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SURGICAL SUCCESS AND PATIENT SATISFACTION ANALYSIS IN DOING ENDONASAL AND EXTERNAL ENDOSCOPIC DACRYOCYSTORHINOSTOMY DURING MANAGEMENT OF PRIMARY ACQUIRED NASOLACRIMAL DUCT OBSTRUCTION

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ABSTRACT
This study aimed to analyze and compare between surgical success and patient satisfaction in doing external dacryocystorhinostomy and endonasal endoscopic dacryocystorhinostomy for managing primary acquired nasolacrimal duct obstruction at Al-Karama Teaching Hospital in Baghdad / Iraq. In this hospital-based prospective, comparative, nonrandomized, interventional study, a total of (50) patients, 25 patients in external DCR group and 25 patients in endoscopic DCR group, diagnosed as primary nasolacrimal duct obstruction (PANDO) who were meeting inclusion criteria were enrolled during the period from 1st June 2015 to 30th May 2016 with additional 6 months and consecutive 6 months follow up for all patients. Postoperative symptomatic improvement and patency of lacrimal passage on syringing were analyzed in each follow up. The success was defined by both symptomatic improvement and patent lacrimal passage on syringing at 6 months after surgery. Intraoperative and postoperative complications were also evaluated. Patient satisfaction and quality of life were analyzed using Glasgow Benefit Inventory Questionnaire. Results showed that mean age of presentation in external DCR was 46.7±15.1 SD (range, 22-66 years) whereas in endoscopic DCR group it was 30.9 ± 10.8 SD (range, 17-49 years). Female preponderance was seen in both groups (F: M=20:5 in Ex-DCR group and 18:7 in En-DCR). Overall, success rate is 94.0% (n=47 out of 50) was demonstrated. Intergroup success rate was almost similar in both groups (Ex-DCR 24/25, 96.0% and En DCR 23/25, 92.0% with p value>0.05). The mean total score from GBI was 45.4±11.1 (95% CI, 21.2-74.0) and 63.2±17.1 (95% CI, 20.1-85.2) in Ex-DCR and En-DCR groups respectively, with P value<0.001. The mean general subscale score was 44.90±14.1(95% CI, 12.9-69.8) in Ex-DCR group and 64.9±17.2 (95% CI, 14.1-87.1) in En-DCR group with P-value<0.001. Social support subscale was 44.9±10.9 95 CI, 1-65.2) in Ex-DCR and 48.1±17.9 (95% CI, 1-75.2) in En-DCR group with p-value=0.276. Physical health subscale score was 57.1±16.1 (95% CI, 51-100) in Ex-DCR group and 73.8±19.9 (95% CI.-60-100) in En-DCR with p-value<0.001. The commonest intraoperative and post-operative complication was bleeding in both groups. It can be concluded from this study that surgical success rate is almost comparable in both groups. Endoscopic DCR was found to have better patient satisfaction compared to external DCR.

KEYWORDS: External dacryocystorhinostomy; Endonasal dacryocystorhinostomy; success; failure; complication.

INTRODUCTION
Under normal circumstances, the quantity of tears secreted should equal the quantity eliminated.[1] Epiphora, an overflow of tears from the eye due to imperfect drainage through the lacrimal passage, is a common annoying symptom, embarrassing the patient both socially and functionally. Nasolacrimal duct obstruction (NLDO), being one of the commonest causes of epiphora, occurs mostly at junction of lacrimal sac and nasolacrimal duct or within the bony nasolacrimal duct. Chronic inflammation leading to fibrosis and stricture is the commonest reason for the block. Retention of mucoid secretion and tears within the sac lead to frequent, recurrent inflammation and infection known as dacryocystitis.[2] Dacryocystorhinostomy (DCR) is the definitive treatment for nasolacrimal duct obstruction (NLDO). It restores patency to the lacrimal outflow system and may be performed using an external or

endonasal approach. External DCR (EX-DCR) surgery was first described by Toti in 1904 and further refined in 1920 Dupuy-Dutemps and Bourget. The external DCR has remained largely unchanged since and has remained the gold standard in regard to its high success rates, rapid primary intention healing due to the suturing of mucosal (laps, and low equipment costs.[3] The presence of a cutaneous scar, potential for injury to medial canthal structures, orbicularis oculi and functional interferences with the physiological action of lacrimal pump are few disadvantages of this procedure.

