Original Article

COMPARATIVE STUDY OF ENDOSCOPIC VS EXTERNAL DACRYOCYSTORHINOSTOMY

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ABSTRACT

Background: This study was carried out to compare the success rate of external and endoscopic dacryocystorhinostomy (DCR) in patients with nasolacrimal duct obstruction.

Material & Methods: Interventional study design was opted. Total 80 patients were divided into two groups with 40 patients in each group. Group 1 underwent external DCR while group 2 underwent endoscopic DCR in Akhtar Saeed Trust hospital from 1/2/2017 to 31/1/2020. The success rate of endoscopic group was compared with the external group in regular follow up after 7th post-op day, one month, 3 months, 6 months and one year. All the data was entered and analyzed with SPSS version 20. Quantitative variable like age was presented as mean and standard deviation. Qualitative variables were calculated in frequencies and percentages.

Result: The success rate in terms of relief of epiphora was 92.5% in endoscopic group as compared to 85% in external group.

Conclusion: The endoscopic DCR showed better results than the external DCR.

Key Words: Nasolacrimal duct, Epiphora, Dacryocystorhinostomy

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INTRODUCTION

Lacrimal drainage pathway starts from the lacrimal puncta and ends in the inferior meatus in the lateral wall of nose. It constitutes lacrimal puncta, lacrimal canaliculi, lacrimal sac, and nasolacrimal duct which ends in an opening in the inferior meatus. Obstruction at any level in the above pathway can cause epiphora (watery eyes). The primary acquired nasolacrimal duct obstruction is due to chronic inflammation resulting in fibrosis, stenosis, and closure of the duct ostium.[1,2]

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Nasolacrimal duct obstruction is the most common cause which can be relieved by a surgical operation dacryocystorhinostomy (DCR) which involves creation of a fistula that bypasses the obstruction and restores the tear flow.[3] The operative approach can be external or endoscopic. External DCR was the gold standard method even after the endoscopic approach had been described, because of limited technology at that time with a success rate ranging between 80% to 100%.[4] However, the improvements in endoscopic visualization & instrumentation have made the endoscopic DCR a better choice these days.[5] In addition, endoscopic DCR has many benefits over external DCR i.eno external scar mark, quicker recovery and lower postoperative morbidity.[6] Various studies describe different success rates of endoscopic endonasal DCR from 89%to 98%.[7,8] This study was conducted to compare

the success rate of external and endoscopic dacryocystorhinostomy (DCR) in patients with nasolacrimal duct obstruction.

OPERATIONALDEFINITIONS

Success being defined as complete relief of epiphora plus patency on syringing at1 year follow up.
Ephiphora is overflow of tears onto the face.

MATERIAL AND METHODS

An interventional study was conducted to do a comparative analysis of endoscopic DCR with external DCR. Eighty lacrimal systems of 80 patients coming to Akhtar Saeed Trust Hospital from 1/2/2017 to 31/1/2020 (three years) were selected. Non-probability type of purposive sampling technique was used for data collection. The patients were selected after detailed ENT examination and opinion from the ophthalmology department. Patients fulfilling the inclusion criteria with isolated lacrimal duct obstruction on syringing, were included in the study. While patients having canalicular obstruction assessed by syringing, were excluded from the study.

The patients were randomly divided into two groups 1 and group 2. Informed consent was taken from the patients. Group 1 underwent external DCR while group 2 underwent endoscopic DCR. Silicon lacrimal tube was removed 12 weeks after surgery. Outcome was compared at 7th postoperative day, 1st month, 3rd month, 6th month and 1 year. S. A standard Performa was used for data collection and the following variables were recorded including age, gender, relief of epiphora on 7th post operative day, 1 month, 3 month, 6 month and one year consecutively. Success rate of either of the procedures in terms of relief of epiphora and patency of syringing at interval of one year was labeled and charted in the table. Demographic profile and relevant data was recorded on research tools. Data was entered and analyzed with SPSS version 22. Quantitative variable like age was presented by calculating mean and standard deviation. Qualitative variables were presented by calculating frequencies and percentages. Out of total 80 participants, 33(41.25%) were males and 47(68.75%) were females.

RESULTS

Out of total 80 participants, 33(41.25%) were males and 47(68.75%) were females.

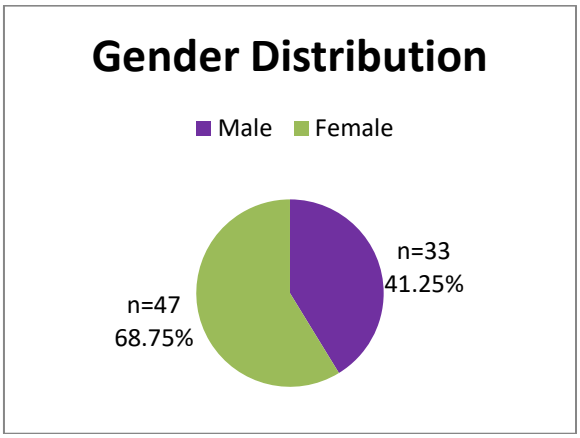

Figure-1: Gender Distribution of Respondents

Table-1: Age Distribution of Respondents

Total number	Mean Age in years	Standard deviation	Minimum	Maximum
80	41.3	13.192	12	64

The mean age of the participants was 41.3±13.19 years.

