

AN ANALYSIS OF PATIENTS WITH CHRONIC DACRYOCYSTITIS

Tariq Farooq Babar, Muhammad Zubair Masud, Nasir Saeed, Muhammad Daud Khan

*Department of Ophthalmology,
Khyber Institute of Ophthalmic Medical Sciences,
Hayatabad Medical Complex, Peshawar.*

ABSTRACT

Objective: The purpose of to study was two fold. Firstly, to study the numbers and demographic patterns of patients presenting with chronic dacryocystitis and to study its different presentations. Secondly, to determine in children and adults the indications for simple dacryocystorhinostomy, dacryocystorhinostomy with intubation, dacryocystectomy and canaliculo-dacryocystorhinostomy.

Material and Methods: It was a hospital based retrospective case study. We analysed 341 eyes of 313 patients who were suffering from chronic dacryocystitis and were admitted to Khyber Institute of Ophthalmic Medical Sciences, Peshawar, during the period of December 2000 and November 2002.

Results: The total numbers of admissions during the period were 6210, thus the patients with chronic dacryocystitis constituted 5.47% of the total admission. The most common age at presentation was over 61 years in 98 cases (31.30%), following by 93 cases (29.71%) between age 40 and 60 years. Females were affected more often than males in 191 cases (61.02%) vs 122 cases (38.97%). Surgery was required on the left side in 159 eyes (46.62%), right side in 154 eyes (45.16%) and bilateral in 28 cases (8.22%). Duration of epiphora was less than one year in 154 eyes (45.01%). The most common presentation was epiphora in 246 eyes (72.14%), followed by mucocoele in 42 eyes (12.31%) and acute on chronic dacryocystitis in 32 eyes (9.38%). The most common indication for surgery was involuntional stenosis in 271 eyes (79.47%), followed by congenital nasolacrimal duct obstruction in 61 eyes (17.88%). In adults, simple dacryocystorhinostomy was done in 230 eyes (67.44%) and dacryocystorhinostomy with silicone intubation in 44 eyes (12.90%). Intubation was done in cases of post-traumatic obstruction and in cases with history of failed dacryocystorhinostomies. Dacryocystectomy was required in 5 eyes (1.46%) and canaliculo-dacryocystorhinostomy in one eye (0.29%). In children upto 16 years, dacryocystorhinostomies were performed in 61 eyes

(17.88%), in 40 eyes (10.11%) with silicone intubation and in 21 eyes (7.77%) without intubation. Females were more commonly affected than males. The most common indication for surgery was involuntal stenosis and congenital nasolacrimal duct obstruction untreated or improperly treated.

Conclusion: Dacryocystorhinostomy alone was the most common operation performed for chronic dacryocystitis.

Key words: Chronic Dacryocystitis, Dacryocystorhinostomy, Dacryocystectomy, Canaliculo-dacryocystorhinostomy.

INTRODUCTION

Dacryocystitis is defined as infection of the lacrimal sac. It is normally unilateral and secondary to obstruction of the nasolacrimal duct. It is most common in persons over 40 years of age, especially post-menopausal women.

Dacryocystitis usually presents in three forms: acute, chronic and congenital. Acute dacryocystitis usually results from infection by staphylococcus aureus or beta haemolytic streptococcus. Presentation is with epiphora, swelling and redness at the inner canthus of the eye. If untreated, the infection may spread to surrounding tissues and can cause preseptal or orbital cellulitis or abscess formation. Systemic antibiotics are usually effective and ultimately surgery may be required. In the chronic form, the disease tends to be indolent and non-dramatic, causing tearing and mild chronic or recurrent conjunctivitis. Pressure over the sac may produce reflux of mucopurulent material from the punctum. Mucocoele is usually formed. Treatment is usually surgical. Congenital dacryocystitis can present as epiphora with mucopurulent discharge since early infancy. If not treated promptly, it may lead to orbital cellulitis or even brain abscess and meningitis. The treatment options include lacrimal sac massage, warm compresses, topical or oral antibiotics, probing, stunts, and dacryocystorhinostomy with or without intubation¹.

