·Clinical Research·

Anterior single flap external dacryocystorhinostomy: outcome in 200 Sudanese patients

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Abstract

• AIM: To present the outcome of anterior single flap external dacryocystorhinostomy (DCR) in Sudanese patients.

• METHODS: The data of 200 consecutive patients were retrospectively analyzed, who had anterior single flap external DCR with a minimum of one year follow-up. The surgeries were performed by the same surgeon (the first author) and patients were followed up for one year postoperatively. Presence of epiphora at the end of one year and no response to syringing and probing was considered failure.

• RESULTS: The mean age of the study sample was 29.7 years (ranged 4-65 years). The ratio of male to female was 1:2. The success rate was 98%. Failure was reported in 4 patients, two of them were traumatic cases with preexisting orbital disfigurement.

• CONCLUSION: This study adds on to the evidence of the usefulness of anterior single flap DCR. Although it is simpler and easier to master the technique, this procedure showed a success rate comparable to that of the conventional method in literature.

• KEYWORDS: dacryocystorhinostomy; external; surgical technique; success rate

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INTRODUCTION

Nasolacrimal duct obstruction (NLDO) is one of the commonest diseases affecting the lacrimal drainage system. Persistent tearing, mucous or mucopurulent discharge from the lacrimal puncta, chronic conjunctivitis and swelling of the lacrimal sac in the medial canthal area (acute or chronic dacryocystitis) are the symptoms that patients may experience due to NLDO[1,2].

Surgical treatment of NLDO is dacryocystorhinostomy (DCR). There are different techniques of performing DCR operation. In principle, DCR is the removal of the bone lying between the tear sac and the nose, and making an anastomosis between medial wall of the sac and nasal mucosa.

Despite satisfactory results reported with several alternative techniques such as nasolacrimal duct intubation [3-5], endoscopic[6,7] or non-endoscopic endonasal DCR[8], and endonasal or transcanalicular laser DCR [9], external DCR remains the method of choice for most oculoplastic surgeons[10,11].

Anterior single flap DCR technique was reported with favorable results in the literature[12-16]. This study presents the surgical outcome and complications encountered with this technique in 200 consecutive patients in our centre.

PATIENTS AND METHODS

Patient Selection The clinical records of patients, who underwent anterior single flap external DCR performed by the first author at Khartoum Teaching Eye Hospital and Walidain Eye Hospital since April 1998, were analyzed retrospectively. Consecutive 200 cases were included in the study. Patients whose records were complete with preoperative, intraoperative and postoperative data, and who were seen on the 2nd and 7th postoperative days and followed up at least 12 months postoperatively were included in the study.

Surgical Technique The procedure could be carried out conveniently using general or local anesthesia. In this study, 32 operations were performed under general anesthesia, and the rest were done under local anesthesia. Topical anesthetic with decongestant was routinely applied to the nasal mucosa prior to the surgery. Diluted adrenaline was injected in and around the area of the lacrimal sac after informing the anesthetist. A vertical 10mm incision, 2mm nasal to and centered by medial canthus was made. Orbicularis fibers

were separated bluntly to expose the medial palpebral (canthal) ligament. The ligament was followed nasally to its attachment to the anterior lacrimal crest. The periosteum was vertically incised (10mm) just anterior to the lacrimal crest; then elevated using Traquair's elevator from the whole lacrimal fossa reaching the posterior lacrimal crest and including the sac within it. Through the same elevator, the suture between the lacrimal bone and frontal process of the maxilla or that between the ethmoid and lacrimal bone was separated. The nasal mucosa was then pushed by the elevator to separate it from the bone.

The opening was enlarged with bone punches to make a rhinostomy about 15mm in diameter (including the whole floor of the fossa). A "U" shaped incision was made in the elevated periosteum and sac to make the anterior flap of the sac. Nasal mucosa behind the rhinostomy was cut. The anterior flap was then sutured with Vicryl 6/0 to the margin of the periosteal cut near the anterior lacrimal crest. The skin was then closed with 6/0 black silk. Light bandage was put on the wound and the nasal pack was removed. Skin sutures were taken out 5-7 days after the surgery. Probing and syringing were attempted if epiphora occurs postoperatively. Absence of epiphora at the end of one year follow-up without the need for further surgical intervention was considered a success.

