Original Research Article

Study of effect of Mitomycin-C on long term results in Endonasal Dacryocystorhinostomy

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Abstract

Aim and Objective: To evaluate the efficacy of topical application of Mitomycin-C for prevention of stomal stenosis in Endonasal Dacryocystorhinostomy (DCR). **Materials and Methods:** 45 patients undergoing endonasal DCR for chronic dacryocystitis were studied prospectively. The follow up period was 6 months. Dacryocystogram was done preoperatively in every patient. Group allocation was done randomly. Group A subjected to topical application of Mitomycin-C after surgery while group B was control group. Post operatively sac syringing and endoscopic evaluation of stomal patency was done for every patient at regular intervals. **Results:** 92% cases of Mitomycin-C group and 85% cases of the control group had long term successful results. This result is statistically not significant ($p > 0.05$). **Conclusion:** Intraoperative Mitomycin-C application is useful to improve long term results though the study is not significant statistically.
Key Words: Epiphora, Endoscopic DCR.

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INTRODUCTION

Endoscopic DCR is well established alternative to external DCR and has a success rate upto 95% in primary cases.[1] The commonest cause of failure is adhesions, fibrosis at stomal site. Liao *et al* in 1995 demonstrated that intraoperative topical application of Mitomycin-C at stomal site prevents fibrosis and adhesions by its wound healing inhibition property, increasing the success rates of endonasal DCR.[2] The present prospective study was carried out in the department of ENT and Head-Neck Surgery at MGM Medical College and Hospital, Aurangabad, over a period of 2 years between July 2011 and June 2013.

MATERIALS AND METHODS

45 primary cases of chronic dacryocystitis underwent endoscopic DCR and followed up for 6 months. Out of 45 patients 15 patients were male and 30 patients were female in age group ranging from 15 to 60 years. Patients with epiphora for more than 2 months not responding to medical therapy were included in the study. Patients with acute dacryocystitis, prior failed DCR, recurrent abscesses, congenital deformities, tumours, intranasal pathologies such as nasal polyps, chronic sinusitis were excluded from the study. Sac syringing and Dacryocystogram was done in every patient preoperatively to confirm canalicular patency and nasolacrimal duct blockage. All the cases were operated under local anaesthesia with intravenous sedation. Patients were randomly allocated into group A (with Mitomycin-C) and group B (Control group). Routine endonasal DCR procedure followed in all patients. In group A patients; at the end of surgery topical application of Mitomycin-C (0.2 mg/ml) soaked in gelfoam pledget was done. The gelfoam pledget was kept over the neo osteum site for one to two minutes. It was followed with saline irrigation both intranasaly and externally over eyes to wash out excess of Mitomycin-C. In subjective

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assessment patients were asked for relief of epiphora. For objective assessment sac syringing was done on 3rd, 7th and 14th postoperative day and Endoscopic evaluation of stoma was done on 1st, 2nd, 3rd, and 6th months after surgery.

OBSERVATIONS AND RESULTS

23 out of 25 (92%) patients of group A and 17 out of 20 (85%) patients of group B had no complains of epiphora at the end of follow up and had an adequate stomal patency when assessed endoscopically. (Table 1).

Table 1

Group	No. of cases with patent stoma	Total cases	Success Rate
Group A (Mitomycin-C)	23	25	92%
Group B - (Control)	17	20	85%

It was observed that group A i.e. Mitomycin-C group had marginally better results over group B i.e. control group. No significant complications other than stomal stenosis, granulations, and synechiae were encountered during study. The complication rate was 12% in group A and 25% in group B (Table 2).

Table 2: Gr. A-Mitomycin-C, Gr. B – Control

Gr.	Complication		Total	Total Cases (n=)	%
	Granulation	Synechiae			
A	1	2	3	25	12%
B	2	3	5	20	25%

Based on the success rate results Chi-Square test was performed and the p value obtained was > 0.1. A p value < 0.05 is accepted to be statistically significant. As p value is > 0.1; this study result is statistically not significant.

DISCUSSION

Mitomycin-C is cytostatic antibiotic antineoplastic drugs. It acts as wound healing inhibitor. So it decreases the fibrosis, adhesion and stenosis at the stoma. It inhibits DNA dependent RNA synthesis; thereby inhibits protein synthesis. It also inhibits cell mitosis in all phases of cell cycle, most predominantly during G1 and early S phase of cell cycle. It affects both replicating and non replicating cells and thus no cell can proliferate after exposure to Mitomycin-C.[2,3] Based on these results Mitomycin-C has been used in ophthalmological procedures to reduce scarring and adhesions following surgery. It is used in resistant cancers of stomach, cervix, colon, rectum, bladder, and small cell carcinoma of lung. Otolaryngological experience with Mitomycin-C encompasses choanal atresia, laryngeal webs, subglottic and tracheal stenosis, esophageal stenosis, and dacryocystorhinostomy.[4] It is widely accepted that the most common cause of faiure in Endoscopic DCR is scar formation, fibrosis, and stenosis of neo ostium. Thus if we can inhibit fibrous tissue growth and scarring by applying antiproliferative agents like Mitomycin-C over stoma, failure rate can be decreased. Histopathological effect of Mitomycin-C application in endoscopic DCR was studied by 'Ugurbas SH', 'G Zilelioglu' in 1997. They concluded that by causing a decrease in cellularity and density of mucosa, topical use of Mitomycin-C may enhance the success rate of surgery.[3] Liao *et al* in 1995 found 95.5% success rate with topical Mitomycin-C as compared to 70.5% in non Mitomycin-C group.[2] Selig *et al* had success rate of 87.5% with intraoperative use of Mitomycin-C.[1] Camara *et al* had success rate of 99.2% with Mitomycin-C compared with 89.6% in the control group in endoscopic LASER assisted DCR.[5] Our study result corroborates to the results of above studies. Zilelioglu *et al*, on the other hand, reported 77.3% success in Mitomycin-C group and 77.8% in non Mitomycin group. Liu *et al* and Beloglazov *et al* also noted similar observation with no beneficial effects of Mitomycin-C.[3,6,7] The complication rate was less in Mitomycin-C group in our study. No ocular complication was noted with application Mitomycin-C. In our study the application period of Mitomycin-C was reduced to 1 minute for this relatively benign disease, as 'Jampel' concluded that 1 minute exposure might be as effective as 5 minutes exposure for antiproliferative activity of Mitomycin-C.[8] Success rate is dependent on the regular follow up for clearance of complications like synechiae and granulations as early as possible so that stoma can be patent. Regular follow up is necessary for long term results.

CONCLUSION

We conclude that intraoperative application of Mitomycin-C in endoscopic DCR is better alternative than routine procedure though the results are not statistically significant. Our series being a small one have not shown statistically significant results. The role of antimitotics like Mitomycin-C in preventing stomal stenosis looks promising and a larger series would generate more reliable conclusions.

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