in contrast to B Pittore et al¹⁶ study where they found the overall success rate of 64 endoscopic DCR

without stenting 94.3% in primary operation and 90.9% in revision surgery. This study is incompatible with the study of Hardik Shah et al where he found that those patients with long period stenting (3-6months) had higher success rate(93.3%) than those without silicone tube stent insertion⁹. the results of this study is in agree with the results of S H Mohamad et al¹⁷ where they found that the success of operation without stenting better than those with 3 months stenting group, but it disagree with the study of both V Kakkar et al¹⁰, and Smitha et al¹¹ where they found that those patients without silicone tube stent had higher success rate than those with stenting for 6 weeks only.

In spite of the above results, this study share with many studies in regards to it didn't have statistical significant difference among the groups of stenting and non stenting subjects such as Hardik Shah et al⁹, Shashidhar et al¹², Rashmi

Yadav et al¹³, Yalaka Jayapal Reddy et al¹⁴, and Ali S. Al-Qahtani¹⁸.

The most common complication occurred after surgery in this study was synechia in 15 cases (20.8%) which was distributed equally in the three groups, followed by eye lid adhesions in 2 cases (2.7%) which occurred in long period stenting group only.

Conclusion; Endoscopic endonasal dacryocystorhinostomy (DCR) is one of common procedures presented to ophthalmologist and done by otorhinolaryngologist. Silicone tube insertion which is one of the different methods used to improve success rate is still a controversial issue. According to this study, no statistical significant difference (benefit) about the usage of silicone tube, and also no statistical difference about how long keeping the tube. But still, it is preferable to use silicone tube(for 2-3 weeks only) to improve success rate.

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