RESULTS

The mean age in the study was 29.7 years (ranged 4-65 years). The ratio of male to female was 1:2 (Table 1). The majority of patients (89%) were younger than 50 years of age. Review of complications demonstrates that only 7 cases had intraoperative hemorrhage more than 100cc, while 193 experienced less hemorrhage. Two patients had early postoprative hemorrhage in the form of epistaxis which stopped without need for nasal repacking. Another two patients had orbital hemorrhage without seriously elevating the intraocular pressure.

There was no case of orbital emphysema, cerebrospinal fluid (CSF) leakage or wound sepsis in our study. Three cases had disfigured scars in the shape of epicanthus fold. Ten patients had postoperative epiphora in varying degrees. Probing and syringing was done for cases of epiphora, which led to cessation of symptoms in six of them leaving only four patients with persistent epiphora or failed DCR. The success rate of surgical procedure used in this study was 98%.

Table 1 Age and gender distribution

Age group	Males		Females		Total	
	No.	%	No.	%	No.	%
1-10	10	5.0	9	4.5	19	9.5
11-20	16	8.0	32	16.0	48	24.0
21-30	15	7.5	36	18.0	51	25.5
31-40	8	4.0	15	7.5	23	11.5
41-50	11	5.5	26	13.0	37	18.5
51-60	5	2.5	13	6.5	18	9.0
61-70	04	2.0	0	0	04	2.0
Total	69	34.5	131	65.5	200	100

DISCUSSION

Age and gender distribution of patients in this study generally complies with figures in literature. The surgical outcome of single flap DCR in this study showed minimal complications. In the three cases with disfigured scars, intraoperative inadvertent extension of the skin incision was made. Epiphora was resolvable by simple probing and syringing. Persistent epiphora or failure of DCR is documented in only four cases; two of them were traumatic cases with distorted bone anatomy. The success rate is comparable with best results reported in previous studies using different flap designs.

Possible postoperative complications of DCR include hemorrhage, wound sepsis, surgical emphysema, CSF leakage and recurrence of epiphora [17]. Occlusion of the new tract, either by granulation tissue or by adhesions, is a drawback of DCR. This complication was evident in only two patients in this study. It has been widely suggested that creation and suturing of both anterior and posterior mucosal flaps increase the possibility of primary healing of the new tract and reduce the mucosal scarring, complying with the general surgical principle of edge-to-edge approximation of tissues [9-22]. Although a sutured anastomosis of both anterior and posterior mucosal flaps appears to better achieve this goal, alternative techniques of external DCR with variations in the mucosal flap design have been described and success rates have been reported to be comparably high [10-14]. However, there are only few randomized studies comparing the outcomes of DCR performed with different mucosal flap designs [15-18].

On the other hand, suturing the posterior flaps often constitutes a difficulty and may take a considerable amount of time, particularly in the presence of hemorrhage in DCR surgery.

Several options have been described for management of the posterior flaps. The posterior flaps can be anastomosed, excised, or not fashioned at all. A study by Elwan [16] found statistically similar success rates by the end of a mean follow-up period of 11 months when comparing excision of

the posterior flaps to posterior flaps not be fashioned at all.

In this study, only anterior single flap is sutured to the margin of periosteum at the anterior lacrimal crest. The U-shaped configuration of the created flap allows easier suturing of sac and periosteal flaps.

Although it is simpler and easier to master the surgical technique, anterior single flap DCR shows a success rate comparable to that obtained by the more complex conventional DCR. This gives this procedure an advantage over the conventional one. However, a randomized trial is needed to statistically compare between the two procedures and validate this conclusion.

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