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Indian Journal of Clinical and Experimental Ophthalmology

Journal homepage: www.ijceo.org

Original Research Article

To evaluate the outcome of external dacryocystorhinostomy without flaps in the cases of adult chronic dacryocystitis

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ARTICLE INFO

Article history:
Received 25-02-2024
Accepted 18-04-2024
Available online 30-09-2024

Keywords:
Epiphora
Dacryocystitis
Nasolacrimal duct
Dacryocystorhinostomy
Flapless DCR

ABSTRACT

Purpose: To evaluate the efficacy of external dacryocystorhinostomy without mucosal flaps in adult population.
Materials and Methods: In this prospective, non-comparative interventional study 50 adult cases with epiphora due to chronic dacryocystitis was selected. All patients were managed with external dacryocystorhinostomy without anastomosis of the nasal and lacrimal mucosal flaps and success rate was evaluated by relief of epiphora and lacrimal syringing on day 1, day 7, and then after 1 month, 3 months & 6 months subsequently.
Results: Total number of cases operated were 52 eyes with female preponderance (38 cases 78%), with left laterality (76%) with success rate of 92%. With mean operating time 27.71min.
Conclusion: External dacryocystorhinostomy without mucosal flaps is a better method of managing the cases of chronic dacryocystitis with higher success rate with minimal skill and time consumption.

1. Introduction

The nasolacrimal duct (NLD) obstruction either primary or secondary, is one of the most important causes of epiphora.[1] The commonest cause of watering and discharge in primary nasolacrimal blockage is chronic dacryocystitis and it causes a lot of discomfort and social stigma. Medical management is never successful and the treatment should always be surgical intervention. The intervention for lacrimal sac surgery is by dacryocystorhinostomy either external or trans-nasal endoscopy. Toti, in the year 1904 first described the external dacryocystorhinostomy for the surgical treatment of epiphora due to nasolacrimal duct blockage.[2] The aims and objectives of DCR are - to facilitate surgically the free drainage of tear from the conjunctival sac to the nasal cavity. The procedure is of choice for the management of epiphora due to nasolacrimal duct obstruction.[3] The success rate is almost 85% to 99%.[4–6] But surgical technic is difficult and needs good experience as well as it is time consuming especially when the burden of cataract surgery is also high. This may urge for some modification in the process of conventional surgery which could be much simpler, atraumatic and less time consuming also desirable success rate. The aim of this study was to evaluate the results of the external dacryocystorhinostomy without anastomosing the lacrimal mucosal and nasal flaps.

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https://doi.org/10.18231/j.ijceo.2024.090

2. Materials and Methods

This study was an interventional study conducted in our institution from 2020 February – 2023 March and ethical committee permission was sought and was approved. Informed valid consent was taken from the patients willing to undergo operation under local anesthesia and take part in the study. Participants were surveyed using self-administered questionnaire and complete ophthalmic examination was done. Total 50 cases of nasolacrimal duct obstruction in age group ranging from 20- 60 years included. Time of the operation was recorded from incision of skin to its closure by suturing.

The patients between age 20-60 years and irrespective of sex, attending Outpatient Department in Silchar medical college & Hospital with epiphora were evaluated clinically and were selected for nasolacrimal syringing and confirmed as a case of chronic dacryocystitis i.e. primary acquired nasolacrimal duct obstruction.

Informed consent taken from all the patients willing to undergo operation under local anesthesia and willing to take part with follow up in the study.

Patients having Acute inflammation, Chronic granulomatous inflammation of lacrimal sac, presence of lacrimal sac fistula & gross DNS or nasal pathology , past history of nasolacrimal trauma and lacrimal sac surgery were excluded from the study.

ENT opinion were taken for any gross abnormality and the cases were selected accordingly for surgical management. Routine blood examination, bleeding and clotting time, routine blood sugar, HIV, HBsAg, and blood pressure was checked routinely in all cases.

Patients were put under topical instillation of proparacaine hydrochloride 0.5% and on table lacrimal syringing was done. Local anaesthesia with 2% Lidocaine with adrenaline 1; 200000 was infiltrated. Nasal packing with ribbon gauge soaked in 4% Lidocaine and xylometazoline hydrochloride 0.1% nasal drops was done in the side to be operated.

