Endoscopic Dacryocystorhinostomy without Probing: Surgical Outcome

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Abstract

Ninety-eight cases of nasolacrimal duct obstruction including 6 bilateral cases were included in the study done at Postgraduate Institute of Medical Research, Chandigarh. All the cases had been divided into three groups with Group I including cases in which 12 endoscopic dacryocystorhinostomy (DCR) with dilatation and probing and stent insertion were performed. In Group II, 23 Endo DCR performed with intraoperative dilatation and probing but no stent insertion. Group III included 69 cases of Endo DCR without dilatation and probing and no stent insertion. Overall success rate was found to be 94.3% with Group III cases having a success rate of 97.1% and was found statistically significant on comparing with that of Group II (p value: 0.03).

Keywords: Endoscopic dacryocystorhinostomy, probing, outcome.

MATERIALS AND METHODS

All patients who presented with symptoms of chronic dacryocystitis from January 1998 to December 2006 were enrolled in this study. We had 98 cases who underwent EDCR, of which six cases had undergone bilateral EDCR, so a total of 104 EDCR were performed. Their age ranged from 7 to 72 years. A detailed history, general physical examination, local examination including detailed otorhinolaryngological examination, sac test and nasal endoscopy to see the accessibility of maxillary line, were conducted on all patients. Other causes of epiphora were excluded. All patients were operated under general anesthesia and were given oral antibiotic for 7 days postoperatively. The patients were divided in three groups. Group I included 12 cases in which intraoperative dilatation of the punctum and probing of the canaliculi was done and a stent was inserted postoperatively. Group II included 23 cases where intraoperative dilatation and probing was performed but no stent was inserted. Group III included 69 cases who had undergone EDCR without dilatation and probing and no stent was inserted. The patients were followed up at a regular interval of one week, one month, three months and six months postoperatively and the data was statistically analyzed.

SURGICAL PROCEDURE

The nasal cavities were packed with 4% xylocaine and adrenaline solution (1 in 1,00000) soaked ribbon gauze, fifteen minutes before operation. 0 and 30° Hopkins rod endoscopes were used for the procedure. The maxillary line, demarcating the junction of the frontal process of maxilla...
and the lacrimal bone, was identified. The mucosa anterior and superior to anterior end of middle turbinate was infiltrated with 1% xylocaine and adrenaline solution (1 in 2,00000).

An incision was made anterior to the maxillary line in front of the anterior end of the middle turbinate. An inferiorly based mucosal flap was elevated and the frontal process of maxilla and lacrimal bone were identified. The anterior wall of the lacrimal sac was exposed in its superior part where the common canaliculus enters the sac. The lacrimal sac could be confirmed as tenting by pressing the medial canthal region and the sac was incised. The redundant medial wall was also excised. A bead of pus coming out with pressure, was seen in 72.46% cases after incising the medial wall. A small neosporin soaked nasal pack was put for 24 hours and the patient was discharged either the same day or next day of surgery and were kept on regular follow-up. Subjective improvement in epiphora was taken as criteria of successful outcome.

RESULTS

Ninety-nine patients (51 males and 48 females) had undergone endoscopic DCR (104 EDCR). Group I included 12 cases [7 males and 3 females (2 females: Bilateral EDCR)]. Group II had 23 cases (13 males and 10 females) and Group III included 69 patients [31 males (1 male: bilateral EDCR) and 35 females (3 females: bilateral EDCR)]. The data was analyzed using chi square test. Since no statistically significant difference (p value = 0.52), (p value < 0.5), (p value < 0.5) was found amongst different sex of all three groups so were combined together for further analysis. The age range of all cases was from 7 to 72 years with a mean age of 39.5 years. Six patients (8.8%) had bilateral dacryocystitis. Coexistent nasal pathology like allergic rhinitis was found in 12 patients (17.3%). Five patients (7.2%) had gross deviated nasal septum for which endoscopic septoplasty was done before proceeding to EDCR in the same sitting. One referred case of failed external DCR in Group II and 2 referred cases of failed endo DCR in Group III had undergone revision surgery. At three months of follow-up, 98 eyes were found to be dry and comfortable. 91.6% (11 cases) cases of group I, 86.9% (20 cases) of Group II and 97.1% (67 cases) of Group III showed improvement with over all success rate of 94.3% (Figs 1 and 2). The success rates of different surgical modalities were compared using the test of proportion. The difference was seen on comparing the success rates in Group I and II with p value of 0.338, in Group II and III with p value of 0.03 (statistically significant), and in Group III and I with p value of 0.178.

