



Research Article

SURGICAL OUTCOME OF STENTING VERSUS NON-STENTING IN ENDOSCOPIC DACRYOCYSTORHINOSTOMY

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ABSTRACT

Introduction-Lacrimal pathway obstruction may be idiopathic or secondary to chronic infections, tumours, trauma or iatrogenic factors, and may occur at any point along the tract, however being more frequent at the level of the nasolacrimal duct. The presenting complaint of a patient with NLD blockage is epiphora. Dacryocystorhinostomy (DCR) is an effective and safe method for the treatment of NLD obstruction. Endoscopic endonasal DCR has evolved from functional endoscopic sinus surgery. DCR with or without stenting has been used widely in the treatment of NLD obstruction. There is a discussion regarding stenting for DCR.

Aim and Objectives – To compare the surgical outcome of stenting versus non-stenting in patients undergoing endoscopic dacryocystorhinostomy.

Materials and methods-A prospective study was done among 40 patients. The patients selected were between 10 years and 60 years of age. 40 patients were divided into two groups. The first group had undergone Endoscopic DCR without stenting and the second group had undergone Endoscopic DCR with stenting (silicone stent). The division of patients into these two groups was random.

Results - Mean age was calculated to be 31.25±7.2 years. Out of 20 patients of the group with stents, complete recovery of symptoms was observed in 19 (95%) cases at minimum six months follow up. Out of 20 patients without stenting, 18(90%) showed complete recovery of symptoms at six months follow up.

Conclusion-Success rate was similar in both, with and without use of stents and no significant difference was observed in patients operated by both the procedures.

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INTRODUCTION

Lacrimal pathway obstruction may be idiopathic or secondary to chronic infections, tumours, trauma or iatrogenic factors, and may occur at any point along the tract, being more frequent at the level of the nasolacrimal duct. Obstruction can be pre-saccal (usually involving the common canaliculus), saccal and post-saccal (nasolacrimal duct). Bilateral nasolacrimal duct obstruction is less common than unilateral obstruction and sometimes this is associated with nasal and sinus diseases. ⁽¹⁾ A patient with NLD blockage will present with Epiphora, which is defined as the overflow of tears. The degree of epiphora can range from the occasional trickle to the chronically bothersome overflow, which could become a cause of social embarrassment. ⁽²⁾ Dacryocystorhinostomy (DCR) is an efficient and safe method for the treatment of NLD obstruction. ⁽³⁾ DCR for the treatment of NLD obstruction was first described via an external approach by Toti in 1904. ⁽⁴⁾ The perceived disadvantages of the external approach DCR include the risk of cutaneous scar and lengthy surgery with significant blood loss. ⁽⁵⁻⁷⁾ These potential complications have led to increase in the popularity of minimally invasive endonasal

approaches. Endoscopic endonasal DCR has evolved from functional endoscopic sinus surgery. The first intranasal DCR was described by Caldwell in 1893. ⁽⁵⁾ In 1989 McDonogh and Meiring described the endoscopic transnasal DCR. ⁽⁶⁾ Since then, a number of modifications using laser have also been described as a useful tool in endoscopic DCR. Modifications have been reported using the holmium yttrium aluminium garnet (YAG), argon, carbon dioxide and potassium titanium phosphate laser ⁽⁹⁻¹¹⁾. Atranscanalicular approach with the neodymium doped YAG laser has also been described. ⁽¹²⁾ DCR with or without stenting has been used widely in the treatment of NLD obstruction. There is a discussion regarding stenting for DCR. Allen and Berlin reported a higher failure rate when using silicone tubing ⁽¹³⁾ while Vishwakarma *et al* found a high success rate with stenting. ⁽¹⁴⁾ In this prospective study, we will study the surgical outcome of patients undergoing Endoscopic DCR in 2 groups – those with stenting and those with non-stenting. That is we would compare the surgical outcome of stenting versus non-stenting in patients undergoing endoscopic dacryocystorhinostomy

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MATERIALS AND METHODS

A prospective study was done among 40 patients from December 2016 - August 2018. The patients between 10 years and 60 years of age coming to Padmashree Dr. D. Y. Patil Hospital and Research Centre between December 2016 and August 2018 with epiphora were considered for the study. Patients with NLD (Post-saccal) blockage, between 10-60 years of age were included in the study while patients with pre-saccal and saccal blockage, markedly deviated nasal septum on same side, severe bony deformity of lacrimal sac fossa (post-traumatic), sinusitis, nasal polyposis were excluded from study. 40 patients were divided into two groups. Patients of the first group had undergone Endoscopic DCR without stenting and the second group had undergone Endoscopic DCR with stenting. The division of patients into these two groups was random. After surgery, a close follow up was maintained for patients of both groups. Data was collected and analysed using proper statistical test.

RESULTS

In this study surgical outcome of stenting versus non stenting was assessed in two groups. The sample size was calculated to be 40 cases among which males were in majority 23 (57.5%) and females were 17 (42.5%). Mean age was calculated to be 31.25±7.2 years. Most of the cases were of age group of 21 to 30 years (11.27.5%) followed by that of 10-20 years(10.25%). 20 out of 40 cases underwent stent placement whereas in the other 20 patients DCR was done without stenting.

