

Original article:

Study of causes of failure in external DCR and endonasal DCR

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Abstract:

Introduction: The external dacryocystorhinostomy (DCR) is the gold standard procedure for treatment of chronic dacryocystitis till today by which all other newer methods of dacryocystorhinostomy procedures are assessed¹. With the recent introduction of endoscopes and microscopes, the original procedure of external dacryocystorhinostomy with extensive dissection have been questioned by some surgeons which has led to interest in less invasive procedures like endonasal endoscopic dacryocystorhinostomy.

Materials and methods: Patients attending ophthalmology outpatient department at Rural Medical College, Loni, for the symptom of epiphora and diagnosed as primary acquired nasolacrimal duct obstruction or chronic dacryocystitis.

Results: By applying Z test of difference between two proportions presence of synechiae formation is more significant in group B as compared to group A and improper ostium placement is more significant in group A as compared to group B. (p<0.01)

Conclusion: In the light of these results, we concluded that External DCR had higher success rate than the endonasal DCR. An endonasal procedure has the advantage of dealing with associated deviated nasal septum, avoidance of cutaneous scar.

Keywords: endonasal DCR

INTRODUCTION

The external dacryocystorhinostomy (DCR) is the gold standard procedure for treatment of chronic dacryocystitis till today by which all other newer methods of dacryocystorhinostomy procedures are assessed¹. With the recent introduction of endoscopes and microscopes, the original procedure of external dacryocystorhinostomy with extensive dissection have been questioned by some surgeons which has led to interest in less invasive procedures like endonasal endoscopic dacryocystorhinostomy. **Mc Donogh and Meiring² (1989)**, were the first to describe the technique of endoscopic intranasal dacryocystorhinostomy. The major advantages being

avoidance of cutaneous wound, and limited tissue dissection and co-existing nasal pathology can be dealt simultaneously in the same operation. However, complete visualization, removing of lacrimal bone and control of excessive bleeding were the major problems unsolved with endonasal endoscopic dacryocystorhinostomy. There are very few prospective studies comparing the outcome of the two techniques. Therefore, this study was undertaken.

MATERIALS AND METHODS

Patients attending ophthalmology outpatient department at Rural Medical College, Loni, for the symptom of epiphora and diagnosed as primary

acquired nasolacrimal duct obstruction or chronic dacryocystitis.

Inclusion criteria:

All symptomatic epiphora cases diagnosed for primary acquired nasolacrimal duct obstruction or chronic dacryocystitis.

Exclusion criteria:

Following patients were excluded from study

- 1) Canalicular and punctal obstruction
- 2) Failed cases of dacryocystorhinostomy
- 3) Ectropion/ entropion/ lower lid laxity
- 4) Post traumatic bone deformity of lacrimal region
- 5) History of radiation therapy of lacrimal region
- 6) History of sino nasal malignancy and granulomatous conditions
- 7) Atrophic rhinitis

Sample size:

The study included 60 cases that were diagnosed as nasolacrimal duct obstruction or chronic dacryocystitis and who were fulfilling inclusion criteria during the study period.

Data collection:

The patients were evaluated as follows:

- 1) Cases selected were subjected to a complete examination according to a defined proforma.

- 2) Detailed ocular and systemic history was taken. A detailed ocular examination and anterior rhinological examination was done. Anterior rhinoscopy was done by otorhinolaryngologist and looked for any significant deviation of nasal septum, polyposis and hypertrophy of turbinates. If they were having any co-existing disease, they were all dealt at the same sitting.

- 3) The patency of nasolacrimal duct was checked by lacrimal syringing. Mucoid/ mucopurulent regurgitation, presence or absence of mucous flakes and the punctum from which regurgitation occurred was noted.

OBSERVATIONS AND RESULTS

In the present study, total 60 cases comprising 30 cases in the external dacryocystorhinostomy (group A) and 30 cases in endonasal dacryocystorhinostomy (group B) were involved who underwent corresponding surgeries, following observations were made:

The success rate was defined by the presence of patent lacrimal passage by lacrimal sac syringing at the end of complete follow up. In our study the success rate for group A was in 26 cases (86.67%) and failure was seen in 4 cases (13.33%). In group B, the success rate was seen in 21 cases (70%) and failure was seen in 9 cases (30%).

