

Clinical Study of Endoscopic Endonasal Dacryocystorhinostomy for Chronic Dacryocystitis-Our Experience in 50 Cases And Review of Literature



Medical Science

KEYWORDS : Epiphora, Nasolacrimal Duct Obstruction (NLD), Chronic Dacryocystitis, Endoscopic Endonasal DCR

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ABSTRACT

Introduction: Chronic dacryocystitis is defined as the chronic inflammation of the lachrymal sac due to stricture of the nasolacrimal duct secondary to chronic inflammation, usually due to nasal origin. For over a century, the gold standard treatment for epiphora is Dacryocystorhinostomy. Toti's technique of External Dacryocystorhinostomy (DCR) has been the treatment of choice for epiphora due to nasolacrimal duct obstruction since 1904 until the introduction of rigid nasal endoscopes and advent of intranasal endoscopic Dacryocystorhinostomy. Materials and Methods: A clinical study conducted in 50 cases of chronic dacryocystitis due to chronic nasolacrimal duct obstruction, who underwent Endoscopic Endonasal Dacryocystorhinostomy (lacrima sac) surgery. The clinical study was conducted in patients with epiphora who presented to the Department of Otorhinolaryngology and Head and Neck Surgery and Department of Ophthalmology, Kurnool Medical College and Government General Hospital, Kurnool from a period of Jan 2014 to Dec 2015. Standard procedures of Endonasal Endoscopic DCR were performed and the results were compared with External Dacryocysto Rhinostomy and other procedures on lacrimal sac surgery. In our study the maximum incidence was found in third decade (36 %) of age group and the mean age was 38 years. The incidence in females (80%) were more than males (20%), left side lacrimal sac lesions (64%) are more than right sided (36%) pathology. Conclusion: Endoscopic Endonasal DCR is considered to be a cosmetic surgery for both sexes as it avoids facial scar and risk of keloid formation as in External DCR and the associated nasal pathology like DNS, Sinusitis can be corrected at same time of surgery of Endoscopic Endo Nasal DCR. Endo DCR is a day care procedure with success rate of 90%. And it's an approach for revision cases of Endo or failed External DCR without any complications, like serious bleeding and recurrence. Endo DCR can be done in acute cases with lacrimal sac abscess or in cases with acute inflammation in patients with chronic dacryocystitis and in children with congenital NLD obstruction

Introduction:

Chronic dacryocystitis is defined as the chronic inflammation of the lachrymal sac due to stricture of the nasolacrimal duct secondary to chronic inflammation, which is usually nasal in origin. The essential symptom is epiphora with swelling at the site of the sac (mucocele) in few cases. On applying pressure over the sac, mucopus or sometimes frank pus regurgitates through the puncta.

Dacryocystitis was first surgically described by Killian in 1889 and popularised by Caldwell in 1893 endonasally but failed to gain success due to limited access to the anatomy of nasolacrimal apparatus. Adeo Toti in 1904 was the first one to perform External DCR successfully and it remains the Gold Standard surgical approach for quite a long time. With the advancement in the rigid Endoscope, in 1989 McDonough and Meiring performed first successful Endonasal DCR surgery. Much modification took place in the technique of Endonasal DCR surgery and so is the use of different materials in the Endonasal DCR surgery with the aim of achieving a guaranteed success of Endonasal DCR surgery.

The aim of this study is to share our experience and results of 50 cases of Endonasal DCR surgery at Department of Otorhinolaryngology and Head and Neck Surgery and Department of Ophthalmology, Kurnool Medical College and attached Government General Hospital, Kurnool

Material & Methods: A clinical study of 50 cases of chronic dacryocystitis due to chronic nasolacrimal duct obstruction who underwent Endonasal Endoscopic Dacryocystorhinostomy was conducted by the Department of Otolaryngology in conjunction with

Department of Ophthalmology Kurnool Medical College Kurnool from a period of Jan 2014 to Dec 2015. Standard procedure of Endoscopic Endonasal DCR was performed by the same surgeon in the same setting. The inclusion criteria of our study are all patients irrespective of age, sex having epiphora, Acute or chronic dacryocystitis, Chronic dacryocystitis following NLD block, Congenital NLD obstruction in children, epiphora due to lacrimal abscess, revision and failed cases of external DCR.

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

All the patients were subjected to a detailed clinical history and clinical examination. In the history, attentions was paid to determining whether the watering of the eye was due to excess tear production (lacrimation) or due to obstructed outflow (epiphora). Previous history of midfacial fractures and nasal surgeries were elicited. Other coexisting related ENT problems, like DNS, Sinusitis, and Allergy were also addressed. Clinical examination included a complete ENT examination with special emphasis on anterior and posterior rhinoscopy to identify any focus of infection, allergic rhino sinusitis, nasal mass lesions & synechia. All patients were subjected to a detailed ophthalmic evaluation to determine any ophthalmic cause of epiphora along with probing and syringing of the lacrimal system to demonstrate the presence of block in the lacrimal drainage system. All the patients also underwent a diagnostic nasal endoscopy to identify or confirm any nasal pathology.



