ISSN: 2395-5775

Available Online at http://www.journalijcir.com

International Journal of Current Innovation Research
Vol. 4, Issue, 12(A), pp. 1413-1415, December, 2018

International Journal of Current Innovation Research

DOI: 10.24327/IJCIR

Research Article

ANALYSIS OF EXTERNAL DACRYOCYSTORHINOSTOMY WITH SILICONE TUBE INTUBATION IN KASHMIRI POPULATION

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ARTICLE INFO

Article History:

Received 13th September, 2018
Received in revised form
11th October, 2018
Accepted 8th November, 2018
Published online 28th
December, 2018

Key words:

Dacryocystorhinostomy; nasolacrimal duct obstruction; stenting; bicanalicular silicone intubation; complications.

ABSTRACT

Aim: To analyse the outcome of patients with nasolacrimal duct obstruction treated with external dacryocystorhinostomy and bicanalicular silicone intubation stenting in terms of clinical outcome, complications and demographic pattern in Kashmiri population.

Material and Methods: The patients were divided into four different age groups. Cases with no or minimal epiphora with free flow lacrimal irrigation, were deemed as successful cases. Failure was defined as lack of any improvement in the symptoms. Complications related to the surgical procedure were also investigated.

Results: Out of 150 cases, there were 92 (61%) females and 58(39%) males, ranged in age from 20 to 60 years (mean 43.33±10.7).138(92%)out of 150 patients who underwent EXT DCR silicon stenting had no post operative complications. Wound infection was observed in 7(4.6%) patients, wound gap in 2(1.33%) patients, epicanthal fold in 02(1.33%) and granuloma in1 (0.66%).

Conclusion: In Kashmiri population where the prevalence of Chronic dacryocystitis is higher than the rest of the country owing to the environment and anatomical factors, external dacryocystorhinostomy with Silicone tube intubation has been showing promising results with success rate of 92% comparable to other results in rest of study.

INTRODUCTION

Dacryocystitis is a common eye disease in ophthalmic practice. The condition is usually unilateral and occurs secondary to obstruction of the nasolacrimal duct. Patients present with watering of the eyes and swelling in the lacrimal sac area due to accumulation of mucopurulent or purulent discharge. Chronic tear stasis or secondary infection occurring in this condition can lead to acute exacerbation of chronic dacryocystitis, mucocele, chronic conjunctivitis, corneal ulcer, endophthalmitis, orbital cellulitis, lacrimal abscess and fistula.

The External dacryocystorhinostomy (EXT-DCR) was first described in 1904 by AddeoToti, who described exposure of the sac via a small skin incision and absorption of that part of the sac adjacent to the canaliculi into the nasal cavity[1]. In 1921, Dupuy-Dutemps and Bourget modified this technique by advocating an edge-to-edge anastomosis between the lacrimal sac and the nasal mucosa (via flaps) over the bony margins of the formed ostium, thus constructing an epithelium-lined tract[2]. With the exception of minor alterations, EXT-DCR is still performed in much the same way.

Dacryocystorhinostomy (DCR) has been the treatment of choice for patients with chronic stenos is and obstruction of the nasolacrimal duct for more than 100 years. The success rate of DCR has improved over the years as a result of better preoperative assessment, including radiological investigation of the nasolacrimal system, absorbable and less irritating suture materials, and improved instruments and anesthetic procedures. Silicone tube intubation to enhance the surgical success in DCR has proven to be a game changer

The success of EXT-DCR has been variable in the literature, with most series having a rate of greater than 90%[3,4]. However, there are a variety of reasons that account for the differences in success rates, including surgical technique in different centers, patient selection, demographics, definitions of success, and the etiology of nasolacrimal dysfunction.

Since the introduction of silicone tube by Gibbs in 1967[5], intubation with silicone tubes has been widely used .Silicone intubation enhances lacrimal pump function by supporting punctal position and apposition during blinking. Silicone intubation also increases lacrimal tear drainage via increasing capillarity.

The present study prospectively evaluates the clinical outcomes of patients with nasolacrimal duct obstruction treated with silicone intubation stenting.

Need for study: In Kashmiri population where the prevalence of Chronic dacryocystitis is higher than the rest of the country owing to the environment and anatomical factors, our study will help us analyze the various aspects of External DCR in local Kashmiri population.

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MATERIALS AND METHODS

***Study Design**:* This prospectivestudy was conducted on 150 patients both male and female aged between 20-60 year atShri Maharaja Hari Singh Hospital GMC Srinagar over a period of two years from January 2016 to January 2018.Written informed consent was obtained from all subjects or legal guardian after explaining the surgical procedure and its consequences. The patient's main symptoms were moderate to severe epiphora with discharge. The investigations done included lacrimal sac patency test, X-ray of PNS and Complete blood count.