The endonasal approach was introduced in 1893 by Caldwell and modified by West in 1910 and Halle in 1914. With advent of nasal endoscope by Stammberger in 1986 and functional endoscopic sinus surgery in early 1990s, there was renewed interest in endonasal DCR. In 1989, McDonough and Meiring pioneered the use of rigid endoscopes in DCR surgery, vastly improving endonasal visualization[4], Advancement of endoscopic endonasal DCR (EE-DCR) results in limited invasiveness, less intra-operative bleeding, reduced operative time, preservation of pump function of the orbicularis oculi muscle, lack of external scar in face, shorter postoperative recovery and low complication rate. It also allows one stage procedure to correct associated nasal pathology and can be performed in cases of acute dacryocystitis. Disadvantages of this technique include lower reported success rates, the need for additional endoscopic surgical training, and higher equipment requirements and costs associated with the procedure.[5-7]

PATIENTS AND METHODS

After obtaining approval from institutional review board of hospital, patients fulfilling inclusion criteria were divided into two groups, group 1 (Ex-DCR) and group 2 (En-DCR) in convenient sampling technique. Patients with previous DCR surgery done elsewhere, eyelid anomaly or abnormality, canalicular or common canalicular obstruction, congenital NLDO, suspected malignancy of lacrimal system, acute lacrimal passage inflammation (e.g. canaliculus, acute dacryocystitis, lacrimal abscess), history of radiation therapy, post-traumatic cases, lacrimal pump failure and partial NLDO, and those who missed any stage of follow-up till up to postoperative 6 months were excluded from the present study. Detailed record of each patient included patient's demographic profile, ocular history, pre¬operative work up comprising of complete ocular and nasal cavity examination. The choice of type of surgery (Ex-DCR or En-DCR) was based on patients preference. Surgical outcomes were determined at six-month follow-up. Surgical success was defined by patient's resolution of symptoms with patency on irrigation at six months after surgery. Surgical failure was defined as no symptomatic reduction in epiphora and/or an inability to irrigate the lacrimal system postoperatively at six months after surgery.[8] Dye disappearance test was done 6 months after surgery. Wound scar in case of external DCR was noted. Patient satisfaction and quality of life were evaluated based on a standardized questionnaire (Glasgow Benefit Inventory, GBI).[9] An interview based on GBI questionnaire was taken from each post¬operative case from both groups on six-month follow-up. The GBI contains 18 changes in health status questions which assess how the intervention has altered the quality of life of the person. The response to each question was based on a five-point Likert scale ranging from a large deterioration in health status through to a large improvement in health status. The GBI questionnaire was scored into a total score and also 3 subscales: -a general subscale, (12 questions), a social support subscale, (3 questions), and a physical health subscale, (3 questions). All these scores ranged from -100 to +100. A score of 1 is given to the answer with the worst change in health status and 5 to the answer with the best change in health status. Total score, the general subscale score, Social support score and physical health scores were calculated for each case by using the following method.

Statistical analysis

Data analysis were performed using SSPS software version 21 to compare the numerical variables. Chi-square (x2), Mann Whitney test and Fischers exact test (FT) were performed wherever applicable. P value<0.05 was considered statistically significant.