DISCUSSION

An overall success rate of 94.3% was recorded in this series of EDCR after 6 months of follow-up. English literature reports a success rate of 75 to 99% with external DCR compared to 82 to 95% with EDCR without the use of laser and with the use of laser, little lower, i.e. 77 to 83%.
An endoscopic septoplasty was required in five cases where the exposure was inadequate due to gross deviated nasal septum. A wide intranasal stoma as well as adequate removal of bone around the stoma are needed to reduce the chances of postoperative stenosis and adhesions resulting in good success rate. Inadequate removal of bone is the commonest cause of postoperative stomal stenosis. The use of powered instruments and lasers are known to cause increased granulations resulting in fibrosis and scarring. We had used Kerisson punch to remove the frontal process of maxilla but in 8 patients, drill was used in which the bone was found to be very thick but none of these patients had postoperative stenosis, probably because of good irrigation done at the time of drilling. Whittet et al has stressed upon the need of preoperative computed tomography (CT scan) and dacryocystogram to evaluate the paranasal sinuses and lacrimal apparatus. However, we found that CT scan does not offer an additive advantage.

The reported outcomes of EDCR and related procedures are summarized in Table 1. The routine use of silicone stenting was advocated by Durvasula et al but reported granuloma formation in one patient and punctal stenosis in 2 patients. Failure following stent insertion is due to granuloma formation, synechiae or punctal erosions. Premature extrusion of stent has been reported to be the commonest complication. However, Durvasula has reported good results with use of stents after 3 months. Ulu et al has reported 85.7% success rate in patients with use of silicone stent and 87.5% in patients without stent. We had a success rate of 91.60% and 97.1% for Group I and Group II respectively. The statistic evaluation amongst these groups does not show any significant difference (p value = 0.178) which means that insertion of a stent in cases with EDCR does not change the surgical outcome. However, the difference in Group II and III is statistically significant (p value = 0.03) which simply means that repeated dilatation and probing of NLD during surgery reduces the surgical outcome because of trauma induced during dilatation.

We acknowledge more benefits with the procedure being performed in Group III. Thus it can be concluded that repeated intraoperative dilatation and probing through the punctum and syringing can predispose to complications and can reduce the chances of surgical outcome, hence not much of use in EDCR.

### Table 1: Results of primary endoscopic dacryocystorhinostomy

<table>
<thead>
<tr>
<th>Investigators</th>
<th>N</th>
<th>Success rate (%)</th>
<th>Comments</th>
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<tr>
<td>Tripathi et al, 2002</td>
<td>46</td>
<td>89</td>
<td>Success; local anesthesia</td>
</tr>
<tr>
<td>Tsirbas, Wormald, 2003</td>
<td>44</td>
<td>89</td>
<td>Lacrimal and nasal mucosal flaps</td>
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<td>Massegur et al, 2004</td>
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<td>93</td>
<td>Hammer-Chisel, mucosal flaps</td>
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<td>Fayet et al, 2004</td>
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<td>Conventional DCR</td>
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<tr>
<td>Durvasula, Gatland, 2004</td>
<td>70</td>
<td>92</td>
<td>Conventional DCR</td>
</tr>
<tr>
<td>Wormald, Tsirbas, 2004</td>
<td>70</td>
<td>97</td>
<td>Success anatomic obstruction</td>
</tr>
<tr>
<td>Javate and Pamintuan, 2005</td>
<td>117</td>
<td>98</td>
<td>Radiofrequency, double stent mitomycin C</td>
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<tr>
<td>Present study</td>
<td>104</td>
<td>97.1</td>
<td>without dilatation and probing NLD</td>
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REFERENCES