Table 2 revealed that the relief of epiphora on 7th day was high (95%) in endoscopic group as compared to external group (90%). After the period of one month, relief of epiphora in endoscopic group was 95% while in external group, the percentage dropped and only 87.5% reported the relief of epiphora. A drop in percentage was also observed in endoscopic group after 3 months to 92.5% whereas in endoscopic group, it remained at 87.5%. After 6 months interval, relief of epiphora in endoscopic group was 92.5% while in external group, the percentage dropped to 85% for relief of epiphora. After a period of one year, relief of epiphora reported in endoscopic group was 92.5% as compared to external group, in which percentage for the relief of epiphora further dropped to 82.5%.

Table-2: Comparison of Outcome of DCR Procedures

Outcome of Procedure			Type of DCR Procedure			p-value
			External	Endoscopic	Total	
Relief of epiphora on7th day	Relief	Frequency	36	38	74	0.03
		Percentage	90%	95%	92.5%	
	No relief	Frequency	4	2	6	
		Percentage	10%	5%	7.5%	
Total			40	40	80	
Relief of epiphora at 1month			External	Endoscopic	Total	p-value
	Relief	Frequency	35	38	73	0.02
		Percentage	87.5%	95%	91.25%	
	No relief	Frequency	5	2	7	
		Percentage	12.5%	5%	8.75%	
Total			40	40	80	
Relief of epiphora at 3 months		Count	External	Endoscopic	Total	p-value
	Relief		35	37	72	0.02
		Percentage	87.5%	92.5%	90%	
	No relief	Count	5	3	8	
		Percentage	12.5%	7.5%	10%	
Total			40	40	80	
Relief of epiphora at 6months			External	Endoscopic	Total	p-value
	Relief	Frequency	34	37	71	0.03
		Percentage	85%	92.5%	88.75%	
	No relief	Frequency	6	3	9	
		Percentage	15%	7.5%	11.25%	
Total			40	40	80	
Relief of epiphora at 1 year			External	Endoscopic	Total	p-value
	Relief	Frequency	33	37	70	0.02
		Percentage	82.5	92.5%	87.5%	
	No relief	Frequency	7	3	10	
		Percentage	8.75	7.5%	12.5%	
Total			40	40	80	

Table 3 showed that the patency was 100% in endoscopic group DCR at one year after procedure, while in external group DCR, patency was 92.5% which revealed that the endoscopic procedure was more effective.

Table-3: Patency on Syringing at 1 Year

Procedure	Outcome	Type of procedure		Total
		External DCR	Endoscopic DCR	
Patency on syringing at 1year	Patent	37(92.5%)	40(100%)	77(96.25%)
	Not patent	3(7.5%)	0(0%)	3(3.75%)
Total		40	40	80

DISCUSSION

In this study, out of the 80 patients, 47 (68.75%) were females and 33 (41.25%) were males. we compared two groups of lacrimal sac surgery. Group 1 underwent external dacryocystorhinostomy and group 2 had endoscopic dacryocystorhinostomy. On 7th postoperative day, 36 (90%) lacrimal systems in group 1 showed relief of epiphora whereas 38 (95%) lacrimal systems in group 2 showed relief of epiphora. On 1 month follow up, the values for relief of epiphora in group 1 were 35(87.5%) and 38(95%) in group 2. On 3rd month follow up, the values for relief of epiphora in group 1 remained same as 35(87.5%) whereas in group 2 the values were reduced but still much higher than group 1 at 37(92.5%). The values for relief of epiphora at 6 months were reduced to 34 (85%) in group 1 and were stable at 37(92.5%) in group 2. On 1 year follow up, the values were further reduced to 33(82.5%) in group 1, while in group 2, values remained stable at 37(92.5%). One year follow up patency of the lacrimal systems in both groups were assessed by syringing and 40(100%) lacrimal systems in group 2 were found to be patent, while in group I, 37(92.5%) lacrimal systems were found to be patent. This difference is statistically

significant (p-value = 0.007) and is comparable to the figures that are given in the international studies.[9-12]

CONCLUSION

Endoscopic dacryocystorhinostomy (DCR) not only provides significantly better results than External DCR in terms of relief of epiphora, but it is also cosmetically more acceptable to the patient with no external scar mark on the face after surgery. We suggest using this technique more commonly for the patients of nasolacrimal duct obstruction.

AUTHOR'S CONTRIBUTION

ZIB: Concept of study and Review
AHS: Data analysis and review critically
MDS: Literature review
SR: Data collection

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