Endoscopic Dacryocystorhinostomy: A Study at IPGMER, Kolkata

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Abstract Endoscopic sinus surgery has developed a new era in the treatment of chronic dacryocystitis. A prospective study was conducted by taking 67 patients having epiphora. Endo DCR was performed under local anaesthesia. Post operative care was given by means of alkaline nasal douching, lacrimal sac massage and endoscopic examination on 1st, 3rd, 6th week. Success rate was found to be 95.5 % which is comparable to external DCR and with added advantages

Keywords DCR · Endo DCR

Introduction

Although the surgical treatment to correct the obstruction within the nasolacrimal duct dates back to 670 AD, it was not until 1904 that Toti described the modern dacryocystorhinostomy [1, 4]. Since then, continued refinements in technique have yielded more predictable results with improved patient satisfaction. The traditional external DCR has consistently demonstrated success rates of 91 % and higher (usually greater than 95 %) [2, 3, 5]. The intranasal approach to DCR was reported over 100 years ago. In 1893 [6, 7] Caldwell created a fistula by intranasally trephining the nasolacrimal duct. Anderson [8], in 1958 presented a film on the intranasal approach. In 1982 Bosshard [9], recommended the use of the 30° and 70° Hopkins endoscope for preoperative assessment and postoperative removal of granulation tissue.

In 1989, McDonough and Meiring [10] described the use of the 30° Storz Hopkins endoscope for visualization during the surgery. They referred the technique as endoscopic DCR.

Massaro et al. [11], in 1990 was the first to report on the use of laser intranasally. They used the operating microscope for visualization, but used the term endonasal DCR. In 1991, Gonnering et al. [12] were the first to report on the combined use of the laser and endoscope, where they referred to as endoscopically laser assisted lacrimal surgery.

Indications for DCR

Chronic dacryocystitis leading to obstruction of nasolacrimal duct.
Mucocoele.

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Advantages of Endoscopic Approach

It is cosmetically more acceptable as there is no external scar.

It is a day care surgery. It can be done in elderly and medically unfit patients who are a relative contraindication for external DCR.

Simultaneous nasal and paranasal sinus pathologies can be treated in the same sitting.

Regular evaluation and care of the operative site is possible with the help of endoscope.

It is more physiological because it preserves the lacrimal pump mechanism and final results are comparable to external DCR.

This study was planned to see the result and patient acceptability in our part of India.

Materials and Methods

Period of Study: Aug 2007 to July 2009.

Nature of study: Longitudinal study for period of 24 months.

Study area: I. P. G. M. E and R, Department of E. N. T

Screening of the patient: By unbiased random selection process.

Selection Criteria

A prospective study was concluded on patients diagnosed to have chronic dacryocystitis between Aug 2007 to July 2009. Diagnosis was done on the basis of clinical examination like regurgitation test and syringing. Patients having canicular block were excluded from study group. All patients visited our ophthalmology OPD with complaints of epiphora of variable duration. Total 67 patients were included in this study; out of them 36 were female and 31 were male patients. Patients below 12 yrs were excluded from the study apprehending congenital malformation. Nasal examinations were done to rule out atrophic rhinitis, polyposis and chronic granulomatous diseases and were operated when nasal mucosa became healthy. DNS and hypertrophied middle turbinate were corrected before endonasal DCR was done.

Surgical Technique

The patients were given Tab Lorazepam 1 mg on the night before operation. Inj. pentazocine lactate, diazepam (5 mg), diclofenac sodium (75 mg) and ranitidine hydrochloride (5 mg) were given intramuscularly 1/2 h before operation. Nasal mucosa was prepared for at least 1/2 h before

operation with local anesthetic agent 4 % Lignocaine and 1:30,000 adrenalin. The surgery was done under infiltration anesthesia with 2 % lignocaine and 1:100,000 adrenaline. Infiltration was done at the insertion of the middle turbinate and the mucosa of lateral wall of nose anterior to the middle turbinate and middle meatus. A one inch (24G) needle was used for anaesthesia (Figs. 1, 2, 3, 4, 5, 6, 7).

First, the ridge on the lateral wall of nose in front of middle turbinate formed by frontal process of maxilla was identified and then posterior to it, the anterior border of uncinate process was located by palpation with maxillary ostium probe. The lacrimal bone lies in between the two.

The incisions were made in the lateral wall of the nose with the help of sickle knife, the upper one starting just anterior to the upper attachment of middle turbinate and proceeded in forward direction for 0.5–0.7 cm. The lower incision was made just at the upper border of inferior

Fig. 1 Injecting L.A

Fig. 2 Identifying maxillary crest by medialising middle turbinate

Fig. 3 Incision started from just above inferior turbinate

Fig. 6 Lacrimal sac exposed

Fig. 4 Mucoperiosteal flap elevated

Fig. 7 Sac opened

Fig. 5 Maxillary crest punched out

turbinate and parallel to it. The two incisions were joined anteriorly, thus creating a posteriorly based mucoperiosteal flap.