The objective of our study were four fold:

- a) To study the demographic pattern of the disease.
- b) To assess the different presentations of chronic dacryocystitis.
- c) To study the indications for dacryocystorhinostomy with or without intubation, dacryocystectomy and canaliculo-dacryocystorhinostomy in adults.
- d) To study the indications for dacryocystorhinostomy with or without intubation in childhood.

MATERIAL AND METHODS

All patients admitted to Khyber Institute of Ophthalmic Medical Sciences during the period of December, 2000 and November, 2002 were recruited in the study. We reviewed the history charts of all patients admitted with chronic dacryocystitis. We retrieved all the relevant data from the notes, including history, visual acuity (aided and unaided), anterior and posterior segment findings.

A note was made for the presence of mucocoele, pyocoele, attack of acute on chronic dacryocystitis, lacrimal fistula, preseptal or orbital cellulitis, meningitis or signs of trauma to the lacrimal system. Any

special test done for patency of lacrimal system was reviewed. Indications for dacryocystorhinostomy with or without intubation, dacryocystectomy and canaliculo dacryocysto-rhinostomy were especially looked for.

RESULTS

We examined data obtained from history charts of 341 eyes of 313 patients admitted with the diagnosis of chronic dacryocystitis during the period of December, 2000 to November, 2002. We found that patients with more than 61 years of age {98 patients (31.30%) were most commonly affected. It was followed by 93 patients (29.71%) between ages 40 and 60 years. Females were more often affected than males {191 patients (61.02%) vs 122 patients (38.97%) (Fig. No. 1).

Surgery was required on the left side in 159 eyes (46.62%), right side in 154 eyes (45.16%) and both eyes in 28 cases (8.21%). The duration of epiphora ranged from less than one year in 154 eyes (45.01%) and between 2 and 5 years in 147 eyes (43.10%) (Fig No. 2). The most common presentation was epiphora in 246 eyes (72.14%) followed by mucocoele in 42 eyes (12.31%) and acute on chronic dacryocystitis in 32 eyes (9.38%) (Table No. 1). The most common indication for surgical intervention was age-related involutional stenosis of the nasolacrimal

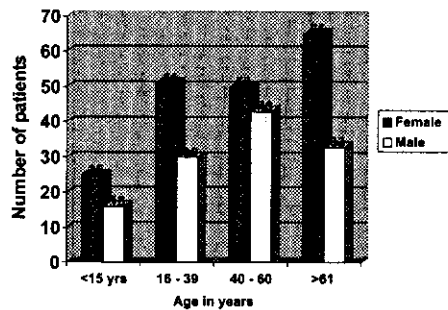


Fig. 1. Age and sex distribution

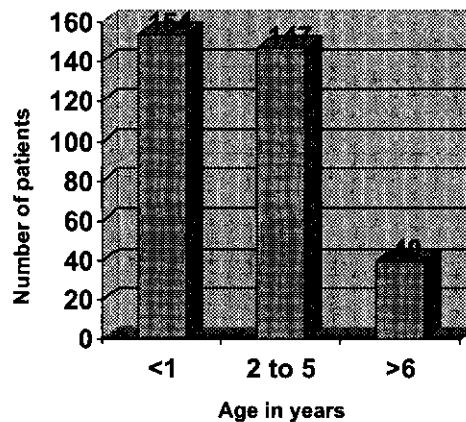


Fig. 2. Duration of Chronic Dacryocystitis

drainage system in 271 eyes (79.47%). It was followed by congenital nasolacrimal duct obstruction in 61 eyes (17.88%) (Table No. 2).

No special test like dacryocystography or macrodacryocystography were done.

In adults, dacryocystorhinostomy alone was done in 230 eyes (67.44%). It was followed by dacryocystorhinostomy with silicone intubation in 44 eyes (12.90%) which included cases with posttraumatic lacrimal obstruction in 8 eyes (2.34%), post-inflammatory scarring in one eye (0.29%) and failed dacryocystorhinostomies in 35 eyes (10.26%).