RESULTS

A total of 50 patients were enrolled in the study, which showed that NLD obstruction is more common with age group 26-45 years. Female constituted 80% and male 20% with male: female ratio of 4:1. In Ex-DCR group, there were total 25 patients (F:M=3.5:1), in En-DCR group total 25 patients (F:M=4:1). This intergroup gender ratio difference, was statistically insignificant (p=0.56) - Mean age for Ex-DCR was 46.7±15.1 (SD), whilst mean age for En-DCR was 30.9 ± 10.8 (SD). This difference was found to be statistically significant (P<0.001). Mean total score from GBI in external DCR group was 45.4±11.1 (95% CI, 21.2-74.0), and mean general subscale score was 44.90±14.1(95% CI, 12.9-69.8), social support subscale was 44.9±10.9 95 CI, 1-65.2), physical health subscale score was 57.1±16.1 (95% CI, 51-100). Whereas in Endoscopic DCR group, mean total score from GBI was 63.2±17.1 (95% CI, 20.1-85.2), mean general subscale score was 64.9±17.2 (95% CI, 14.1-87.1), mean social support subscale score was 48.1±17.9 (95% CI, 1-75.2) and physical health subscale score was 73.8±19.9 (95% CI.-60-100). The difference in mean total score, general subscale score, and physical health score in between the two groups was statistically significant p-value<0.001, while the difference in mean social support score was statistically non significant P-value>0.05 (Table 1).

Table 1: Surgical outcomes in both groups.

GBI scoring scale	External DCR		Endonasal DCR		P value
	Mean (SD)	95% CI	Mean (SD)	95% CI	
GBI Total	45.4(11.1)	21.2-74.0	63.2(17.1)	20.1-85.2	<0.001
General score	44.9(14.1)	12.9-69.8	64.9(17.2)	14.1-87.1	<0.001
Social support	44.9(10.9)	1-65.2	48.1(17.9)	1-75.2	0.449
Physical health	57.1(16.1)	51-100	73.8(19.9)	-60-100	0.001

Overall success rate after 6 months of surgery for External DCR was 96.0% and that of Endoscopic DCR was 92.0%, while intergroup success rate was statistically non significant (P value>0.05) (table 2).

Table (2): Glasgow Benefit Inventory (GBI) Scoring.

Classification	External DCR (Group1)		Endonasal DCR (Group 2)	
	No of patients	%	No of patients	%
Surgical success	24	96.0	23	92.0
Surgical failure	1	4.0	2	8.0
Total	25	100	25	100

DISCUSSION

The current study showed that most of patients were in both age group 26-35 (25.0%) years and 36-45 years (24.5%). This indicates that acquired nasolacrimal duct obstruction is more common in middle age group. There is a declining trend towards both extremes of age. This may be due to the fact that amount of lacrimal secretion is less in extremes of ages.[10] We observed majority of the younger population preferring En-DCR over Ex-DCR. This was possibly because of the comfort of surgery, lesser hours of stay at the hospital, and devoid of ugly scar formation. Out of 50 patients, 40 (80.0%) were female and 10 (20.0%) were male and ratio was 4:1, which was similar to other studies of.[10 & 11] Surgical success in our study was 96.0% in Ex-DCR (n=24), and 92.0% in En-DCR (n=23). Cokkeser et al[5] reported the success rate of external and endoscopic DCR to be 89.8% and 88.2% respectively. Goel et al[12], in their study found full success rate of 95% and 90.9% for external DCR and endoscopic DCR respectively with no statistically significant difference, whereas partial success rate of 4.55% was found for endonasal DCR. Duwal et al.[11] in their comparative study reported surgical success rate of 94.1% and 90.3% for external and endoscopic DCR group respectively. Dasgupta et al.[13] in their comparative study reported surgical success rate of 94.54% in EX-DCR (n=52), and 91.07% in EN-DCR (n=51) which is similar to our study.

