ORIGINAL ARTICLE

Comparison of Success Rate of External Dacryocystorhinostomy with and without Mitomycin-C in patients of Chronic Dacryo-cystitis

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ABSTRACT

Aim: To compare the efficacy of external dacryocystorhinostomy with and without intraoperative application of mitomycin-C in patients with chronic dacryocystitis.
Method: This randomized controlled trial was conduct at Out Patient Department of Ophthalmology, King Fahad Armed Forces Hospital, Jeddah from March 2013 to February 2014. Total 200 patients were enrolled. Patients were randomly divided into two groups A & B.Patients who had undergone external dacryocystorhinostomy, both male or female with age from 20 year to 70 years were included in present study
Results: Success rate surgical procedure in Group A was 96% and in Group B was 85%. Significant (P=0.014) difference between the success rate was seen between the both groups. Female predominance was seen in both study groups.
Conclusion: External dacryocystorhinostomy with intraoperative mitomycin-C is more efficacious than external dacryocystorhinostomy without mitomycin-C.
Keywords: Chronic dacryocystitis, External Dacryocystorhinostomy, Mitomycin-C, Tearing.

INTRODUCTION

Chronic Dacryocystitis is defined as the prolonged inflammation of the lacrimal sac, most commonly due to the obstruction of the nasolacrimal duct[1]. Chronic dacryocystitis is commonly encountered by an ophthalmologist accounting for 87.1% of epiphora, which causes social embarrassment due to chronic watering from the eye[2,3].

External dacryocystorhinostomy (EXT-DCR) is the most popular procedure done for nasolacrimal duct obstruction in managing epiphora[4].

In external dacryocystorhinostomy surgical anastomosis of the lacrimal sac to the nasal mucosa of middle meatus is done by cutting the intervening bone[5]. The most important causes of failure of external DCR are obstruction at common canalicular end, fibrous tissue growth in the flap anastomosis and closure of osteotomy site[6].

Mitomycin-C (MMC) is an alkylating antibiotic, derived from Streptomyces caespitosus.[7]Itdecreases fibroblast collagen synthesis by inhibiting DNA-dependent RNA synthesis[7]. Intraoperative mitomycin-C application in EXT-DCR is effective and safe and cheap adjunct that helps to achieve excellent results of surgery[8].

This study compares the efficacy of external dacryocystorhinostomy(EXT-DCR) with and without Intraoperative mitomycin-C in a group of patients presenting with the complaint of epiphora having chronic dacryocystitis secondary to the nasolacrimal duct obstruction. So the better of the two procedures will be used in future.

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MATERIAL AND METHODS

This randomized controlled trial was conduct at Out Patient Department of Ophthalmology, King Fahad Armed Forces Hospital, Jeddah from March 2013 to February 2014. Total 200 patients were enrolled by using Non probability consecutive sampling technique. Permission was taken from institutional review board and written consent was taken from every patient included in the study.

Patients who had undergone external dacryocystorhinostomy, both male and female with age from 20 years to 70 years were included in present study.

Patients with gross nasal pathology, patients with noticeable lower lid laxity, patients with repeat dacryocystorhinostomy surgery for DCR failure patients with post traumatic lids were excluded from the surgery.

Patents were divided into two groups Group A and Group B randomly. Group A consisted on patients who undergone external dacryocysto-rhinostomy with intraoperative use of mitomycin-C and Group B consisted on patient who who undergone external dacryocystorhinostomy without intraoperative use of mitomycin-C.

All the patients were operated by a consultant Ophthalmologist having 5 years experience in ophthalmology surgery. Patients were followed up for 3 months for the patency of lacrimal drainage system.

Patency of the lacrimal drainage system was checked by dilating lacrimal puncta (upper & lower) with punctum dilator and inserting a blunt tipped canula, on a 2ml saline filled syringe, into the lower punctum and saline pushed forcefully. After pushing saline if patient told that it has come into his/her nose or throat, it confirmed that the drainage system was patent; this indicated that surgery was successful. If saline regurgitated from the upper punctum it indicated that the drainage system was blocked. It showed that surgery was not successful.

All the data was entered in pre-designed proforma along with demographic profile of the patients. All the collected data were analyzed by using SPSS version 16. Mean and SD was calculated for age and frequencies and percentages were calculated for for the patency of the lacrimal drainage system and gender. Chi square test was used to detect the difference between the two groups. P value ≤ 5% was considered as statistically significant.