PRESENTATION OF CHRONIC DACRYOCYSTITIS

Presenting features	No. of eyes	%
Epiphora (watering)	246	72.14
Mucocoele	42	12.31
Acute on chronic dacryocystitis	32	9.38
Corneal ulcer	18	5.27
Pyocoele	2	0.58
Panophthalmitis	1	0.29
Total	341	100

TABLE - 1

INDICATIONS FOR SURGERY

Aetiology	No. of eyes	%
Involuntal stenosis	271	79.47
Traumatic lacrimal stenosis	8	2.34
Postinflammatory lacrimal scarring due to Hodgkin's disease	1	0.92
Congenital nasolacrimal duct obstruction	61	17.88
Total	341	100

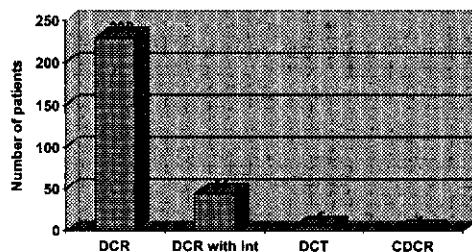
TABLE - 2

Dacryocystectomy was carried in 5 eyes (1.46%) and canaliculo-dacryocystorhinostomy in one eye (0.29%) (Fig No. 3). Regarding children of less than 16 years old, dacryocystorhinostomies were done in 61 eyes (17.88%). Forty eyes (10.11%) were treated with intubation, while the remaining 21 eyes (7.77%) were not intubated.

DISCUSSION

Dacryocystitis is defined as inflammation of the lacrimal sac usually caused by some kind of obstruction in the nasolacrimal duct. The condition is commonly seen in infants and people over 40 years of age.

There are two types of acquired nasolacrimal duct obstructions, primary or sec-



DCR = Dacryocystorhinostomy, DCR with Int = Dacryocystorhinostomy with silicone intubation, DCT = Dacryocystectomy, CDCR = Canaliculo-dacryocystorhinostomy.

Fig. 3. Surgical techniques in adults

ondary. The primary acquired nasolacrimal duct obstruction (PANDO) is the one in which there is nasolacrimal duct obstruction caused by inflammation without any known cause, whereas secondary acquired lacrimal drainage obstruction (SALDO) is that entity in which there is a known cause of inflammation or fibrosis. The causes may be infectious, inflammatory, neoplastic, traumatic, or mechanical^{2 and 3}.

Dacryocystitis usually involve one eye but can be bilateral. The symptoms of acute dacryocystitis include pain, erythema and oedema over lacrimal sac area. More serious sequelae are lid abscess, orbital cellulitis, blindness, cavernous sinus thrombosis, and death. Chronic dacryocystitis present with chronic tearing, chronic or recurrent conjunctival inflammation and infection while congenital dacryocystitis can be indolent or present with chronic tearing and discharge. It can also lead to and thus present as orbital cellulitis, brain abscess, and meningitis.

Regarding race, blacks rarely develop dacryocystitis because of their large nasolacrimal ostium into the nose. Moreover, the lacrimal canal is shorter and straighter in blacks as compared to Caucasian. Most recent reports demonstrate that 70-83% of cases of dacryocystitis occur in females as compared to males. Congenital dacryocystitis occurs with equal frequency in both sexes. Nasolacrimal sac infections and inflammations commonly occur in two distinct age groups, infants and adults over 40 years. Acute dacryocystitis in newborns is rare, occurring in less than 1% of all newborns. Acquired dacryocystitis is primarily a disease of female gender and is most common in patients older than 40 years, with a peak incidence in patients aged 60-70 years⁴.

In our study 31.30% patients were over 60 years old. A mean age of 60.7 years (range, 21-93 years) has been reported by Lee-wing and Ashenurst² and Mortimore and Banhegyi⁵.