Table 1 Distribution of patients in the study

| Age group(years) | Number | Percent |
|------------------------------|--------|---------|
| 10 to 20 | 10 | 25.00% |
| 21 to 30 | 11 | 27.50% |
| 31 to 40 | 6 | 15.00% |
| 41 to 50 | 9 | 22.50% |
| 51 to 60 | 4 | 10.00% |
| Gender | Number | Percent |
| Female | 17 | 42.50% |
| Male | 23 | 57.50% |
| Endoscopic DCR | Number | Percent |
| With stenting | 20 | 50.00% |
| Without stenting | 20 | 50.00% |
| Duration of disease | Number | Percent |
| Less than 6 months | 4 | 10.00% |
| More than 6 months | 36 | 90.00% |
| Post operative complications | Number | Percent |
| Corneal irritation | 1 | 2.50% |
| Infection | 2 | 5.00% |
| Persistent tearing | 3 | 7.50% |
| Prolapse of stent | 1 | 2.50% |
| Synechiae | 1 | 2.50% |
| No complications | 32 | 80.00% |

Table 2 Association of endoscopic DCR (with and without stents) with symptoms and duration of disease

| | Endoscopic DCR | | | | P value |
|--|----------------|---------|------------------|---------|---------|
| | With stenting | | Without stenting | | |
| | Number | Percent | Number | Percent | |
| Epiphora | 20 | 100.00% | 20 | 100.00% | 0.465 |
| Swelling of lacrimal region | 4 | 20.00% | 6 | 30.00% | 0.465 |
| Mucopurulent discharge from medial canthus | 4 | 20.00% | 6 | 30.00% | 0.465 |
| Congenital dacryocystitis | 1 | 5.00% | 2 | 10.00% | 0.548 |

Table 3 Success rate of endoscopic DCR in both with and without stent cases at 6 months follow up

| Group | Total | Success rate at 6 months(%) | Failure rate at 6 months(%) |
|------------------|-------|-----------------------------|-----------------------------|
| With Stenting | 20 | 19 (95%) | 1(5%) |
| Without stenting | 20 | 18 (90%) | 2(10%) |
| P value | 0.69 | Not significant | |

Out of 20 patients of the group with stents, complete recovery of symptoms was observed in 19 (95%) cases at a minimum of six months follow up. Out of 20 patients without stenting, 18(90%) showed complete recovery of symptoms at six months follow up. Rate of success was 95% among patients with stenting and 90% in patients of the non stenting group. There was however no statistical difference in the success rate between the two groups (p >0.05). All patients were followed up for at least 6 months. In this study success rate was not affected much by doing the surgery without stents. Postoperative complications were seen in 8 patients in the form of persistent tearing and infections.

DISCUSSION

DCR operation is done to eliminate obstruction, obtain a normal tear flow and to treat chronic dacryocystitis. It is a common practice for surgeons to place stents at the time of DCR. It has been assumed that they increase the success rate of the procedure. Silicone intubation simultaneous with DCR was first described by Gibbs.¹⁶

In our study 95% success rate was seen among patients of endonasal DCR in whom stents were placed as against 90% success in those without stents. The success rate is hence comparable (p=0.69, not significant association).

Thus it is evident that placement of stent does not improve the success rate drastically. Similar results were reported by Harvinder et al¹⁵ and Acharya et al¹⁷. Kakkar¹⁸ and Unlu et al¹⁹ also found the results not significant, similar to our study. Vishwakarma et al.¹⁴ in a prospective study of 272 patients reported a higher success rate with stent placement. In 1989, Allen and Berlin¹³ reported that stenting during DCR was associated with a statistically significant increase in the failure rate. They concluded that routine use of stenting in DCR should be avoided.¹³

Some studies indicate that factors such as postoperative infection, history of post operative trauma, and size of the rhinostomy may play an important role in the surgical success.¹⁵ Today, a vast majority of surgeons use stenting in DCR and prefer the procedure over non stenting. Therefore cessation of its use could not be suggested. Furthermore, prospective randomized studies with a larger sample size are required to be conducted for a more definite answer to this research.

Jordan and Nerad²¹ suggested that complications are there after DCR with stenting. Later animal models and human studies have shown that histopathologic changes are induced by the presence of these stents but it remains unclear as to whether these changes are the result of simple mechanical irritation or are actually chemically induced by the stents itself.^{14,23,24,25} In our study only 20% cases showed complications.

In our study, chronic dacryocystitis was found to be significantly more common in men than women. Sing et al²⁶ and Naik et al²⁷ reported similar higher incidences of

dacryocystitis in females which was contrary to our study. The reason may be due to bad personal habits and exposure to dust for longer duration.²⁷

CONCLUSION

Success rate were similar in both groups of patients, those with and those without usage of stents. No significant difference was noted in patients operated by both the procedures.

It is evident that stenting may not contribute to the success of endonasal DCR, further similar outcomes have been observed. Other factors such as size of the rhinostomy, complications and presence of infection may play an important role in success of endonasal DCR.

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