USE OF MITOMYCIN C IN ENDO-DCR

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Abstract: Objective: To evaluate the role of topical Mitomycin C in Endoscopic Dacryocystorhinostomy (DCR), for the prevention of stomal stenosis. **Patients:** Thirty patients undergoing endoscopic DCR for chronic dacryocystitis were studied prospectively. The follow up period was 12 months. **Technique:** Patients were divided into two groups randomly. All of them underwent endoscopic DCR. One group was subjected to topical Mitomycin C application after surgery while the control group was not. **Main outcome measures:** Postoperative relief of epiphora and endoscopic documentation of the patency of the stoma were the main outcome measures. **Results:** 80% cases of the Mitomycin C group and 86.67% cases of the non Mitomycin C group had long-term successful results. This result is not statistically significant ($p > 0.2$). **Conclusion:** Intraoperative Mitomycin C application does not alter the long-term results in endoscopic DCR. A properly and adequately performed surgery is more vital for successful result.

Keywords: Epiphora, Endoscopic DCR.

INTRODUCTION

Ophthalmological literatures consider external dacryocystorhinostomy (DCR) as the gold standard for the treatment of lacrimal duct stenosis. Rhinologists, on the other hand favour the endoscopic approach. Caldwell described the first intranasal DCR in 1893, but with the advent of endoscopic surgery, rhinologists have popularized endoscopic DCR over the last two decades. Endoscopic DCR is a well-established alternative to external DCR and has a success rate of upto 95% in primary cases (Selig et al 2000, Singh et al 2004). However, there is a considerable amount of variation in long-term results amongst different series and failures are not uncommon. The commonest cause of failure is obstructive adhesion in the area of the intranasal stoma. Selig et al (2000) & Liao et al (2000) demonstrated that intraoperative application of Mitomycin C, a wound healing inhibitor, is effective in increasing the success rates of endoscopic DCR. The present prospective study was carried out in the department of ENT and Head-Neck Surgery at Ramakrishna Mission Seva Pratishthan, Vivekananda Institute of Medical Sciences, Kolkata, over a period of two years between January 2003 and December 2004.

AIMS & OBJECTIVES:

The aim of the present study was to evaluate the efficacy of a cytostatic antibiotic Mitomycin C in preventing postoperative fibrosis and stenosis, when applied topically in cases of endoscopic DCR. The patency of the stoma and relief of epiphora after surgery were the main outcome measures.

MATERIALS AND METHODS

Thirty primary cases of chronic dacryocystitis were treated surgically by Endoscopic DCR and followed up for 12 months. The average age of incidence was 32.5 years and the male: female ratio was 2:3. Patients with recurrent epiphora for more than 2 to 4 months not responding to medical therapy were included in the study. Patients with acute dacryocystitis, recurrent abscesses and tumours of the lacrimal apparatus were excluded from the

study. Any intranasal pathology in the form of DNS, Polyps, Allergy or Granulomatous diseases was treated preoperatively. Patency of the canaliculus was assessed before surgery by probing and syringing and performing Contrast Dacryocystography. All the cases were operated under local anaesthesia. The bone on the lateral wall of the nose overlying the lacrimal sac was exposed by electrocauterising the overlying mucosa. Adequate bone was then removed with a Kerrison's punch, to expose the whole of the medial wall of the sac. An incision was then made over the anterior end of the sac and the whole of medial wall was removed. At the end of the surgery, 15 cases (Group A) were subjected to topical Mitomycin C (0.2 mg/ml) with a soaked cotton pledget for 2 minutes. In the rest 15 patients (Group B) Mitomycin C was not applied. No stent was used and nasal pack was not given at the end of the surgery. Local massage, serial syringing of the sac on the 3rd, 7th & 14th postoperative day and nasal douching were performed during the follow up period. The stoma was assessed endoscopically on the 3rd, 6th & 12th months after surgery.

OBSERVATIONS AND RESULTS

Twelve out of 15 (80%) of Group A and 13 out of 15 (86.67%) cases of Group B had no complain of epiphora at the end of follow up and had an adequate intranasal opening when assessed endoscopically (Table1).

Group	Total cases	Successful cases
A	15	12
B	15	13

Table1: Group A: Mitomycin C, Group B: Non Mitomycin C

It was observed that Group B i.e. the non-Mitomycin C group had marginally better results over Group A. No significant complications other than stenosis of the stoma and synechia were encountered during the study. Based on this result Chi-square test was performed and the p value obtained was > 0.2 . A p value < 0.05 is accepted to be statistically significant. So we can say that this result is not statistically significant.

DISCUSSION

Mitomycin C is an antimetabolite which interferes with cell division in the G₁ - M phase and is primarily used in resistant cancers of stomach, cervix, colon, rectum, bladder and non-small cell carcinoma of lung. But it has also been found to selectively inhibit the proliferation of fibroblasts in tissue culture (Jampel et al 1992, Khaw et al 1992, Cummings et al 1998). Based on this experimental study results, Mitomycin C has been used in ophthalmological procedures to reduce scarring and adhesions following surgery. Otolaryngological experience with Mitomycin C encompasses cases of choanal atresia, laryngeal webs, subglottic stenosis, tracheal stenosis, bronchial stenosis, esophageal stenosis, hypopharyngeal stenosis and dacryocystorhinostomy (Rahbar et al 2002).

Selig et al (2000) reported 87.5% success rate in endoscopic DCR, with application of topical Mitomycin C, but the series was a small one and did not have any control. Liao et al (2000) found 95.5% success rate with topical Mitomycin C, as compared to 70.5% in non-Mitomycin group and have strongly recommended its use. Zilelioglu et al (1998), on the other hand, reported 77.3% success in Mitomycin group and 77.8% in non Mitomycin group. Liu et al (2003) and Beloglazov et al (1999) also noted similar observations with no beneficial effects of Mitomycin C and hence have not recommended its use. Our study showed marginally better results (86.67%) in non-Mitomycin group, compared to Mitomycin group (80%), which corroborates to the results of Beloglazov et al (1999), Liu et al (2003) and Keerl et al (2004). They observed that with appropriate operative techniques and in experienced hands the success rates of Endo-DCR are practically equal to those of the classical external approach. The major advantages of Endo-DCR are shorter operative times, lower complication rates, reduced patient morbidity and absence of external scars. They also emphasized that stenting of the canaliculi and topical Mitomycin C are not required routinely and LASER also does not give better results. Stringent postoperative care is essential to prevent endonasal synechia and subsequent recurrences, which conforms to our observations. Our series being a small one have not shown statistically significant results of topical Mitomycin C as opined by Selig et al (2000).

CONCLUSION

We conclude that intraoperative application of Mitomycin C does not alter the long-term outcome in endoscopic DCR. An adequately performed surgery, where most or the entire medial wall of the lacrimal sac is removed, yields excellent long-term result in treating chronic dacryocystitis. A larger series would probably generate more reliable conclusions. We are planning to use

nasolacrimal shunts in the near future, which may further shorten the operative time with better results.

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