In our study 61.02% were female. Similar female preponderance has been reported in other studies by Mortimore and Banhegyi⁵ and O'Donnell and Shah⁶. This higher incidence of chronic dacryocystitis due to acquired nasolacrimal duct obstruction in the middle aged and elderly females could be due to significantly smaller dimensions in the lower nasolacrimal fossa and middle nasolacrimal duct. These changes in the anteroposterior dimensions of the bony nasolacrimal canal coincide with the osteoporotic changes occurring in the middle-aged females. Moreover, menstrual and hormonal fluctuations and a heightened immune system are factors that may contribute to the disease process. Hormonal changes that bring about a generalized de-epithelization in the body may cause the same within the lacrimal sac and duct. An already narrow lacrimal fossa in women predispose them to obstruction by the sloughing off of the debris³.

In our study, surgery was offered on the left side in 46.02%, on the right side in 45.16% and bilateral in 8.21% of cases. In the series of 13 patients of Mortimore⁵, left sided dacryocystorhinostomy was done in 8 cases, right side in 3 cases and bilateral in 2 cases.

The duration of epiphora was on an average between 1 year and 5 year in 43.10% of our cases. Prolonged duration of symptoms is also reported by Mortimore⁵ with an average of 36.6% months.

Epiphora was the most common presentation of chronic dacryocystitis in our series and occurred in 246 eyes (72.14%). It was followed by mucocoele formation in 42 eyes (12.31%) and acute on chronic dacryocystitis in 32 eyes (9.38%). Moreover, the presentation can be subtle and diagnosis made only on routine clinical examination. Persistent epiphora may on the other hand cause decreased visual acuity due to increased tear film on the surface of the eye, corneal

ulceration which may end up in corneal perforation and lead to endophthalmitis or panophthalmitis⁴.

The most common indication for surgery is idiopathic involutonal stenosis of the nasolacrimal drainage system and in majority the cause is not known. In our series 271 eyes (79.47%) had involutonal stenosis, 61 eyes (17.88%) had congenital nasolacrimal duct obstruction, 8 eyes (2.34%) had traumatic lacrimal stenosis and one eye (0.29%) had lacrimal scarring due to involvement of Hodgkin's disease. Emmerich and Busse reported in their retrospective study that 60% of their patients had recurrent chronic dacryocystitis, 32% had acute dacryocystitis, 7% had facial trauma and less than 1% had tumour⁷.

The aetiology of congenital nasolacrimal duct obstruction is still not clear but three theories are well established i.e, incomplete canalization of the nasolacrimal duct (at the valve of Hasner), neonatal infection and factors other than developmental ones may play a role in its pathophysiology⁸. Trauma may be iatrogenic and non-iatrogenic. Iatrogenic trauma occurs in the case of scarring of the lacrimal passage after aggressive probing, orbital decompression surgery and paranasal, nasal or craniofacial procedures. Noniatrogenic traumatic causes include trauma with either blunt or sharp objects and can involve the canaliculi, lacrimal sac and nasolacrimal duct⁹. Tucker and et al¹⁰ made a clinicopathologic review of 150 patients having clinical suspicion of primary acquired nasolacrimal duct obstruction. He found that 147 patients (98%) had histopathologic findings consistent with inflammation of the lacrimal sac. In the remaining three cases, one had sarcoid granuloma, the other had oncocyoma and the last one had lymphoma. Thus the incidence of significant pathology in the lacrimal sac in clinically suspected primary acquired nasolacrimal duct obstruction is very low.

