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OUTCOME OF DACRYOCYSTORHINOSTOMY WITH OR WITHOUT SILICON INTUBATION IN PRIMARY NASOLACRIMAL DUCT OBSTRUCTION

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ABSTRACT

Objectives: The objective of the study was to compare the outcome of Classical Dacrocystorhinostomy (DCR) alone or with Slicon intubation in patients of primary nasolacrimal duct obstruction.

Study design: This is a randomized prospective interventional study performed at Saidu Teaching Hospital form from 1st January 2006 to 31st December 2006.

Material and methods: Diagnosis of nasolacrimal duct obstruction was made on basis of history, clinical examination, regurgitation test and syringing of the nasolacrimal passage. Patients were selected by convenient sampling and were randomized to two groups, for DCR with and without Silicon tube. Silicon tube was removed after 4 months of surgery. Patients were followed up to 6 months.

Results: Total number of patients was one hundred. Fifty (50%) patients were operated with silicon intubation and 50 (50%) without silicon intubation. Male to female ratio was 1:1.27. Age range was 15 years to 80 years. Mean, median and mode ages were 42.54, 47 and 30 years respectively. Eleven patients were lost from the study at various stages and were not included in the results of the study. The complications noted were silicon tube loss in 2 cases, silicon tube displacement in 3 cases and DCR failure in 4 cases. Among the failure, 2 cases belonged to each group with and without silicon intubation.

Conclusions: We conclude that the complications rate with and without silicon intubation is the same in primary nasolacrimal duct obstruction. It is therefore, recommended that silicon intubation may not be necessary in such cases.

Key words: DCR, Intubation, NLD Obstruction.

INTRODUCTION

Watering from the eye(s) due to primary nasolacrimal duct obstruction, is quite a common complaint amongst the patients presenting in the ophthalmic outpatient department through out the world, but specifically in this part of the country. Being a mechanical problem, it needs a standard corrective procedure in the form of Dacryocystorhinostomy. Results of dacryocystorhinostomy (DCR) are variable and failure is still at a level that requires special attention and improvement in the surgical methods and skill of DCR. The common cause of DCR failure is fibrous (granulation) tissue development at the nasal mucosa and obstruction of the inner end of the by-pass channel[1-2].

A number of novel approaches have been devised to increase the success rate of DCR surgery. A developmental step was introduced in the DCR surgery to put silicon tube in the passage during surgery and keep it there for 3 to 6 months so as to have patent passage after completion of the process of fibrosis in the nasal mucosa and osteotomy[1].

Some people have tried to improve results by applying cytotoxic drug (mitomycin C) over the internal opening to retard the fibrous tissue development at the nasal mucosa level and minimize failure, with success[3].

A method of DCR, with minimal trauma, is going on with the name of "Light Guided Endoscopic Dacryocystorhinostomy" obviously with no skin scar. Another method of DCR, performed from nasal side, with the use of laser, instead of knife, with minimal bleeding, less tissue manipulation and no skin scarring. This is limited by expensive equipment and an experienced team work of ophthalmologist and Otorhinolaryngologist.[4,6]

The search for a procedure, where DCR should be of short duration, least traumatic, minimal

bleeding, least expensive with minimal or no skin scaring and above all with no or least failure rate, should continue.

Objectives; the objective of our study was to compare the outcome of Classical Dacrocystorhinostomy (DCR) alone or with Slicon intubation in patients of primary nasolacrimal duct obstruction.

MATERIAL AND METHODS

Study design: This is a randomized prospective interventional study performed at Departemnt of Ophthalmology , Saidu Teaching Hospital Saidu Sharif. The Study period was from 1st January 2006 to 31st December 2006.

Patients were selected by convenient sampling and were randomized to two groups, for DCR with and without Silicon tube. A total of 100 patients, having nasolacrimal duct obstruction, were included in this study. After taking detailed history, nasolacrimal duct obstruction was confirmed by regurgitation test or syringing. The following cases were excluded:

1. Children 14 years or bellow.
2. Failed DCR.
3. Punctal occlusion.
4. Canalicular obstruction.
5. Those having repeated attacks of acute dacryocystitis, causing fibrosis of the lacrimal sac and surrounding tissues.
6. Lacrimal fistula.
7. Mucocoele.

The study protocol was approved by Ethical committee of the institution. Informed consent was taken from all patients. Screening for hepatitis B, C and diabetes mellitus was done in all cases.
Any local or systemic disease was treated or controlled first. DCR was done with or without silicon intubation, in 50 (50%) cases each, randomly alternating. All patients were operated under local anaesthesia. 2% lignocaine with 1 in 200,000 adrenaline was injected, 3 ml at the site of incision subcutaneously and 4ml deep into the orbit along the medial wall, with 5ml disposable syringe. A gauze ribbon soaked in 4% lignocaine with adrenaline was put in the nostril of the same side to cause local anaesthesia as will as constriction of blood vessels in the nasal mucosa to minimize bleeding.

