Comparative Study on Dacryocystorhinostomy (DCR) Surgery with Silicon Tube Intubation and Without Silicon Tube Intubation

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ABSTRA CT

Aim and Objective: To compare the outcome of dacryocystorhinostomy surgery with silicone tube intubation and without silicone tube intubation at Makkah Eye Hospital Khartoum, Sudan.

Methodology: A total 140 were operated for nasolacrimal duct obstruction (NLDO), at Makkah Eye Hospital Khartoum, Sudan. 70 patients were operated with silicon tube intubation and 70 patients operated without silicontube. The patency of Lacrimal drainage system was evaluated with syringing of lacrimal system. Age, gender, laterality, and on third month visit lacrimal irrigation were recorded. Surgical success was accepted as the patency of the formed ostium with lacrimal syringing/ irrigation. Data was analysed using the average, standard deviation, variation coefficient, and the statistical significance was determined using t-test.

Results: The results of our study was patients with silicon tube intubation success rate was higher 94.28% as compare to patients without silicon tube intubation 88.57% , with p-value ($p>0.05$).

Conclusion: Our study shows that dacyocystorhinostomy with silicon intubation has higher success rate, although results were insignificant statistically.

Keywords: Outcome in DCR, Silicon Tube Implantation, Lacrimal syringing

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INTRODUCTION

It is estimated that more than 3.5% patients visiting ophthalmological clinic have lacrimal drainage system obstruction due to many reasons. Dacryocystitis is the infection of lacrimal sac most often as a result of blockage of nasolacrimal duct.[1] Dacryocystitis may be acute or chronic. Presenting complaint of chronic dacryocystitis is watering from eye.[2]The most common sign presented by a patient suffering from chronic dacryocystitis is, a swelling which is most of the time painless and situated at medial canthus.In some situations, swelling may not be obvious but there is regurgitation of mucopurulent discharge from canaliculi on putting pressure over the lacrimal sac.Dacryocystitis if left untreated can cause progressive loss of vision and it can also cause life-threatening conditions, because untreated infection may provok to preseptal cellulitis, orbital cellulitis, meningitis, and even cavernous sinus thrombosis and death[3].

There are no of methods to treat the blocked nasolacrimal duct. Ideal treatment of NLDO may however vary according to Ophthalmologists preference. The treatment modalities include probing, probing with adjunctive Mitomycin –C, dilatation with balloon catheterization, metallic and plastic

stents, silicon tube implantation and external and internal dacryocystorhinostomy, with and without Mitomycin-C, however external DCR is the most successful mode of treatment for NLDO. Till today the ideal surgical procedure to treat NLDO is External DCR, because of its significant success rate, with short learning period and it doesn't need expensive instruments which makes it a non-expensive method.

For many years, endonasal DCR was performed by Otorhinolaryngologists. In recent years, Ophthalmologists also perform endonasal DCR. In endonasal DCR there is speedy healing, there is no scar because there is no incision externally and lacrimal pump mechanism is intact as orbicularis oculi muscle is not involved in this procedure. By endonasal DCR one can be able to correct the correlated intranasal pathologies in same sitting.[4]An inert and easily tolerable silicon material in DCR surgery was first described by Older. Silicon tube has been routinely used by some surgeons, while some surgeons use this in complicated candidates. It is accepted that silicon tubes hinder the blockage of newly formed ostium[5].

Some Surgeons favor to do DCR with silicon tube, as they reported high success rate, other surgeons not in favor to put silicon tube in DCR surgery, according to them, that silicon tube causes granulomatous inflammation, which causes failure of DCR surgery[6, 7]. So the role of use of silicon tube in DCR surgery is controversial and there is lack of data regarding comparative studies[8,9]. Putting this theme in mind, we did a comparative study to reach a solid conclusion, whether use of silicon tube is better or not. Hopefully our current study will be able to give clear guidelines for use of silicon intubation during DCR surgery.

MATERIAL AND METHODS

This study was conducted at Makkah Eye Hospital Khartoum, sudan, in year 2017 and 2018. 140 patients who were suffering from NLDO, underwent DCR surgery of them in 70 patients DCR done with silicon tube intubation and 70 patients underwent DCR without intubation. Patients having stenosed canaliculi, lacrimal abcess and acute dacryocystitis, were excluded from the study. A thorough ocular examination including visual acuity, slit lamp examination for eye lid, lacrimal puncta position and presence of mucus or pus formation done. Patients were also examined by an ENT specialist to exclude any nasal pathology. The patients were explained about the procedure and associated possible risks and complications of procedure. After 24hours of surgery first dressing was changedand to ascertain patency of newly formed ostium, irrigation of the lacrimalp assage was done and to wash out any blood clots and debris in the passage. 70 patients underwent standard DCR with silicon tube intubation n 70 patients standard DCR without silicon tube. Patients were followed up after one week, one month and 6 months. On each follow up along with history of epiphora, lacrimal irrigation was performed, to confirm the patency of newly formed ostium. Treatment was considerd Successful if there is resolution of epiphora and discharge and patency of the passage on lacrimal irrigation/syringing.