In our study 230 eyes (67.44%) having age-related involutional stenosis of nasolacrimal duct underwent dacryocystorhinostomy without intubation. The most common complication following dacryocystorhinostomy was intraoperative bleeding in 59 eyes (17.30%) and postoperative bleeding requiring nasal packing in 24 eyes (7.30%). There is some controversy regarding the use of stenting for dacryocystorhinostomy. Those who advocate its use report an increased patency rate, due to maintenance of the ostium of the lacrimal sac into the middle meatus and correction of presacal stenosis¹¹. Allan and Berlin, reported a higher failure rate when using silicone tubing. A reason put forward for this was the presence of granulomatous inflammation in association with silicone intubation¹². Emmerich and et al⁷ obtained data on 1014 patients having external dacryocystorhinostomy as their primary procedure for their dacryostenosis. The functional success rate was 85% in a postoperative follow up period of 1-11 years. No serious intra or postoperative complications were seen. Dacryocystorhinostomy (DCR) for the treatment of nasolacrimal duct obstruction, was first described via an external approach by Toti in 1904¹¹. The first intranasal DCR was described by Caldwell in 1893¹³. In 1989, Mc Donogh and Meiring¹⁴ described in detail the endoscopic transnasal DCR. Modifications have been described using the Holmium: YAG, argon, carbon dioxide and KTP laser^{13and15}. A transcannalicular approach with the Neodymium: YAG laser has also been described¹⁶.

In our series, 44 eyes (12.90%) underwent dacryocystorhinostomy with silicone intubation. There was history of trauma with canalicular stenosis in 2.34%, Hodgkin's disease in 0.29% and failed dacryocystorhinostomy in 10.26%. Korporowicz¹⁷ published his findings on 30 operations and suggested that the results of temporary intubation of lacrimal canaliculi with simultaneous dacryocystorhinostomy are far more superior in

patients with history of trauma or inflammation in the lacrimal drainage pathways. According to Onerci, dacryocystorhinostomy with silicone intubation may be used routinely for two months to have better results, but no longer than 3 months to avoid complications. Silicone intubation is recommended in canalicular stenosis whether traumatic or postinflammatory, scarred lacrimal sacs and in re-operations due to failed dacryocystorhinostomies¹⁸.

The main indication for dacryocystectomy is excision of lacrimal sac tumours. Five eyes (1.46%) of our cases had dacryocystectomy. They all were very old and frail. They were having recurrent chronic dacryocystitis, and 0.58% had history of failed dacryocysto-rhinostomies. In a similar study by Boynton and Anawis¹⁹, three patients underwent dacryocystectomy. These patients were cured of dacryocystitis after surgery and none had epiphora postoperatively. Thus, there may be a group of patients with dry eyes and chronic dacryocystitis. Such patients may respond well to dacryocystectomy.

Only one eye (0.29%) underwent canaliculo-dacryocystorhinostomy with intubation following unsuccessful lacrimal surgery. There was a lower canalicular obstruction with 8mm of patent normal canaliculus between the punctum and obstruction. Dacryocystography is helpful in determining which patients are amenable to this treatment modality. Success rates are encouraging²⁰.

In our study 61 eyes (17.88%) were children under 16 years of age. Forty eyes (10.11%) had dacryocystorhinostomy with silicone intubation and 21 eyes (7.77%) had dacryocystorhinostomy alone. They all had previous courses of failed hydrostatic massage with topical antibiotics and two or three failed probings. They all had comparable surgical results. In a study by Eric, Yassir and Geoffrey²¹, external DCR for primary nasolacrimal duct obstruction in children had

a high (96%) cure rate. The high success rate of DCR without silicone intubation suggests that routine intubation in children is probably not necessary.

CONCLUSION

Dacryocystitis due to nasolacrimal duct obstruction is more common in patients over 60 years of age. Females are usually more commonly affected. Duration of epiphora is usually beyond one year in the majority of patients.

Involitional stenosis of nasolacrimal duct obstruction and congenital nasolacrimal duct obstruction are the commonest indications for dacryocysto-rhinostomy with and without silicone intubation. Failed dacryocystorhinostomy usually requires re-surgery and often needs intubation.

Chronic dacryocystitis requires proper treatment and identification of the site of obstruction. Surgery is often required to avoid complications. Routine intubation is usually not advisable.

In order to reduce the number of children requiring dacryocystorhinostomy, we need to improve the management of congenital obstruction of nasolacrimal duct.

For further improvement in the outcome of dacryocystorhinostomy and in order to reduce the incidence of failed dacryocystorhinostomy, we need to further enhance the surgical skills of our surgeons and also further refine the technique.

