



ORIGINAL RESEARCH PAPER

Otolaryngology

A CLINICAL STUDY OF ENDOSCOPIC ENDONASAL DACRYOCYSTORHINOSTOMY IN CASES OF CHRONIC DACRYOCYSTITIS.

KEY WORDS:

Dacryocystorhinostomy(DCR , Syringing,MITOMYCIN-C,Stent.

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ABSTRACT

AIM: To study the outcome of 50 cases of endonasal DCR surgery.**METHODS:** This is a prospective study of results of different methods in endoscopic dacryocystorhinostomy and nature of complications. It is conducted at the Department of ENT, Government general hospital, Kurnool. The study group consisted of 50 patients aged between 7 to 60 years. **RESULTS:** At three months follow-up, there is a symptomatic cure in 45 patients (90%). The success rate was higher (100%) when both Mitomycin-C and DCR Stent was used. With other procedures with stent alone (86%), Mitomycin-C alone (83%), and DCR without Stent (90%) almost similar success rate was seen. The procedure was unsuccessful in 5 cases (10%). Among the complications encountered following Endoscopic DCR, the commonest was postoperative synechiae (20%) Others were anatomical difficulties in 8cases and hemorrhage in 10 cases. **CONCLUSION:** Endoscopic DCR is simple and safe. It is minimally invasive procedure as it is a direct approach to the sac. Cosmetically it is acceptable as there is no external scar. The advantages of the endoscopic approach are the magnificent view of the lacrimal sac in its entirety,and the preservation of the lacrimal pump, the possible lower intraoperative time and the lower morbidity.

INTRODUCTION:

Epiphora is a common annoying symptom, embarrassing the patient both socially and functionally and may even endanger the eye. It is in contradistinction to lacrimation, caused by the imperfect drainage of tears through lacrimal passages. Lacrimation occurs due to excessive tear production.1Obstruction of the nasolacrimal pathway is a common disorder, clinically manifested by the presence of tearing and/or infection.2Chronic Dacryocystitis is commonly encountered by an ophthalmologist accounting for 87.1% of epiphora1,3. It commonly affects females over 40 years of age with a peak incidence in 60 to 70 years. It is less common in negros than in whites and as being the tropical country it is more common in India. It has a higher incidence among people of lower socioeconomic status4.From the past 2 decades, endoscopic DCR has become accepted as a suitable treatment for patients either with obstructions of the lacrimal system at the level of the sac (saccul obstruction) or below it (post- saccul obstruction).5,6 Although there exists a consensus concerning some technical details in EN-DCR, many aspects of the treatment process still remain controversial. The reason for this uncertainty is due to the lack of prospective studies.

MATERIALS AND METHODS

The study group consisted of 50 patients aged between 7 to 60 years. Among them, 40 were females and 10 were males.

Inclusion criteria: The inclusion criteria of our study are all patients irrespective of age, sex, having Epiphora ,Chronic dacryocystitis,Epiphora due to lacrimal abscess,Revision and failed cases of endoscopic DCR

Exclusion criteria :suspicion of malignancy, bony deformity, traumatic and neurological cases with canalicular and punctal obstruction, patients not attended for regular follow up.

PREOPERATIVE ASSESSMENT: Clinical examination included a complete ENT examination with special emphasis on anterior and posterior rhinoscopy to identify any focus of infection, allergic rhinosinusitis, nasal mass lesions, and synechiae. All patients were subjected to a detailed ophthalmic evaluation to determine any ophthalmic cause of epiphora. The patients were then subjected to a diagnostic nasal endoscopy to identify any nasal pathology and a CT scan of the nose and paranasal sinuses was done in necessary cases. For cases of revision DCR, assessment of the operated site was performed.

Ophthalmic investigations like syringing of the lacrimal system, to demonstrate the presence of a block in the lacrimal drainage system.

All patients underwent routine hematological investigations preoperatively. The patients were admitted and a pre-anesthetic workup performed. The patients were started on prophylactic antibiotics.in our study all the 50 cases have undergone syringing,all the cases have NLD block and DNE was done in 50 cases in which 38 cases has septum in midline with no other anatomical variations,the other 12 cases have deviated nasal septum.

Renato roithman et al said that the endoscopic examination of the nasal cavity is also important in the preoperative evaluation. One of the advantages of the endoscopic nasal surgery is that associated nasal problems can be corrected simultaneously7.Allen et al quoted that Contaminant infections of the paranasal sinuses and nasal cavity are a potential risk of failure for endoscopic DCR, so treating these preoperatively is generally recommended whenever possible8.

ANAESTHESIA: 12 of 50 patients underwent the surgery under general anesthesia, the remaining were operated under local anesthesia.

Local anesthesia: The nasal cavity is shrunk with a mixture of 4% Xylocaine 30 ml and 1:1000 adrenaline 0.5 ccs. With premedication of 1 cc fortwin + 2 cc Phenergan + 1 cc Atropine.Local infiltration of 1% Xylocaine with 1:200000 epinephrine is given over Lacrimal sac area using 5cc syringe with 26 G needle.The lower edge of the anterior lacrimal crest just above the attachment of inferior turbinate.Anterior border, superior and inferior attachments of uncinat.