Inclusion criteria: were cases with acquired nasolacrimal duct obstructions, chronic dacryocystitis, lacrimal sac mucocele.

Exclusion criteria: Patients with acute dacryocystitis, Lacrimal sac tumor, dacryolith, coexisting nasal pathologies like atrophic rhinitis, nasal tumor, chronic granulomatous disease of the nose, suspicion of malignancy, and previous radiation therapyetc. which could influence the outcome of the surgery were excluded from the study.

Surgical Procedure

All patients were operated under local anesthesia. We performed external dacryocystorhinostomy by using the Dupuy-Dutemps and Bourguet technique[2]. Lower and upper puncta were dilated. Lacrimal irrigation was performed. Nasal packing was done with gauze socked in 2% lidocaine and 1/100,000 adrenaline. Proper packing of the nasal cavity helped in anesthetizing the mucosa, achieving good hemostasis, and providing good exposure of the nasal mucosa during surgery. A 7-8-mm-long, curvilinear skin incision was performed lateral to the angular vessels, 8-10 mm away from internal canthal ligament, parallel to the nasal root. After approaching the periosteum with blunt dissection, fiber orbicularis muscles on the periosteum were separated. A fixation suture with 6/0 vicryl was placed on the internal canthal ligament, and the ligament was dissected. The periosteum was dissected using a periosteal elevator. The lacrimal sac was exposed and dissected away from the lacrimal fossa. A 9-14-mm-sized bone window with regular contours was created on the lacrimal bone using a kerrison bone punch. "H" shaped anterior and posterior flaps of the nasal mucosa and lacrimal sac were formed. The posterior flaps of the nasal mucosa and lacrimal sac were sutured together with 6/0 vicryl sutures. Bicanalicular silicone tubes were inserted and secured with a sleeve. The anterior flaps of the nasal mucosa and lacrimal sac were sutured. The dissected internal canthal ligament was resutured in situ on the periosteum. The skin incision was closed with three 6 0 Vicryl sutures.

***Postoperative Follow-up**:* The patients were monitored on postoperative day 1, week 1, week 4, month 3, and then 6 month. Sutures were removed on the 7thday. Silicone stents were withdrawn at postoperative after 3 months. Postoperatively, oral antibiotic therapy (amoxycillin+clavulanic acid 625 mg t.i.d), Non-steroidal anti-inflammatory drugs (diclofenac 50+serratiopeptidase10 b.i.d), and topical antibiotic-steroid (moxifloxacin and Dexamethasone) were used and tapered off during each follow up visit. To avoid possible side effects, such as cataract, and glaucoma, close monitoring for intraocular pressure and cataract was done at every follow up visit

***Outcome Measures**:* All patients who were followed up after the removal of the silicone tube(s) were included in this study. At each follow up visit, lacrimal irrigations were performed, and the patients were examined and evaluated. We evaluated age, gender, the operated side, and the effects of silicone intubation on the surgical results. Objective outcome measures were obtained by patency testing after lacrimal system irrigation. Cases without epiphora, demonstrated with free flow lacrimal irrigation, were deemed successful cases. Failure was defined as lack of any improvement in the symptoms. Complications related to the surgical procedure were also investigate

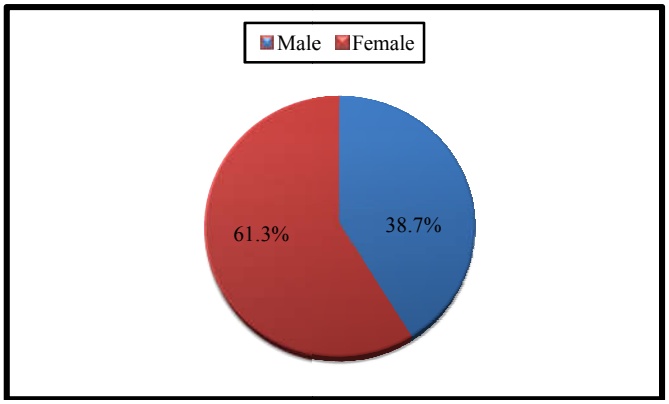
RESULTS

In total, 150external DCR procedures were performed on 150 patients. There were 92(61%) females and 58(39%) males, ranged in age from 20 to 60 years (mean 43.33±10.7). The distribution of age and sex among study groups are shown in Table 1.Out of 150 cases, 70 (46%) were of age group 40-50 followed by 36(24%) from age group 30-40, 24(16%) from age group 20-30 and 20(14%) from age group 50-60.