Table No.1: Comparison of Result in Group A and Group B:

| Result | Group A(n=30) | Group B(n=30) |
|---------|---------------|---------------|
| | No. (%) | No. (%) |
| Success | 26 (86.67%) | 21 (70%) |
| Failure | 4 (13.33%) | 9 (30%) |
| Total | 30 | 30 |

By applying Z test, difference between two proportions, there is a highly significant difference between the success rate in Group A and in Group B. (p<0.01)

Causes of failure:

Out of 4 cases failed in group A, blocked rhinostomy site by granulation tissue was found in 3 cases (10%)

followed by improper ostium placement in 1 case (3.33%) on diagnostic nasal endoscopy (DNE).

In group B, synechiae formation between the lacrimal sac flap and nasal mucosal flap was seen in 6 cases (20%) followed by blocked rhinostomy site by granulation tissue is seen in 3 cases (10%) on diagnostic nasal endoscopy (DNE).

Table No.2: Diagnostic nasal endoscopy in failed cases in Group A and Group B:

| Causes of failure | Group A(n=30) | Group B(n=30) |
|---|---------------|---------------|
| | No. (%) | No. (%) |
| Blocked rhinostomy site by Granulation Tissue | 3(10%) | 3 (10%) |
| Synechiae formation | 0 | 6 (20%) |
| Improper ostium placement | 1 (3.33%) | 0 |
| Total | 4 (13.33%) | 9 (30%) |

By applying Z test of difference between two proportions presence of synechiae formation is more significant in group B as compared to group A and improper ostium placement is more significant in group A as compared to group B. (p<0.01)

DISCUSSION

In our study the success rate for group A was in 26 cases (86.67%) and failure was seen in 4 cases (13.33%). In group B, the success rate was seen in 21 cases (70%) and failure was seen in 9 cases (30%).

Hartikainen et al³ had primary success rate of 91% for external dacryocystorhinostomy and 75% for endonasal dacryocystorhinostomy. Study done by **Cokkesser et al⁵** showed the success rate of 89.9% for external dacryocystorhinostomy and 88.2% for endonasal dacryocysto-rhinostomy. **Ibrahim et al⁵⁷** in their study had success rate of 82% for external dacryocystorhinostomy and 58% for endonasal dacryocystorhinostomy. **Mirza et al⁶** in their study had success rate of 94% for external dacryocystorhinostomy and 64% for endonasal

dacryocystorhinostomy. Our study correlates well with the other studies.

All the patients with blocked lacrimal syringing underwent nasal endoscopy. 3 cases (10%) showed obstruction at rhinostomy site by granulation tissue formation. 1 patient (3.33%) showed an improper ostium placement. **Welham et al⁷** have noted ostium related problem as a cause of failure in 52% cases. Other contributing factors were scarring and intervening ethmoid. Our study had showed only 1 case (3.33%) of failed external dacryocystorhinostomy surgery because of ostium related problem, which was very low as compared to Welham et al.

Study by **Kuldeep Moras et al⁸** had showed the obstruction at the rhinostomy site in 2 cases (10%). Our study correlates well with this study. Repeat endonasal dacryocystorhinostomy surgery was advised to all the patients. On repeat endoscopic examination, 3 patients (10%) showed obstruction at rhinostomy site by granulation tissue formation and

narrow bony ostium. All of them were advised revision endoscopic surgery.

Study by **Kuldeep Moras et al**⁹ had showed the obstruction at the rhinostomy site in 2 cases (10%).

Study by **A Tsirbas** and **P J Wormald**¹⁰ had showed scarring of the osteotomy in 5 cases that led to the failure of the surgery.

Postoperative scarring at the site of the rhinostomy is one of the major causes of DCR failure¹¹.

Our study correlates well with the other studies.

6 patients (20%) showed synechiae formation between the lacrimal sac flap and nasal mucosal flap.

Ostium could not be visualised. The synechiae were so extensive that probe could not enter the meatus.

Study by **Kuldeep Moras et al**¹² had showed the synechiae formation in 1 case (5%).

Passorn Preechawai¹³ in their study had found that 3 cases (7.1%) out of 42 who had failed results showed fibrosis at the nasal mucosa. Our study correlates well with the other studies.

Patients were advised to undergo repeat endonasal dacryocysto-rhinostomy surgery. Post operatively almost all the patients in group B and few patients in group A underwent nasal endoscopic examination for intranasal cleaning of mucus, debris and for removal of synechiae.

- Success rate for group A was 86.67% and for group B, it was 70%.
- The failed cases showed obstruction of rhinostomy site by granulation tissue in group A and synechiae formation between the lacrimal sac flap and nasal mucosal flap in group B.
- The failed cases were advised to undergo endonasal DCR again.

CONCLUSION

In the light of these results, we concluded that External DCR had higher success rate than the endonasal DCR. An endonasal procedure has the advantage of dealing with associated deviated nasal septum, avoidance of cutaneous scar.

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