RESULTS

In our study total, 140 DCR procedures were performed on 140 patients. Patients were divided into two groups, 70 patients in each group. Out of140 cases, 50 (35.7%) were men and 90 (64.2%) were women, ranged in age from 9 to 73 years (mean51.3±10.7). Age, gender, and laterality were found to have no statistical significance among groups ($p > 0.05$). The distribution of case characteristics among the 4 study groups are shown in Table 1. The mean follow-up period was 21 (range 6 to 36) months.

DCR with silicon intubation has high success rate than DCR alone, total success rate with silicon tube intubation was 94.28% as compared to DCR alone with success rate 88.57%, with p-value (p>0.05) (table-2).

DISCUSSION

It is estimated that more than 3.5% patients visiting ophthalmological clinic have lacrimal drainage system obstruction due to many reasons. Dacryocystitis is the infection of lacrimal sac most often as a result of blockage of nasolacrimal duct. Dacryocystitis may be acute or chronic. Presenting complaint of chronic dacryocystitis is watering from eye. A usually painless swelling at the inner canthus, is most often the presenting sign in chronic dacryocystitis. In some situations, swelling may not be obvious but there is regurgitation of mucopurulent discharge from canaliculi on putting pressure over the lacrimal sac.

This comparative study on outcome of DCR surgery with and without intubation was conducted at Makkah Eye Hospital, Khartoum, Sudan. This study provides insight into the problems and differences in methodology and overall failure rate of procedure of DCR with and without intubation in our population, even though the demographic indicatives were similar with others or neighboring population. The Nasolacrimal duct blockage is more commonly seen in female population, which often shows bilateral involvement. Sixty four percent of our study populations were females. Several other authors has also been described female preponderance, although Khan et al in their series encounters a relatively lower ratio of female patients (52%) , jamali m et al in his study also reported a high female ratio (74%)[10]. Many explanations have been given for high score involvement by womens. Some changes in hormones in female causes generalized de-epithelization may do same within lacrimal sac and duct and Women also have significantly smaller dimensions in lower nasolacrimal fossa and middle nasolacrimal duct. Here an already narrow lacrimal fossa in women predispose them to obstruction by sloughed off debris. However cheap, unnecessary and wrong use of eye cosmatic on eyebrows and eyelashes may have a capacity in nasolacrimal system obstruction.

Silicon tube is used in the nasolacrimal passage during DCR surgery in those patients, which suppose to bear a high risk of lack of success. The aim of putting silicon tube during DCR surgery is to restore the opening of lacrimal drainage system.

In our study DCR surgery with silicon tube intubation has establish high success rate as compared to DCR without silicon tube, success rate in patients with DCR with silicon tube intubation was 94.28% and success rate in patients with DCR without silicon tube intubation was found 88.57% withp-value(p>0.05).

Similar type of studies were conducted in other setups in different countries, Kacaniku, conducted similar type of studies in 2009 and again in 2014 which shows better results in DCR surgery with silicon tube intubation95.1% and DCR without intubation carry a success rate of 87.5%, he insisted for further studies to reach a conclusion weather intubation is beneficial or not[11, 12]. Silicone intubation is likely to improve outcomes in external dacryocystorhinostomy. We believe that the silicone intubation facilitate epithelialization of the DCR fistula. In other studies, Baig et al.[13] described 87.09% success rate in patients who were operated in adjunctive to silicon tube intubation.90% success rate revealed in DCR surgery with intubation by Delaney and Khooshabeh[14]. Bhandari RD et al, done a comparative study on DCR with and without intubation in87 patients and concluded that

there is no difference in success rate in putting silicon tube[15]. Bhat MA done a comparative study on DCR surgery with and without intubation in 2016 -17, he reported a high success ratio in patient who underwent silicon tube intubation, but success rate was insignificant statistically[16]. McLachlan et al did 291 DCR surgeries and proclaimed 94% success rate [17]. Talpur et al[18] and Advani et al [19], have claimed success rate of 98.14% and 95% respectively in cases of DCR with siliconeintubation.

Table-1:

	Group 1 (n=30)	**Group 2(n=19)**	**Group3(n=36)**	**Group4(n=55)**
Age (mean± SD)	45.86± 15.7	42.96±1 8.02	51.3±20. 1	48.2±16. 1
Gender(M/F)	10/20	06/13	14/22	20/35

Table-2:

	Group with intubati on	**Group without intubati on**	**Total**
	70	**70**	**140**
Patent	94.2%(6 6)	88.57%(62)	91.42%(12 8)
Recurre nt waterin g	6.0%(4)	12.9%(8)	08.57%(12)

CONCLUSION

Our study findings suggest that dacryocystorhinostomy with silicone tube intubation has higher success rate, although results were insignificant statistically. So to get satisfactory and better results DCR should be done with silicon tube intubation because intubation has extra effect, and in some conditions like cannalicular blocks, punctal problems have more additive results with silicon tube.

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