In this study, we aimed to compare patient's satisfaction in two groups using the Glasgow Benefit Inventory (GBI). From the 25 questionnaires in each group analyzed, the mean total score from the GBI in external DCR group was 45.4±11.1 (95% CI, 21.2-74.0) whereas in endoscopic DCR group was 63.2±17.1 (95% CI, 20.1-85.2). The difference of 17.8 in between external and endoscopic groups reached statistical significance p-value<0.001, suggesting that although both operations produce positive post-interventional change in health status, the difference between two procedures is statistically significant. The general subscale score in external DCR was 44.90±14.1(95% CI, 12.9-69.8), whereas in endoscopic DCR group was 64.9±17.2 (95% CI, 14.1-87.1), the difference in two groups was statistically significant p-value<0.001. Social support scale in external DCR group resulted in a mean of 44.9±10.9 95 CI, 1-65.2), whereas in endoscopic DCR group resulted in a mean of 48.1±17.9 (95% CI, 1-75.2) and the difference in two group was statistically not significant p-value>0.05. Similarly, physical health score in external DCR group was 57.1±16.1 (95% CI, 51-100), whereas in endoscopic DCR group was 73.8±19.9 (95% CI.-60-100), the difference between two groups is statistically significant p-value<0.001. Although both operations produce positive post interventional change in social support subscale and physical health subscale, the difference between two is not significant. In their study, Hii et al.[14] have prospectively evaluated adults treated with external or EE-DCR and analyzed patient's satisfaction with the GBI. The questionnaire was posted 6 weeks postoperatively and the mean GBI scores were +16.1 and +24.1, respectively. The difference of 8 between the scores did not reach statistical significance, suggesting that although both operations produce positive post interventional change in health status, the difference between both is negligible.

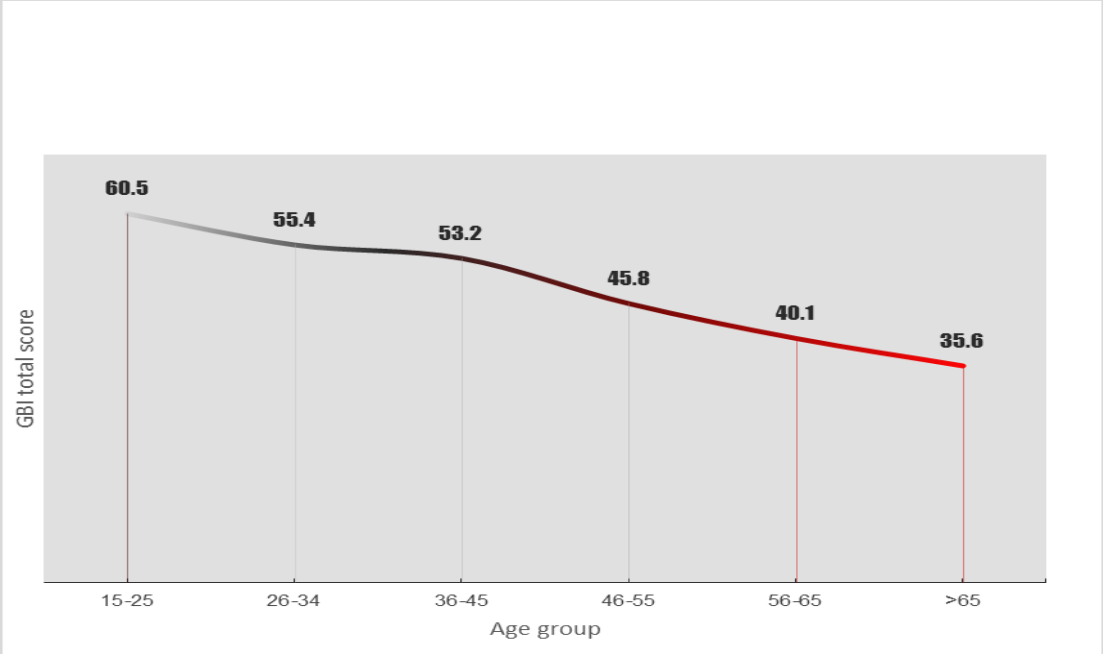

Figure (1): Mean GBI total score distribution in different age groups.