A vertical incision was given in the skin 7 mm medial to the medial canthus. The fibers of orbicularis oculi were separated from each other by blunt dissection to reach the anterior lacrimal crest. The medial palpebral ligament was divided at this position. The lacrimal sac was pushed laterally by blunt dissection and the lacrimal sac fossa was exposed. A gap was created in the suture between lacrimal bone posteriorly and maxillary bone anteriorly, by the suture breaker. With the bone punch forceps, lacrimal bone and part of the maxillary bone along with the anterior lacrimal crest were removed to expose the mucosa of the lateral wall of the nose.

Lacrimal probe was passed into the lacrimal sac through the lower punctum and canaliculus. A vertical incision was given in the posterior part of the medial wall of the lacrimal sac. Then a horizontal incision was extended anteriorly from either end of the vertical incision to create only an anterior flap of the sac. A similar, corresponding anterior flap was made of nasal mucosa. Nasal pack was removed. In cases where silicon intubation was considered, the two ends, one each, of the silicon tube were passed into the nose through upper and lower punctum. The two ends of the tube were tied together in the nose with 4/0 black silk and the extra part of the tube was trimmed short. The two flaps were sutured together with 6/0 vicryl. The split muscle fibers were sutured with 4/0 catgut. Three interrupted sutures were given in the skin with 4/0 black silk. Patient was allowed to go to his/her bed in the ward.

Mefenamic acid 500 mg was given orally every 8 hours for pain. Prophylactic antibiotics were given as Ciprofloxacin 500 mg 12 hourly, for 5 days, to all patients. In cases of severe pain intramuscular diclofenac sodium 75 mg was used.

1st visit was done on 1st postoperative day in the ward, and the patients were discharged from the hospital, if there were no complications. 2nd visit was done after one week and skin sutures were removed. 3rd visit was done after 4 months and silicon tube was removed. 4th visit was done after 6 months. Criteria of success were relief from symptoms, no regurgitation and patent nasolacrimal passage on syringing.

RESULTS

One hundred patients were included in this study, for a period of one year, from 1st January 2006 to 31st December 2006, with the age range of 15 to 80 years (Figure No.1).

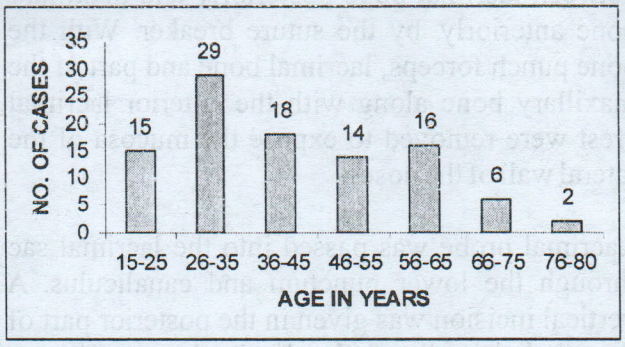


Figure No. 1: Age Distribution

Mean, median and mode ages were 42.54, 47 and 30 years respectively. Forty four (44%) patients were males, 56 (56%) patients were females and male to female ratio was 1:1.27 (Figure No.2).

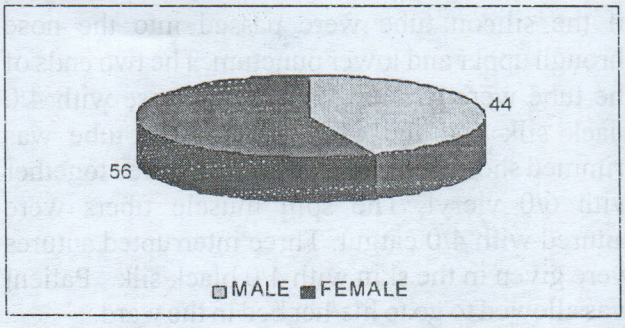


Figure No. 2: Sex Distribution.

Eleven patients were lost during the study period, 4 from intubation group and 7 from non intubation group and so they were not included in the results of this study. The presenting complaints were watering in 100% of the cases while 53% of the cases complained of discharge as well. No patient complained of pain or red eye. Seventy eight patients (78%) were diagnosed by positive regurgitation test and the remaining twenty two patients (22%) by lacrimal sac washout by syringing. Two patients (2%) had bilateral nasolacrimal duct obstruction but at the movement we have operated on one eye only in each of these two cases. Forty seven (47%) cases had right sided nasolacrimal duct obstruction while 53 (53%) had left sided obstruction (Figure No.3).

