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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2556169>Available online at: <http://www.iajps.com>**Research Article****WHETHER INTRAOPERATIVE MITOMYCIN-C (MMC)
USAGE IS EFFECTIVE OR NOT? A COMPARATIVE
RESEARCH CONDUCTED ON CHRONIC DACRYOCYSTITIS
PATIENTS UNDERGOING EXTERNAL
DACRYOCYSTORHINOSTOMY (EXT-DCR)****¹Dr Atiqa Javaid, ²Dr. Ayesha Arif, ³Dr Muhammad Nadeem Butt****¹Jinnah Hospital Lahore, ²House Officer DHQ Teaching Hospital Gujranwala, ³House Officer,
Jinnah Hospital Lahore****Abstract:**

Objective: We aimed to compare the effectiveness of external dacryocystorhinostomy (EXT-DCR) with the intraoperative application and without intraoperative application of mitomycin-C (MMC) among chronic dacryocystitis patients.

Material and method: The research design was a randomized controlled trial and it was conducted at Sir Ganga Ram Hospital, Lahore. The timeframe of research span from January 2017 to October 2017 (Ten Months). The research sample consisted of a total of 200 patients and these patients were also randomly allocated Group – I & II. Both male and female patients of (20 – 70) years of age who underwent EXT-DCR were made a part of this research. Patients also gave informed consent and we also secured ethical approval from the hospital management.

Results: Both the groups showed a success rate of 96% (Group – I) and 85% for (Group – II) patients. Both the groups also showed a significant success rate difference with a significant P-Value of (0.014). Female were more in number in both groups. The researcher also applied SPSS software and Chi-Square test for statistical analysis.

Conclusion: The application of intraoperative MMC with EXT-DCR is effective in comparison to the absence of application of MMC in EXT-DCR.

Keywords: External Dacryocystorhinostomy (EXT-DCR), Chronic Dacryocystitis, Nasolacrimal Duct Obstruction and Mitomycin-C (MMC).

Corresponding author:**Atiqa Javaid,**

Jinnah Hospital, Lahore.

QR code



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INTRODUCTION:

Chronic Dacryocystitis refers to an inflammation which lasts for longer duration and it is of lacrimal sac, that occurs commonly because of nasolacrimal duct obstruction [1]. It is commonly attributed to 87.1% of ophthalmologist occurrence of epiphora which leads to chronic eye-watering and social embarrassment [2, 3]. EXT-DCR is one of the most repeated procedures which is carried out for the obstruction of nasolacrimal duct in order to treat an onset of epiphora [4]. For EXT-DCR the surgical lacrimal sac anastomosis to middle meatus nasal mucosa, we cut the bone which intervenes [5]. Failure of external DCR is mostly because of the canalicular end, osteotomy site closure and growth of fibrous tissue in flap anastomosis [6].

MMC is taken from *Streptomyces caespitosus* which is an antibiotic with alkylating features [7]. MMC also reduces the fibroblast collagen synthesis by DNA inhibition which is depending on the synthesis of RNA [7]. An intraoperative MMC application in external dacryocystorhinostomy is safe, cheap and effective which helps in the achievement of excellent surgical outcomes [8]. We aimed to compare the effectiveness of external dacryocystorhinostomy (EXT-DCR) with the intraoperative application and without intraoperative application of mitomycin-C (MMC) among chronic dacryocystitis patients. Therefore, a better surgical procedure will be a reference for future surgeries.