REFERENCES

1. Collin JRO, Welham RAN. A manual of systematic eyelid surgery. 2nd ed 1989; 109-19.
2. Lee-Wing MW, Ashenurst ME. Clinico-pathologic analysis of 166 patients with primary acquired nasolacrimal duct obstruction. *Ophthalmology* 2001; 108: 2038-40.
3. Camara JG. Nasolacrimal duct obstruction: e-medicine (medline) 2002; 1-13.
4. Gilliland GG. Dacryocystitis: e-medicine (medline) 2002; 1-24.
5. Mortimore S, Banhegyi GY, Lancaster JL et al. Endoscopic dacryocystorhinostomy without silicone stenting. *J R Coll Surg Edinb*. 1999; 44: 371-3.
6. O' Donnell B, Shah R. Dacryocystorhinostomy for epiphora in the presence of a patent lacrimal system. *Clin Experiment Ophthalmol* 2001; 29: 27-9.
7. Emmerich KH, Busse H, Meyer, et al. Dacryocystorhinostomia externa. Technique, indications and results. *Ophthalmology* 1994; 91: 395-8.
8. Bareja U, Ghose S. Clinico-bacteriological correlates of congenital dacryocystitis. *Indian Ophthalmol* 1990; 38: 66-9.
9. Bartley GB. Acquired lacrimal drainage obstruction: an etiologic classification system, cases reports and a review of the literature. Part 1. *Ophthal Plast Reconstr Surg* 1992; 8: 237-42.
10. Tucker N, Chow D, Stockl F, et al. Clinically suspected primary acquired nasolacrimal duct obstruction: Clinico-pathologic review of 150 patients. *Ophthalmology* 1997; 104: 1882-6.
11. Griffiths JD. Nasal catheter use in dacryocystorhinostomy. *Ophthal Plast Reconstr Surg* 1991; 7: 177-86.
12. Anderson RL, Edwards JJ. Indications, complications and results with silicone stents. *Ophthalmology* 1979; 86: 1474-87.
13. Metson R, Woog JJ, Puliafito CA. Endoscopic laser dacryocystorhinostomy. *Laryngoscope* 1994; 104 (3 Pt 1): 269-74.
14. Mc Donogh M, Meiring JH. Endoscopic transnasal dacryocystorhinostomy. *J Laryngol Otol* 1989; 103: 587-9.
15. Massaro BM, Gonnering RS, Harris GI. Endonasal laser dacryocystorhinostomy. A

- new approach to nasolacrimal duct obstruction. *Arch Ophthalmol* 1990; 108: 1172-6.
16. Patel BC, Phillips B, Mc Leigh WM, et al. Trans canalicular Neodymium: YAG laser for revision of dacryocystorhinostomy. *Ophthalmology* 1997; 104: 1191-7.
17. Korporowicz D, Nowak A. Estimation dacryocystorhinostomy with temporary intubation of lacrimal canaliculi. *Klin Oczna* 2002; 104: 112-4.
18. Oneci M. Dacryocystorhinostomy. Diagnosis and treatment of nasolacrimal canal obstructions. *Rhinology* 2002; 40: 49-65.
19. Boynton JR, Anawis MA. Role of dacryocystectomy in the management of failed dacryocystorhinostomy associated with chronic dacryocystitis. *Ophthalmic Surg Lasers* 1996; 27: 133-6.
20. Doucet TW, Hurwitz JJ. Canaliculo-dacryocystorhinostomy in the management of unsuccessful lacrimal surgery. *Arch Ophthalmol* 1982; 100: 619-22.
21. Eric AB, Yassir AR, Geoffrey E. R. Paediatric dacryocystorhinostomy for nasolacrimal duct obstruction. *Ophthalmology* 2001; 108: 1562-4.

Address for Correspondence:

Dr. Tariq Farooq Babar,
Assistant Professor,
Department of Ophthalmology,
Khyber Institute of Ophthalmic Medical Sciences,
Hayatabad Medical Complex, Peshawar.