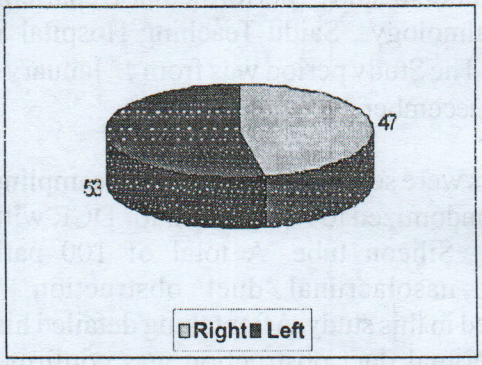


Figure No. 3: Laterality.

Among the 46 patients operated with silicon tube intubation, two (4.35%) lost the silicon tube without knowing it, earlier than the 3rd visit, but developed no DCR failure. Silicon tube was displaced laterally towards the conjunctival sac in 3 (6.52%) cases, 2 of these were replaced easily from punctum side while in one case we had to take help of ENT surgeon to replace it from within the nasal cavity (Table No. 1).

Table No.1: Complications.

Type of complications	No. of patients
Silicon tube loss	2 (4.35)
Silicon tube displacement	3 (6.52%)
Dacryocystorhinostomy failure	4 (4.49%)

At 6 months post operatively, 4 (4.49%) patients had failure of DCR. Two each of them belonged to

the intubation and non intubation group respectively. Three of them had persistent watering and discharge while one had watering only. On probing and syringing one patient had obstruction at the medial end of common canaliculus while 3 had fibrous (granulation) tissue membrane development at the nasal mucosa (osteotomy) level.

DISCUSSION

Chronic dacryocystitis is a common disease and requires surgery in the form of DCR [4, 5]. It causes continuous contamination of tear film by micro-organisms and is a continuous hazard to the eye if any penetrating (surgical/accidental) trauma occurs to the eye [6]. DCR is a major surgery and involves cutting of subcutaneous tissues, lacrimal sac, nasal bones and nasal mucosa[7, 8]. It can be performed under general or local anaesthesia [9]. In most of the world it is done under general anaesthesia. We have done all of our cases under local anaesthesia. Local anaesthesia provides early patient mobilization; improved patient satisfaction and reduced hospital stay [10]. Bleeding is diminished due to vasoconstriction (adrenaline) thus making the surgery easier to perform [11]. It can avoid the complications of general anaesthesia [12]. The addition of bupivacaine 0.5% to lidocaine 2% gives prolonged and effective anaesthesia during surgery and good analgesia during postoperative period and therefore is a better choice for DCR surgery [12]. In two studies the success rate of external DCR has been found to be 90% [13, 14] while in other three studies an over all success rate of external DCR has been reported to be 80% to 95% [15, 16, 17]. Our study confirms these previous published studies with the success rate of 96%. The causes of failure in our study are fibrous (granulation) tissue development at the nasal mucosa (osteotomy) level in 3 cases and obstruction of distal end of common canaliculus in one case. These are the two most common causes of DCR failure reported in the literature.[1,2]. Mc pherson and Egelston [18] noted dense scar tissue at the osteotomy site in DCR failure cases. Pico [19] found that on re-DCR, membrane of organized granulation tissue was responsible to occlude the new drainage channel. Allen and Berlin[1] and Mc Lachlan[2] noted obstruction more commonly at the distal end of common canaliculus.

Among the efforts to prevent DCR failure is the use of mitomycin C (cytotoxic drug). Mitomycin-C inhibits the synthesis of DNA, RNA and protein[20]. So it has been used successfully in pterygium and trabeculectomy [21,22]. It has positive role in preventing DCR failure [3] and with the use of mitomycin C, DCR success rate can be improved to 99%[3] or even to 100% [23,24]

Female predominance has been reported by Akhund [3] and Advani [25] with female patients being 72% and 85% respectively as compared to our study which is 56%.

Hussain reported 94.7% success in intubated group and 78.8% success rate in classical DCR group [26]. The success rate of DCR with silicon intubation in our study (95.65%) is almost equal to this study but the results of our classical DCR are quite better (95.35%). There is no doubt that DCR with silicon intubation has its own indications in complicated cases. But in uncomplicated cases the use of silicon tube in DCR has to be justified. As the results of Classical DCR are exactly equal to DCR with silicon intubation in our study, we recommend classical DCR in cases found to have only nasolacrimal duct obstruction to avoid the extra cost, extra time of surgery and the complications of silicon tube intubation. Our results are supported by another study which says that classical DCR is preferable in uncomplicated cases [25].

CONCLUSION

We conclude that the complications rate of DCR with and without Slicon intubation is the same in primary nasolacrimal duct obstruction. It is therefore, recommended that silicon intubation may not be necessary in such cases.

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