General anesthesia: Using Thiopentone, iv induction was done followed by succinyl choline. Orotracheal intubation was done with throat pack and anesthesia maintained with volatile agent halothane or isoflurane.

shrikant Deshpande et al, in their study they preferred local anesthesia as it reduces stress which in turn decreases bleeding9. Reza Erfanian Salim et al. in their study a mixture of lidocaine (2%) and epinephrine (1:200,000) was injected into the nasal mucosa in the surgical site in all patients¹⁰.

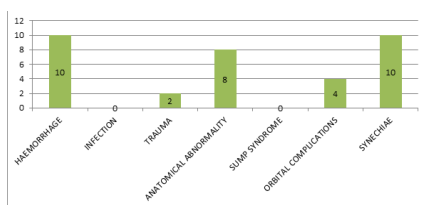
OPERATIVE PROCEDURE:Nasal cavity packed with cottonoids with 1:30,000 dilutions of adrenaline and 4% xylocaine to achieve both topical anesthesia and vasoconstriction. The average duration of nasal packing is 10minutes.Topical 4% xylocaine is instilled into the conjunctival sac.30° rigid nasal endoscope is introduced into the nasal cavity.A local anesthetic infiltration may

also be administered into the atrium of the nasal cavity using 2% xylocaine and 1:100,000 adrenaline. The sickle knife was used to make a posteriorly based 'U'-shaped incision anterior to the attachment of uncinata and deepened up to bone. The superior extent of incision up to 5mm above axilla of the middle turbinate, inferior extent up to lower border of the middle turbinate. The flap corresponding to the incision is raised. The total exposed area of bone is between 1 to 1.5cm2. A Bone punch or Microdebrider burr under irrigation with saline is used to drill the medial wall of the lacrimal bone anterior to the uncinata process, exposing a small portion of the lacrimal sac surface. For primary cases, the lacrimal sac is distended by irrigation of saline through the punctum. For revision cases, a 01 Bowman's lacrimal probe is passed through the lower punctum to tent the mucosa of the lacrimal sac. A vertical incision is then made on the anterior face of the lacrimal sac with a sickle knife, and the entire medial wall is removed with DCR punch, at this point pus or mucus usually flows out from the sac. The patency of the DCR is checked by the 01 Bowman's lacrimal probe passed into the nose via the inferior canaliculus, which is then seen in the nasal cavity. The excess mucosa over the stoma is trimmed off. minimal nasal packing is done.

POSTOPERATIVE CARE AND FOLLOW UP: Fibrin clots and crusts were cleared with the aid of the nasal endoscope in the Minor O.T at least once a week for 4 to 6 weeks. Further cleanings depend on need. Syringing and irrigation were performed daily for the first 4 postoperative days and thereafter weekly or biweekly for up to 6weeks. At the end of the third month, patients were assessed subjectively and objectively. The subjective assessment was by means of a questionnaire for assessment of relief of symptoms. Objective assessment was done by irrigation of the lacrimal system and assessment of the flow through the stoma with a 30-degree nasal endoscope.

RESULTS: In the study of 50 patients, 10 were male, 40 were female in the ratio of 4:1, the study indicates a predominance of female. In our study we have done 4 variations of endoscopic endonasal DCR. Intubation of lacrimal passage with DCR Stent was done in 7 patients, Mitomycin-C was used in 6 patients, both Stent and Mitomycin-C was used in 7 patients. Remaining 30 patients underwent classical surgery.

The complications of surgery and outcome of the different methods of surgery encountered in our study are: Among the complications encountered following Endoscopic DCR, the commonest was postoperative synechiae (20%) Others were anatomical difficulties in 8 cases (16%) and hemorrhage in 10 cases (20%). Among anatomical abnormalities, in 7 cases difficulty was faced in removing bone and in one case anterior ethmoids were exposed. No other complications were encountered in the course of the study.



Complications of Surgery

Objective Assessment: Objective assessment of each patient was done by performing syringing of the lacrimal drainage system and observing for the free flow of saline through the intranasal ostium. The objectively assessed success rate was 90%

Table 1: Success rate

PROCEDURE	NUMBER	PERCENTAGE
DCR WITHOUT STENT	27/30	90
STENT	7-Jun	86
MITOMYCIN-C	6-May	83
BOTH STENT+MITOMYCIN-C	7-Jul	100

Table 2: Failure Rate

PROCEDURE	NUMBER	PERCENTAGE
DCR	30-Mar	10
STENT	7-Jan	14
MITOMYCIN-C	6-Jan	17
BOTH STENT+MITOMYCIN-C	0/7	0

Out of 50 patients, 10 patients had synechiae formation. Synechiae was released in all patients, in which 5 patients had successful outcome and 5 patients had unsuccessful outcome.