MATERIAL AND METHODS:

The research design was a randomized controlled trial and it was conducted at Sir Ganga Ram Hospital, Lahore. The timeframe of research span from January 2017 to October 2017 (Ten Months). The research sample consisted of a total of 200 patients and these patients were also randomly allocated Group – I & II. Both male and female patients of (20 – 70) years of age who underwent external dacryocystorhinostomy were made a part of this research. Patients also gave informed consent and we also secured ethical approval from the hospital management. We did not include any patient of gross nasal pathology, recurrent dacryocystorhinostomy surgery for the patients who failed in DCR having post-traumatic lids and observable lower lid laxity. Group – I included all those patients who underwent EXT-DCR with an intra-operative use of MMC; whereas, Group – II included all those patients who underwent EXT-

DCR without MMC application intraoperatively. A consultant ophthalmologist operated all the patients in ophthalmology surgery. The ophthalmologist has five years of experience. We also carried out a three months follow-up for every patient to observe lacrimal drainage system patency.

Lacrimal drainage system patency was verified through lower and upper dilating lacrimal puncta with the help of a punctum dilator and by blunt tipped cannula insertion. The insertion was made through a saline filled syringe (2 ml) with a forceful saline insertion. With the insertion of saline if patient informed that saline has come into throat or nose; it confirms about a patent drainage system. It also indicates a successful surgical procedure. The blockage of the drainage system is confirmed with the help of regurgitated saline from upper punctum. Blockage of drainage system also confirms an unsuccessful surgical procedure.

We documented all demographic profile of patients on a proforma and analyzed the research outcomes of SPSS software. The researcher presented the age in mean and SD values; whereas, lacrimal drainage patency in percentage and frequency. Differentiation of both groups was confirmed through a Chi-Square test. A significant P-Value was taken as (≤ 5).

RESULTS:

Both the groups showed a success rate of 96% (Group – I) and 85% for (Group – II) patients. Both the groups also showed a significant success rate difference with a significant P-Value of (0.014). Female were more in number in both groups. Both male and female patients of (20 – 70) years of age who underwent external dacryocystorhinostomy were made a part of this research with respective average of (37.77 ± 11.96) years and (39.96 ± 09.05) years. Among one hundred patients of Group – I, there was 68 females and 32 males; whereas, in Group – II, there were 76 females and 24 males. Both groups presented a dominance of female population over male population as shown in Table – I. Table – II shows patency in 96 patients of Group – I after three months with 96% success rate. Whereas, 85 patients of patency in Group – II after three months with 85% success rate. Both the groups also showed a significant success rate difference with a significant P-Value of (0.014). Detailed outcomes are as under (Table – I & II):

Table – I: Group Wise Gender Distribution

Gender	Male	Female
Group – I	32	68
Group – II	24	76

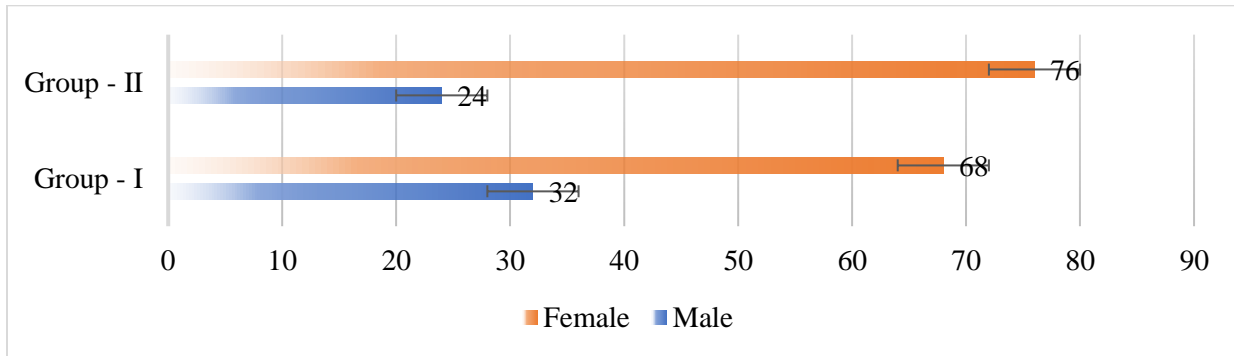
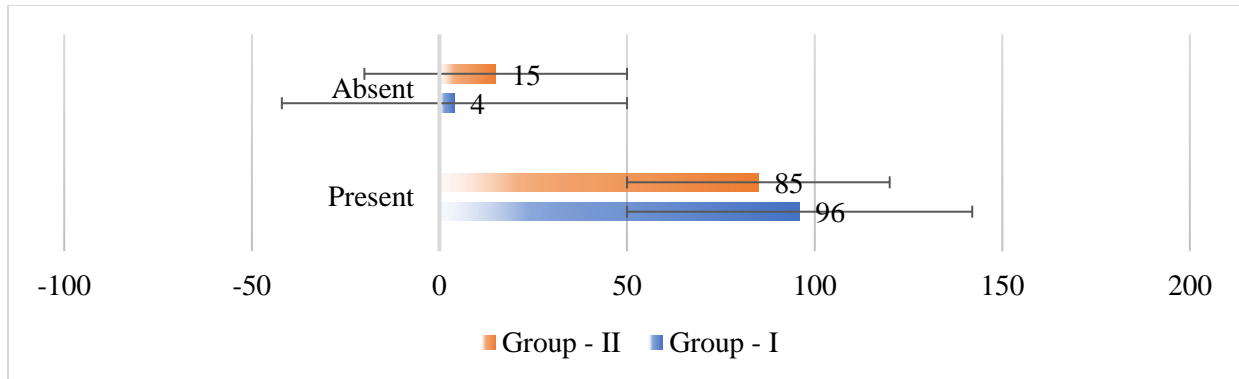