Postoperative complications, such as wound infection, wound gap, epicanthal and granuloma, are presented in Table 2.Out of 150 patients which underwent EXT DCR silicon stenting wound Infection was observed in 7(4.6%) patients, wound gap in 2(1.33%), epicanthal fold in 2(1.33%) and granuloma in 1 (0.66%) Out of 150 patients who underwent External DCR 138(92%) had no post operative complications.

Table 1 Demographic variables among groups (N= 150)

Age in years	20-30	30-40	40-50	50-60
Percentage	24(16%)	36(24%)	70 (46%)	20(14%)
Gender M/F	09/15	16/20	25/45	8/12



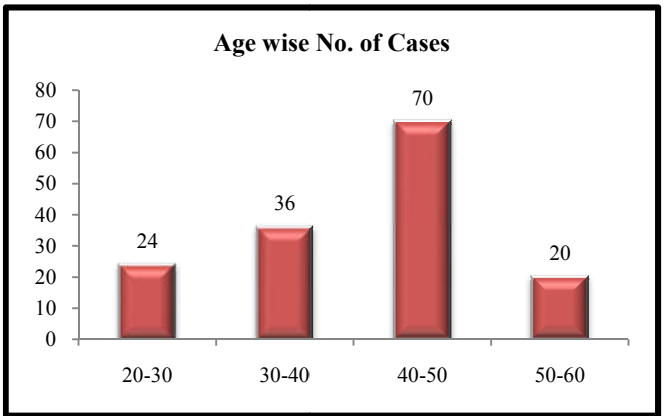


Table 2 Postoperative Complications

Complications	Number	Percentage
Wound infection	07	4.6%
Wound gap	02	1.33%
Epicanthal fold	02	1.33%
Granuloma	01	0.66%
Total	12	7.92%

DISCUSSION

There are many surgical methods for treating lacrimal drainage system disorders that aim to eliminate the obstructions of lacrimal drainage and to ensure sufficient lacrimal patency. Despite numerous existing surgery methods for treating lacrimal drainage system disorders, there are cases where a sufficient patency is not achieved and epiphora recurs. The aim of the present study was to prospectively evaluate the clinical outcome of patients with nasolacrimal duct obstruction treated with silicone intubation stenting. The demographic characteristics of our patient population were similar to earlierstudies.

Nasolacrimal outflow obstruction is much more common in women than in men and measurement of bony nasolacrimal duct study[6] has revealed that with small lower nasolacrimal fossa and middle nasolacrimal duct which explains the higher predominance of nasolacrimal duct obstruction in women .In our study women were found to be more in number then men.
In our study, we analyzed 150 surgically treated cases of lacrimal drainage system disorders. From the general data, the majority of treated patients (61.3%) were female, and 38.7 % were male while Female preponderance was also shown by Soler Machin *et al*.[7] (73.91%), Unlu *et al*.[8] (76%), Mortimore *et al*.[9] (74%). The female predominance is found in our study as is found in other studies.

The mean age of the patients was 43.33±10.7 years (range 20 to 60 years) in our study while Mortimore *et al*.[9] reported that the mean age of their patients was 34 years, Unlu *et al*.[8] reported a mean age of 34 years, and Soler Machin *et al*.[7]reported a mean age of 65 years. The mean age difference may be due to larger size of our study as compared to the rest.

In our study out of 150 cases 138 had no complications and our success rates of 92% was observed while Mortimore *et al*.[9] reported a success rate of 98.14% in 54 dacryocystorhinostomies, Kim *et al*.[11] reported a success rate of 95% out of 40 dacryocystorhinostomies with silicone intubation and Baig *et al*.[12] reported a success rate of 87.09% out of 62 procedures. The difference of success rate between our study and the rest is probably due to larger size of our study.

Stenting of the nasolacrimal drainage system with a silicone tube has been used in conjunction with DCR in our study as a routine. The purpose of the stent in the nasolacrimal system is to prevent adhesion of the mucosal lining of the channels during the healing process and to prevent the consolidation of fibroblasts around the wound edges of the bony ostium. Despite these advantages of silicone stents, complications, such as peripunctal granulation, erosions of puncta and canaliculi, chronic nasal irritation, corneal erosion, canalicular laceration, interpunctal symplepharon, inflammatory mass, and pyogenic granuloma formation, have been reported[10], though none of the complications were noted in our study.

CONCLUSION

In our study External dacryocystorhinostomy with silicone tube intubation has been accepted as a highly successful procedure in patients with history of epiphora and discharge following chronic dacryocystitis with a success rate of 92% in Kashmiri population

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