Curvilinear skin incision conforming to the anterior lacrimal crest[7] was made 3 -3.5 mm away from the medial canthus 2mm above and 3 mm below the medial palpebral ligament taking care of the angular vein. Orbicularis oculi was dissected and retracted with skin muscle retractor. Medial palpebral ligament was divided from the crest of anterior lacrimal bone and the lacrimal sac was exposed properly. Bowmen's lacrimal probe was passed through the lower punctum through the common canaliculus into the sac and kept in situ so that common canalicular opening is tracked to prevent injury. Medial wall ($3/4^{th}$) of the lacrimal sac was then dissected and removed leaving a small portion of the sac around the common canaliculus. Lacrimal bone was exposed up to the lamina papyracea and the bony ostium was fashioned with Citelli's bone punch. An approximate ostium of 12mm x 10mm, vertically oval with rounded borders and smooth well-trimmed edges was targeted.[7] The nasal packing was removed and nasal mucosa was exposed. The flap of the nasal mucosal was excised and removed all around the Ostium. Lacrimal probe was then removed. Medial palpebral ligament was secured with 6-0 Vicryl suture and the dissected orbicularis muscles were also secured with 2-3 sutures with Vicryl sutures 6-0. Skin was also closed with Vicryl sutures 6-0. Lacrimal syringing was performed with normal saline and checked and confirmed the easy flow. Hemostasis was secured all along the procedure. Antibiotic ointment was applied and a firm pressure bandage was done. Oral antibiotics and anti-inflammatory and topical antibiotics were given to all the patients for a week or so. Nasal decongestants were continued for a month.

Follow-up was done on the 1st, 7th postoperative day and thereafter 1st, 3rd and 6th months.

On the postoperative day-7th skin sutures were removed and on each visit complications such as wound gap, discharge or any secondary infections, granuloma formation, epistaxis etc. were looked for and taken care.

The success following surgery was decided by lacrimal drainage patency by syringing at final postoperative follow-up visit and if syringing was found to be blocked it was considered as surgical failure.

3. Results

Following results and observations are found out in the study. Total number of patients were 50 and the operation were done in 52 eyes .Incidence of dacryocystitis is found more in the age group of 40-50 yrs. with total no of 23 cases, out of which 18 cases i.e. (78.3%) with female preponderance (Table 1). The incidence of left sided dacryocystitis was found to be more in our study i.e. total 38 cases (76%) and bilateral only 2 cases i.e. (4%), (Table 2). Operating time i.e. from incision to skin closure, 42 case were done within 15-30 mins and mean time for the procedure was 27.71min (Table 3). Per operative complications were- bleeding occurred in 4 cases (7.7%), lacerations of the nasal mucosa in 2 cases (3.8%). Postoperative complications were epistaxis in 1 case (1.9%), periorbital oedema in 4 cases (7.7%), hypertrophic scar in 1 case (1.9%), NLD block in syringing 4 cases (7.7%) and none had secondary infections. (Table 4) On follow up NLD was found to be patent post operatively in cent percent cases on 1^{st} day, 7^{th} day, and at 1month and 92.3% were patent at 6 months & 1year (Table 5). Success rate was (92.3%) i.e. 48 eyes at the end of 1 year Table 6).

4. Discussion

Incidence of chronic dacryocystitis due to nasolacrimal duct obstruction is more prevalent in females in 4-5th decade. Duke Elder et al; found chronic dacryocystitis in female is

Table 1: Age and sex wise distribution of cases

Age	Male	Female	Total
20-30	01(25%)	03 (75%)	04
30-40	02(11.7%)	15(88.3%)	17
40 -50	05(21.7%)	18(78.3%)	23
50-60	00(0%)	06(100%)	06
Total	08(16%)	42(84%)	50

Table 2: Distribution of cases according to laterality

Right	Left	Bilateral	Total
10 (20%)	38 (76%)	02 (4%)	50 (52 Eyes)

Table 3: Distribution according to time of surgical procedures

Operating time (in minutes)	Number of cases
15-30	42
30-45	6
45-60	2
60+	2

Operating time (from incision to skin closure)**:** Mean time for the procedure was 27.71min.