Table – II: Group Wise Patency Distribution

Patency	Present	Absent
Group – I	96	4
Group – II	85	15



DISCUSSION:

The common occurrence of chronic dacryocystitis is reported in the fifth and seventh decade of life and EXT-DCR is gold standard management of the epiphora which is also secondary to the obstruction of nasolacrimal [9].

Both male and female patients of (20 – 70) years of age who underwent external dacryocystorhinostomy were made a part of this research with respective average of (37.77 ± 11.96) years and (39.96 ± 09.05) years. Mukhtar also presented similar mean age among the patients who underwent EXT-DCR with and without MMC having respective mean age as (38.77 ± 10.96) years & (40.96 ± 10.05) years [10].

Among one hundred patients of Group – I, there was 68 females and 32 males; whereas, in Group – II, there were 76 females and 24 males. Both groups presented a dominance of female population over the male population. Murthy also reported female

predominance in his series [11]. The female predominance is because of the presence of lower nasolacrimal fossa and bony lacrimal canal narrower lumen in females.

Another author reported the failure of EXT-DCR among 76% patients as a DCR failure caused due to the scar tissue at the site of osteotomy [12]. Whereas, another author reported DCR failure after EXT-DCR subsequently in intranasal adhesions (30.76%), abnormal fistula size (22.30%) and closed ostium in (6.15%) [13].

MMC, being a powerful agent helps in the prevention of scarring by cell multiplication inhibition that contributes in the tissue scarring [10]. The success rate after three months of surgical intervention in Group – I & II were respectively 96% and 85% with and without MMC respectively with a significant P-Value of (0.014). It shows the effectiveness of EXT-DCR with MMC than without MMC. In another

series, an author studied drainage system patency and reported significant effectiveness in MMC treated group (P-Value = 0.005) with success rate in cases as 96% and controls like 84% [14]. Whereas, another author reported success rate in cases and controls respectively 97% and 76% with the application of MMC in EXT-DCR (P-Value = 0.005) [15]. These outcomes are in agreement with the success rate outcomes of our series.

In our experience, EXT-DCR with the application of an intraoperative MMC anatomized flaps and soaking over the osteotomy can potentially reduce adhesion formation around osteotomy and also common canaliculus opening. Soaking of MMC in the course of DCR surgery is effective and modified surgical procedure with improved EXT-DCR success rates. In the recent studies, the success rate of Non-Laser DCR MMC intraoperative application also proved to be effective for enhancing the success rate.