RESULTS

Mean age of the patients of Group A was 37.77±11.96 years while mean age of Group B was 39.96±09.05 years. Among the 100 patients of Group A, male patients were 32(32%) and female patients were 68(68%) and out of 100 patients of Group B, 24(24%) patients were male and 76(76%) patients were female. There was a female preponderance in both study groups (Table 1).

As shown in table 2, it is clear that 96/100 patients in group A showed patency at the end of 3 months after the surgery which shows that the success rate (efficacy) is 96%. While in the group B, 85/100 patients showed patency of the lacrimal drainage system at the end of 3 months after surgery which indicates that the success rate in group B is 85%. Statistically significant (P=0.014) difference between the success rate (efficacy) of both groups was found.

Table 1: Gender distribution for both groups

Group	Male	Female
A	32(32%)	68(68%)
B	24(24%)	76(76%)

Table 2: Patency of lacrimal drainage system

Group	Patency	
	Present	Absent
A	96(96%)	4(4%)
B	85(85%)	15(15%)

P value 0.014

DISCUSSION

Chronic dacrocystitis is preferentially more common in adults over middle life from 5th to 7th decade. EXT-DCR is a gold standard procedure in the treatment of epiphora secondary to nasolacrimal obstruction[9].

In present study mean age of the patients in Group A (External Dacryocystorhinostomy with mitomycin-C) was 37.77±11.96 years while mean age of the patients of Group B (External Dacryocystorhinostomy without mitomycin-C) was 39.96±09.05 years. In one study by Mukhtar et al, similar mean age of the patients undergone External Dacryocystorhinostomy with mitomycin-C and without mitomycin-C was as 38.77±10.96 years and 40.96±10.05 years respectively[10].

There was a female preponderance in both groups of our study. Similarly Murthy et al reported female preponderance in their study[11]. This female preponderance may be attributed to the presence of narrower lumen of bony lacrimal canal and lower nasolacrimal fossa in females.

In one study "Endoscopic revision of external dacryocystorhinostomy failure" cause of DCR failure in 76% patients was scar tissue at the osteotomy site.[12] In another study "Nasal Endoscopic Assessment of Failure after External Dacryocystorhinostomy" causes of DCR failure in 30.76% patients were intranasal adhesions, in 22.30% patients were abnormal fistula size and in 6.15% were closed ostium[13].

MMC is a powerful agent which prevents scarring by inhibiting the multiplication of cells which produce scar tissue[10]. In present study success rate was 96% in patients of Group A (External Dacryocystorhinostomy with mitomycin-C) at the end of 3 months after surgery while success rate was 85% in the Group B (External Dacryocystorhinostomy without mitomycin-C) at the end of 3 months after surgery. These results are statistically significant (P=0.014) which means that the external dacryocystorhinostomy with mitomycin-C is more efficacious as compared to external dacryocystorhinostomy without mitomycin-C.

In one study, based on the patency of the drainage system, the success rate (efficacy) was significantly (*P*=0.005) greater in the MMC groupas compare the control group 96% vs 84%[14]. In another study "Mitomycin C in endoscopic dacryocystorhinostomy Application"; success rate was 97% and in control group success rate was 76%. Significant (P=0.005 difference between the proportion of both groups was seen[15]. Results of these studies were comparable with our study.

In our experience, external dacryocystorhinostomy with Intraoperative mitomycin-C soaking over the osteotomy and anatomized flaps can minimize the adhesions around the osteotomy area as well as the opening of common canaliculus. In this way, mitomycin-C soaking during DCR surgery is a useful modified procedure to improve the success rate of external DCR. Recently, it has been proved that intraoperative application of mitomycin-C in Nonlaser Endoscopic Endonasal Dacryocystorhinostomy (NLEN-DCR) is useful in improving the success rate.

CONCLUSION

It is concluded that usage of mitomycin-C (MMC) for 5 minutes intraoperatively in external dacryocystorhinostomy (EXT-DCR) provides much better surgical results than conventional external dacryocystorhinostomy without mitomycin-C. So, external dacryocystorhinostomy with intraoperative mitomycin-C is more efficacious than external dacryocystorhinostomy without mitomycin-C.

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