Investigations: All the cases were thoroughly investigated with HB %, Blood grouping & Rh typing, bleeding time, clotting time, red blood cell count, white blood cell count, differential WBC count, random blood sugar, platelet count, blood urea, serum creatinine, serum electrolytes, screening for HIV, HbsAg, HCV, complete urine examination, imaging procedures like x-rays skull and chest, ECG, Echocardiography Physician /Cardiologist opinion regarding fitness for surgery, along with pre-anesthetist check-up and were found to be normal.

Surgical Technique: We preferred to operate under local anaesthesia except in uncooperative and apprehensive patients who were planned under general anaesthesia. An external block was given with 1% xylocaine; the nasal cavity was anesthetized and decongested with 4% xylocaine cotton patties. The area of the Agger Nasi air cells, mucosa of lateral nasal wall in the region of maxillary line was infiltrated with 2% xylocaine with 1 in 200,000 adrenaline solution. A 1cm square incision was made in lateral wall of nose with help of sickle knife or No 15 blade, starting just anterior to the axilla of middle turbinate two horizontal one vertical incision was given. The mucosal flap anterior to the middle turbinate and the periosteum elevated. The lacrimal bone removed by DCR punch and the lacrimal sac seen and confirmed by endoscopy. More bone was removed to expose the medial wall of the sac. The lacrimal part of the fossa was removed up to the base of the uncinat process. Thus, about 1x1cm of bone was removed to expose the medial wall of the sac completely. An incision was made on the medial wall of the sac and the entire medial wall of the sac was removed using straight Blakesley forceps and sickle knife. Lacrimal sac syringing was done with normal saline and a free flow of the fluid was observed with endoscopy.

During post operative period patients treated with Antibiotic, Anti Inflammatory, Local Decongestant, and Antibiotic Steroid Eye Drops. Saline Nasal Douching and Gentle Digital Massaging of Sac region were advised. Endoscopic suction clearance was done weekly for one month, then monthly for 6 months to prevent crusting, adhesions/ synechae.

Results and Observations: In this prospective study of 50 cases, who underwent Endonasal Endoscopic DCR; all the results of surgery and complications, data analysed and were compiled. Subjective assessment was done for improvement of epiphora and objective assessment was done by means of sac syringing and endoscopic visualisation. The operation was considered to be successful after complete relief of epiphora and endoscopic confirmation of patency of stoma with sac syringing and irrigation.

Table 1 Showing incidence of age particulars

Age (Yrs)	No. of Patients	%
01 – 10	02	04 %

11 – 20	01	02 %
21-- 30	18	36 %
31-- 40	16	32 %
41 -- 50	10	20 %
51 -- 60	01	02 %
61-- 70	02	04 %

In our study of 50 cases (Table 1) the maximum incidence was found in the age group of third decade (36 %) followed by fourth decade (32%) and (20%) in fifth decade. The mean age was 38 years (Endo DCR for congenital NLD obstruction was the youngest case recorded in our series at the age of 6 yrs and oldest case was 65 yrs with epiphora).

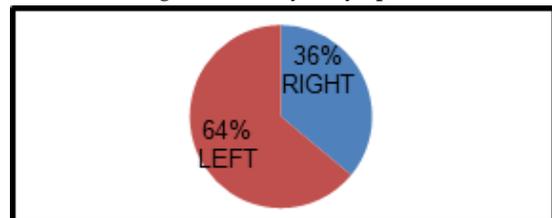
Table 2 Showing sex distribution

Sex	No. of Patients	%
Male	10	20%
Female	40	80%
Total	50	100%

In our study of 50 cases sex wise distribution Females were 40 cases (80%) more commonly affected (Table2). Males are often less affected 10 cases (20%),



Table 3 showing the laterality of symptoms



In our study of 50 cases, side of lesion (Table 3) showing left side lacrimal apparatus involved in 32 cases (64%), more affected than right side 18 cases (36%), and right eye involvement is less.

Aetiological distribution of cases: Chronic dacryocystitis was the most common Aetiology (80%), followed by mucocoele of the lacrimal-sac (20%). Both were idiopathic in nature.

Associated Pathology:

In our study of 50 cases ten (10) patients had DNS, 2 cases had concha bullosa, 4 cases had maxillary sinusitis, 2 cases were HbsAg +ve co existed risk of surgery and 2 cases were revision cases. These cases needed additional surgery attended along with Endonasal DCR.

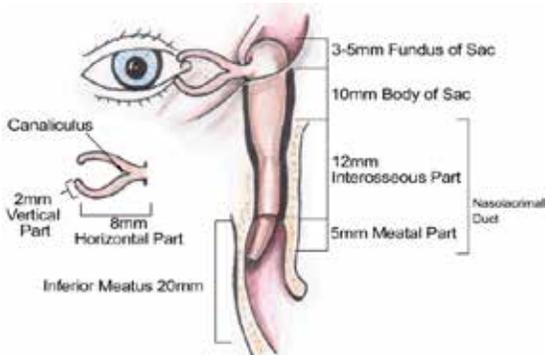
Four (4) cases had moderate intraoperative bleeding, which was controlled with cautery. Six (6) cases had synechiae/ adhesions in the postoperative period; cases were followed and were corrected in subsequent minor surgery. In our study we did not encounter any serious or major complications like CSF Rhinorrhoea, Orbital Injury though it is reported in some studies.