CONCLUSION:

We suggest that MMC usage for a period of five minutes during EXT-DCR surgical intervention provides better and effective surgical outcomes than without the application of MMC. So, the application of intraoperative mitomycin-C with EXT-DCR is effective in comparison to the absence of application of mitomycin-C in EXT-DCR.

REFERENCES:

- Murthy VK, Narayana M, Venkataiah Y, Vijayalakshmi V, Dudala SR. Study of Efficacy of Intra Operative mitomycin in Dacryocystorhinostomy (DCR). [cited 2014 Aug 26]; Available from <http://iosrjournals.org/iosrjournals/papers/Vol14-issue1/Version-2/C014120913.pdf>
- Choussy O, Retout A, Marie JP, Cozlean A, Dehesdin D. Endoscopic revision of external dacryocystorhinostomy failure. *Rhinology*. 2010 Mar 2;48(1):104-7.
- Elmorsy SM, Fayk HM. Nasal Endoscopic Assessment of Failure after External Dacryocystorhinostomy. *Informa healthcare*. 2010 Aug;29(4):197-201.
- Ari S, Gun R, Surmeli S, Atay AE, Çaca İ. Use of adjunctive mitomycin C in external dacryocystorhinostomy surgery compared with surgery alone in patients with nasolacrimal duct obstruction: A prospective, double-masked, randomized, controlled trial. *Elsevier Inc*. 2009 Aug;70(4):267-73.
- Zhiyong Q, Min LZ, Leung S. Mitomycin C in endoscopic dacryocystorhinostomy Application. *Free Papers*. 2011;3(314).
- Mudhol RR, Zingade ND, Mudhol RS, Harugop AS, Das AT. Prospective Randomized Comparison of Mitomycin C Application in Endoscopic and External Dacryocystorhinostomy. *Indian J Otolaryngology Head Neck Surg*. 2013 Aug;65(Suppl 2):255-9.
- Yildirim C, Yaylali V, Esme A, Ozden S. Long-term results of adjunctive use of mitomycin-C in external dacryocystorhinostomy. *Int Ophthalmol*. 2007;27(1):31-5.
- Rahman A, Channa S, Niazi JH, Memon MS. Dacryocystorhinostomy without intubation with intraoperative mitomycin-C. *J Coll Physician Surg Pak*. 2006;16(7):476-8.
- Keerl R, Weber R. Dacryocystorhinostomy -state of the art, indications, results. *Laryngorhinootologie*. 2004 Jan;83(1):40-50.
- Mukhtar SA, Jamil AZ, Ali Z. Efficacy of External Dacryocystorhinostomy (DCR) with and without Mitomycin-C in Chronic Dacryocystitis. *Journal of the College of Physicians and Surgeons-Pakistan: JCPSP*. 2014;24(10):732-5.
- Perveen S, Sufi AR, Rashid S, Khan A. Success Rate of Probing for Congenital Nasolacrimal Duct Obstruction at Various Ages. *J Ophthalmic Vis Res*. 2014 Jan;9(1):60-9.
- Basil JH. Symptomatic Epiphora. *Br J Ophthalmol*. 1959; 43:415.
- Radhakrishna M, Banerjee AR, Biswas MC, Anindita M, Kundu PK, Sasmal NK. Clinico bacteriological Study of Chronic Dacryocystitis in Adults. *J Indian Med Assoc* 2008;106(5):296-8.
- Zaman M, Babar TF, Abdullah A. Prospective randomized comparison of dacryocystorhinostomy (DCR) with and without intubation. *Pak J Med. Res*. 2005;44(2):75-8.
- Marr JE, Drake-Lee A, Willshaw HE. Management of childhood epiphora. *Br J Ophthalmol*. 2005 Sep;89(9):1123-6.