In our study, young age group 15-25 had highest mean GBI total score of 60.5 (SD 16.0) whereas in age group >65 had 35.6 (SD 8.9) (Figure 1). The younger patients had improved general perception of well-being compared with older patients. This is a consistent finding in the literature. Tripathi et al.[15] showed a statistical correlation between complete resolution 12 month post endoscopic laser DCR (EL-DCR) in 46 patients and the younger age of the patient. Tarbet and Custer[16] found that 62% of all patients with patent OCR's to U irrigation still had persistent epiphora clinically. Furthermore, Delaney et al.[17] described only 38% of patients with patent DCRs clinically classed themselves as completely asymptomatic through questionnaire.

64.9±17.2 (95% CI, 14.1-87.1) and that of external DCR was 44.90±14.1(95% CI, 12.9-69.8).

REFERENCES

1. American Academy of Ophthalmology (Orbit, Eyelid and Lacrimal System).
2. Sihota R, Tandon R (2015) Parson's Disease of the Eye. Elsevier 20th, 450.
3. Hartikainen J, Antila J, Varpula M (1998) Prospective randomized comparison of endonasal endoscopic dacryocystorhinostomy and external dacryocystorhinostomy. Laryngoscope, 108: 1861-1866.
4. McDonogh M, Meiring JH (1989) Endoscopictransnasal dacryocystorhinostomy. J Laryngol Otol, 103: 585-587.
5. Cokkeser Y, Evereklioglu C, Hamdi E (2000) Comparative external versus endoscopic dacryocystorhinostomy: results in 115 patients (130 eyes). Otolaryngol Head Neck Surg, 123: 488-491.
6. Ben Simon GJ, Joseph J, Lee S, Schwarcz RM, McCann JD, et al. (2005) External versus endoscopic dacryocystorhinostomy for acquired nasolacrimal duct obstruction in a tertiary referral center. Ophthalmology, 112: 1463-1468.
7. Onerci M (2002) Dacryocystorhinostomy. Diagnosis and treatment of nasolacrimal canal obstructions. Rhinology, 40: 49-65.
8. Karim R, Ghabrial R, Lynch TF, B Tang (2011) A comparison of external and endoscopic endonasal dacryocystorhinostomy for acquired nasolacrimal duct obstruction. Clinical Ophthalmology, 5: 979-989.
9. Jutley G, Karim R, Joharatnam N, Latif S, Lynch G (2013) Patient satisfaction following endoscopic endonasal dacryocystorhinostomy: a quality of life study. Eye, 27: 1084-1089.
10. l.liff C (1971) A simplified dacryocystorhinostomy. Arch Ophthalmology 85: 586-591.
11. Duwal S (2015) Outcomes of external and endoscopic dacryocystorhinostomy. Nepal J Ophthalmol, 7: 39-46.
12. Goel M, Kotwal D, Gupta D, Sharma M (2012) Comparison of endonasal endoscopic dacryocystorhinostomy over external dacryocystorhinostomy. Int J Med Health Res, 2: 64-68.
13. Dasgupta S (2016) Comparison of external and endoscopic endonasal dacryocystorhinostomy: a hospital based retrospective study. Int J Res Med Sci, 4: 2822-2829.
14. Hii BW, McNab AA, Friebel JD (2012) A comparison of external and endonasal dacryocystorhinostomy in regard to patient satisfaction and cost. Orbit, 31: 67-76.
15. Tripathi A, Lesser TH, ODonnell NA, White S (2002) Local anaesthetic endonasal endoscopic laser dacryocystorhinostomy: analysis of patients'

acceptability and various factors affecting the success of this procedure. Eye, 16: 146-149.
16. Tarbet KJ, Custer PL (1995) External dacryocystorhinostomy, surgical success, patient satisfaction, and economic cost. Ophthalmology, 102: 1065-1070.
17. Delaney YM, Khooshabeh R (2002) Fluorescein transit test time and symptomatic outcomes after external dacryocystorhinostomy. Ophthal Plast Reconstr Surg, 18: 281-284.