It was observed that endoscopic DCR took less time (Mean duration = 60 minutes).All the cases in the study were followed up postoperatively for a period of 3 months to 9 months(average 6 months) for evaluation of any complications, patency of drainage system, stoma appearance and subjective improvement of epiphora Table 4 showing endo DCR surgery results and analysis

Aim is wide open endo nasal sac to prevent recurrence



Discussion: Chronic dacryocystitis is one of the most commonly encountered problems in all age groups and is more common in lower socio-economic groups.



Endo DCR Results analysis	No of Patients	Percentage
Correction Of Associated Symptoms	16	32%
Revision cases	02	04%
Bleeding	04	08%
Synechiae/Adhesions	06	12%
External Scar	0	0%
CSF Rhinorrhoea	0	0%
Damage To Medial Canthus Structures	0	0%
Function Of Lacrimal Pump	50	100%

Table4 Showing Endo Nasal Endoscopic DCR Surgery results and analysis

Endoscopic Endonasal DCR is one of the upcoming surgeries done now as it is having better outcomes than external approach as it avoids any facial scar, facilitates lacrimal pump mechanism by preserving scarring action of orbicularis oculi muscle. Simultaneous treatment of nasal pathologies in one setting like DNS, sinusitis and revision surgery And bilateral cases can also be done. Acute dacryocystitis is not a contraindication as in external DCR various modifications have been done in endoscopic DCR such as application of mitomycin- C, use of silicon tubing/stent, laser as-

sisted DCR and use of micro debrider.

The commonest cause of chronic dacryocystitis was found to be idiopathic blockage of the Naso-lacrimal duct. In a study by Manfred Weidenbecher et al (1994), it was found that 78.5% of the cases had an idiopathic cause, while Kristin J Tarbet et al (1995) found it in 72% of the cases. The rest of the cases were either traumatic or infective (Lacrimal abscess, acute dacryocystitis).

In our study 50 cases underwent Endonasal Endoscopic DCR.40 cases (80%) were females and 10 cases (20%) were males. This indicates that dacryocystitis is more common in females. In a study conducted by Sprekelsen et al (1996), 80% of the patients were found to be females and only 20% were males. Most studies have demonstrated that 70 to 80% cases of chronic dacryocystitis occurred in females this can be due to the long duration of exposure to smoke in kitchen, use of kajal and other cosmetics that increases chances of transmission of infection or congenital or anatomical narrowing of nasolacrimal duct drainage system in females as compared to males. It is also possible that endocrine factors may be playing a role in the aetiology of chronic dacryocystitis.

In the present study, the patients were aged between 6 to 65 years of age. A maximum incidence was seen in the 3rd and 4th decades of life followed by fifth decade. In a study which was conducted by Cokker et al (2000), the age of the patients ranged from 4 to 76 years. HB Whittet et al (1993) observed that the age of their patients ranged from 14 to 80 years.

Left eye is more commonly seen to be affected in dacryocystitis. In our study 32 patients (64%) were having left eye involvement and 18 patients (36%) were having right eye involvement. It has been observed that nasolacrimal duct and lacrimal sac form a greater angle on right side than left side. It increases chance of stasis and obstruction of nasolacrimal duct on left side. It was therefore attributed as a cause of preponderance of chronic dacryocystitis on left side. Other explanation is that most of the people are right handed, hence their left hand is free and used for cleaning the eye or mopping of tears that increases chance of infection in the left eye. Another possibility could be congenital or anatomical narrowing of nasolacrimal duct on left side



In our study out of 50 patients, 10 patients (20%) had DNS, 2 patients (4%) had concha bullosa, and 4 patients (8%) had maxillary sinusitis which was corrected during endoscopic DCR surgery.

In our study 4 cases (8%) had moderate intraoperative bleeding which was controlled with cautery and 6 cases (12%) had synechiae/adhesions in the postoperative period which was also corrected in subsequent follow up. All the cases were followed up for 3 months to 9 months and all patients had symptomatic improvement of epiphora.

Conclusion: Endoscopic DCR is considered to be a cosmetic surgery as it avoids facial scar in both sexes and risk of keloid as in External DCR. An associated nasal pathology like DNS or Sinusitis can be corrected at same time of surgery of Endonasal DCR. Endo DCR is a day care procedure with success rate of 90% and it's an approach for revision cases of Endo or failed External DCR without any serious complications and bleeding. Endo DCR can be done in acute cases or acute on chronic dacryocystitis or lacrimal sac abscess and in children with congenital NLD obstruction. Regular post operative follow up is necessary for endoscopic DCR like any case for successful outcome in surgery

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