The flap was elevated with the help of Freer's elevator or round knife of micro laryngeal surgery. The upper half of the flap was trimmed after operation.

Thus, the base of lacrimal fossa was exposed. A 2 mm Kerrison's bone punch was to remove the bone of lacrimal fossa. Bone of upper part of lacrimal fossa is very thick. It is better to remove this part to expose fundus of the sac to prevent recurrence. If it seems difficult with Kerrison punch one may use drill. In our experience, if drill is not available 2 mm curve osteotome is a better alternative. A bony ostium was created measuring 1 cm × 1 cm. Uncinate process was preserved in most cases of endo-DCRs. Bowman's lacrimal probe was used to tent the medial wall of the sac.

With the help of 0° and 30° 4 mm nasal endoscope, an incision was made in postero–inferior aspect of medial wall of the sac with the help of right angled triangular micro knife or sickle knife. Medial wall of the sac was removed with Blakesley forceps. Lacrimal syringing was done to ascertain the patency. Nasal packing was done in four cases and left for 24–48 h. Inj. tranxamic acid 1 gm was used 1 h before prophylactically for hemostasis. The patients were discharged on the same day; if they came from remote places discharge given on following day. Patients were put on oral antibiotics, anti-inflammatory drugs, and nasal decongestants mixed with steroid, and antibiotic with steroid eye drop. The patients were instructed to do digital massage over the sac area. Alkaline nasal douche was given twice every day for 1–2 weeks to prevent crusting. From 2nd week onwards nasal decongestants mixed with steroid, and antibiotic with steroid eye drop started to prevent fibrosis of stoma. Follow up was done with endoscopic examination on 1st, 3rd and 6th week to look for and remove any granulation, crust or debris and adhesion at the site of rhinostomy and observe free flow of fluid during syringing and to assess the approximate size of the ostium.

Result

The study was performed on 67 patients. There were 31 males (27.3 %) and 36 female (72.7 %). About 47 (77.3 %) cases were that of chronic dacryocystitis, (of which male 19 (40.4 %) and female 28 (59.6 %); 11 cases were mucocele {seven male (10.5 %) and four female (6 %)} and nine cases were pyocele {05 (7.5 %) male and 04 (6 %) female. DNS was present in 07 (10.5 %) and hypertrophied middle turbinate in 05 (7.4 %) cases. In one case DNS had to be corrected surgically in the same sitting.

The average time required for endo DCR was 30 min. The primary operation was successful in 61 cases (91 %). In three (4.5 %) cases granulation had blocked the ostium and needed endoscopic removal; ultimately patients became symptom free. In two (3 %) patients, the dissection was done more anteriorly so sac could not be identified. Repeated surgery was done after 6 weeks and the attempt was successful. On routine follow up, two patients needed trimming of mucosa overlying the ostium. In both the cases, the patients were asymptomatic. In three (4.5 %) cases failure occurred due to restenosis.

Thus, the success rate (including after minor revision surgery) was 95.5 %. Endoscopic examination during follow up revealed that there was gradual decrease in the ostium size. The healing process was complete in most of the cases between 4th and 6th weeks after operation. After 6 weeks, there was minimal change in the size of the rhinostome.

Discussion

Our study included patients of above 12 yrs. Pediatric patients were not included in our study due to more chance of congenital anomalies. In our study 36 (53.7 %) patients were female and 31 (46.3 %) were male. Chronic dacryocystitis has been observed to be more common in women of low-socio economic group due to their poor hygiene, exposure to smoke and dust. Use of eye black and other cosmetics also increase the chances of transmission of infection [13–15]. There may be congenital anatomical narrowing of nasolacrimal drainage system in females as compared to males [16].

Pyocele of the sac acute dacryocystitis and atrophic rhinitis were relative contraindication for the external DCR but this is not true for endo DCR. However healing time is more in cases of atrophic rhinitis [16].

Our study reveals the fact that the result of endo DCR is almost similar to that of external DCR with its extra advantages as mentioned before. It can be done in cases of pyocele, acute dacryocystitis and atrophic rhinitis where conventional external DCR is relatively contraindicated. It is a day care surgery so it can be done in elderly and in patients who are medically unfit for external DCR. This procedure does not leave an external scar and the lacrimal pump mechanism remains undisturbed. The nasal and PNS pathologies if present can be treated in the same sitting.

The use of endoscope in the nose requires thorough knowledge of the anatomy of the nose and the surrounding structures. Regular and intensive follow up has direct bearing on the result and this important aspect should be explained to the patients.

There are few reasons of failure of endonasal DCR like learning curve, poor post-operative follow up and care, small bony ostium, rough handling of nasal mucosa, damage to the lateral wall of lacrimal sac and small fibrosed sac.

Conclusion

Endoscopic approach has revolutionized the surgical treatment of chronic dacryocystitis converting external DCR to endoscopic DCR. Though the outcomes are comparable in two procedures, the endo DCR certainly has several advantages over the conventional DCR.

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