DISCUSSION:

Endoscopic Dacryocystorhinostomy 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. In our study all the patients had been diagnosed as having nasolacrimal duct obstruction. It is found to be more common in the age group of 21 to 40 years (68%) for both sexes, probably due to decreased lacrimation in extremes of age. Females are more commonly affected (80%) and it is thought to be due to bad personal habits, long duration of exposure to smoke in the kitchen and dusty environment. Left side is more affected than the right side (56%) because, on the left side, it is observed that the nasolacrimal duct and lacrimal sac form a greater angle which increases the stasis and obstruction. Another explanation is that most of the people are right-handed; hence the left hand is free and is used for cleaning the eye or mopping the tears that increase the chance of infection in the left eye. As it is a day care surgery, it can be performed in elderly patients and in patients who are medically unfit and contraindicated for external DCR. Most cases can be done under local anesthesia. The patients were followed up for a period ranging between 1 to 14 months after Endoscopic DCR (mean: 8 months). The patients who underwent Endoscopic DCR presented with the following symptoms, in variable combinations: epiphora (100%), nasal obstruction (24%), nasal discharge (14%), visual disturbances (30%), and allergic features (16%). All patients underwent a detailed history and clinical examination. All patients underwent a complete ophthalmic evaluation including syringing. All patients were subject to detailed investigations preoperatively. All patients were subject to a diagnostic nasal endoscopy and, when indicated, a CT scan of the nose and paranasal sinuses. Patients for secondary (revision) DCR were investigated for determining the cause of failure of primary surgery. The cause of failure in cases of external DCR was stenosed nasal ostium. In revision Endoscopic DCR cases adhesions and stenosed ostium are causes for failure of surgery. Our results are better (100%) when both DCR stent and Mitomycin-C are used together. DCR without a stent, DCR with stent alone, DCR with mitomycin-C alone showed almost similar success rate. Syringing was performed for the first 4 postoperative days and thereafter weekly or biweekly for 4 to 6 weeks. Patients were assessed for symptomatic relief at the end of the 3rd postoperative month. At this time, 90% of patients had experienced total relief of epiphora; the partial relief. Mild complications like synechiae, swelling of eyes are seen postoperatively which are managed appropriately with antibiotic and anti-inflammatory drugs, eye massage, and local ice pack application. Although in our study success rate was higher when both stent and mitomycin-c used they have their own complications. Do Hyun Kim et al stated that the success and morbidity rates showed no difference between the stent group and nonstent group in the meta-analysis. The outcomes of stent group have postoperative bleeding, eyelid problems, granulation and synechiae formation and these complications are less in nonstent group. In the study by Kong et al. to prevent the obliteration of the intranasal lacrimal sac ostium, many surgeons prefer to insert bicanalicular silicone tubes to stent the rhinostoma. Shi-ming Cheng et al suggested intraoperative mitomycin-c application seems to be a safe adjuvant that reduces closure rate of the osteotome. Akshay Gopinathan Nair et al suggested that mitomycin-c in DCR appears to improve the success rate of DCR. Shu Liao et al suggested that intraoperative mitomycin-c improves the success rate without any significant

complications¹⁵. Wormald et al described that creation of a large ostium as well as mucosal flaps improves the efficacy of the endonasal technique¹⁶. Wenyan Peng et al described that modified preserved nasal and lacrimal mucosal flap technique is simple and safe with better clinical outcome¹⁷. Pradeep Pradhan et al suggested that double posterior based mucosal and lacrimal flap technique has a satisfactory outcome¹⁸. Endoscopic DCR has more advantages when compared to external DCR, It avoids facial scar. Minimal post-operative discomfort. Can be performed on both eyes. Can be performed as day care procedure. Can be done even during lacrimal abscess presentation. Warfarin and aspirin need not be discontinued during surgery. Injury to the angular vein, medial palpebral ligament, orbicularis oculi is avoided as in external DCR. Revision surgery easy.

CONCLUSION:

Endoscopic DCR is simple and safe. It is minimally invasive procedure as it is a direct approach to the sac. Can be performed safely in cases of pyocele and mucocele. Cosmetically it is acceptable as there is no external scar. When properly indicated, dacryocystorhinostomy has a high success rate to treat epiphora, through the endoscopic endonasal approach. The advantages of the endoscopic approach are the magnificent view of the lacrimal sac in its entirety, no external scar, and the preservation of the lacrimal pump, the possible lower intraoperative time and the lower morbidity. Moreover, other sinonasal disorders may be corrected in the same surgical procedure, such as nasal septum deviation and adenoid hypertrophy. Nevertheless, the endoscopic technology and associated instruments increase the cost of the procedure. Thus, DCR is today a surgery which is carried out with excellent results by the ophthalmologist as well as by the rhinologist. The teamwork: ophthalmologist+ otorhinolaryngologist, may bring about many benefits to the surgical treatment of patients with epiphora.

Limitation of study: The conclusion drawn from this study suffer from a handicap of small numbers(50). hence, this should be considered as a pilot study and further large scale needs to be undertaken

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Lacrimal Stent. *Ann Otolaryngol Rhinol* 2(9): 1061. to clarify the issues raised in this pilot study.