Table 4: Frequency of preoperative & postoperative complications

Per operative	Number of eyes (percentages)	Post operative	Number of eyes (percentages)
Bleeding	04 (7.7%)	Epistaxis	01 (1.9%)
Laceration of nasal mucosa	02 (3.8%)	Periorbital oedema	04 (7.7%)
		Infections	00 (0%)
		Hypertrophic scar	01 (1.9%)
		Blocked syringing	04 (7.7%)
Total	06 (11.5%)		10 (19.2%)

Table 5: Distribution of cases according to postoperative outcome on follow up

Post of period	Outcome	Number of eyes (Percentage)
1^{st} day	NLD patent	52(100%)
7^{th} day	NLD patent	52(100%)
1 month	NLD patent	52(100%)
3 month	NLD patent	48(92.3%)
6 month	NLD patent	48(92.3%)

Table 6: Distribution of cases according to postoperative outcome on follow up

Success	48 eyes (92.3%)
Failure	04 eyes (7.7%)
Total	52 eyes

75-80% and in male is 20-25%. In our study females are found to be 42 (84%) and males were 8 (16%). lacrimal fossa in female is narrow and hence predisposes to lacrimal passage obstruction due to sloughed off debri because of hormonal changes causing de-squamation.[8] Deka et al; in their study found the sex incidence as 65% females and 35% male and the observed mean age of 41 years.[9] Kacaniku et al reported female 37(71%) male 15(29%) with mean age of 44.6 years.[10] Kumar Rashmi et al found female cases were 75(78.12%) males were 21(21.8%) and average age to be 37.5years.[11] In our study the average age of presentation was 41.42 years almost similar to other studies.

The failure rate of primary DCR surgery is 12% however failure rates ranging from 0 to 18% have been reported in other literatures.[12–14] Failure rate of our study was 8% at 6 months post-operative.

Mean Surgical Time Taken in Our Study was 27.71 mins while in in U shaped technique was 43.39± 7.5 minutes and H shaped flap technique was 52.14± 4.42 min and by Kumar Reshmi et al and Agrawal et al.[11,14]

Other studies had per-operative bleeding in 4 of the cases (5%), nasal mucosal tear in 2 (2.5%) cases [10\]. Kacaniku et al reported intraoperative bleeding in 3(5.8%) cases and nasal mucosa laceration in 2(3.8%) cases[10] 3 cases of epistaxis and 2 cases of periorbital ecchymosis as postoperative complications as reported by Deka et al.[9] In our study bleeding was 7.7%, nasal mucosal laceration in 5.8%, epistaxis in 1.9%, periorbital oedema 7.7%, scar 1.9%, nasolacrimal block 7.7%.

In our study the failure rate was 7.7% .The overall surgical failure of external DCR was 10%,[11] similar observations were made by Walland et al who reported a. failure rate for primary surgery as 12%[14] and several other studies has shown failure rates ranging from 0 to 18%.[12,13,15] The different complications may be due to patient selection, preoperative preparation, and surgeon's experience in atraumatic tissue handling with proper intervention.

The surgical failure rates in external dacryocystorhinostomy may also be due to the position and size of the ostium, obstruction in the common canaliculi, fibrosis and scarring within the anastomosis due to infection or use of non-absorbable suture material, persistent mucocele, deviated nasal septum and the sump syndrome.[16] The ideal ostium is one which leaves at least 5mm around the canaliculus free of bone i.e. at least 1cm in diameter also facilitates gravitational flow and no possibility of stagnation.[7]

The study conducted by Shun-shin et al combined the results of a total of 799 cases and showed an overall success rate of 91% for primary external dacryocystorhinostomy which is in accordance with this study.[15] Kumar Rashmi et al had 94.79% overall surgical success of external dacryocystorhinostomy with flaps.

Surgical success rate in our study was assessed with the status of epiphora and lacrimal syringing done at 1^{st} day, 7^{th} day, 1month, 3months, 6 months intervals respectively and the ultimate success rate at 6 months was 92.3%. Response to tissue healing process of individual is also an important factor for a successful dacryocystorhinostomy surgery.[17]

Limitations of our study was that it was hospital based study with bias in patient selection with small sample size as it was a surgical based and the period of the study was short also the follow up of the patients were poor.

5. Conclusion

Flapless external DCR is a good and safe surgical technique for the primary nasolacrimal duct obstruction or chronic dacryocystitis in adults. It is easy to master and is an effective surgical procedure with minimal time investment to relieving watering i.e. epiphora without any much intraoperative and post-operative complications.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Cite this article: Das PJ, Deka B, Das RK, Baruah A, Deka D, Das T. To evaluate the outcome of external dacryocystorhinostomy without flaps in the cases of adult chronic dacryocystitis. *Indian J Clin Exp Ophthalmol* 2024;10(3):521-524.