ORIGINAL ARTICLE

Results of External Dacryocystorhinostomy with the Subciliary Incision

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ABSTRACT

Purpose: To assess post-operative cosmetic and functional results of external Dacryocystorhinostomy with Subciliary incision in adults with primary naso lacrimal duct obstruction (NLDO).

Study Design: Quasi experimental study.

Place and Duration of Study: Oculoplasty clinic, Al Ibrahim Eye Hospital, Malir, from July 2016 to September 2017.

Methods: Hundred eyes of hundred patients were included. Inclusion criteria was all the patients between the ages of 20 to 70 years having epiphora with diagnosis of NLDO, chronic Dacryocystitis or Mucocele. Patients having ectropion or entropion of inferior punctum were excluded from the study. DCR with intubation was performed through Sub ciliary incision. Inner canthus was photographed with a Nikon D70S digital camera at 1, 3 and 6 months after surgery. Functional success was determined by subjective improvement in watering and patent drainage passage on syringing. Cosmetic result of the scar was assessed by subjective satisfaction of the patient and grading of the subciliary incision scar according to a four level scale by two ophthalmologists. SPSS version 20.0 was used to analyze the data.

Result: DCR was done on 100 eyes in 100 patients. Functional and cosmetic success was noted in 90 (90%) eyes. 83 patients attained successful functional outcome, which was confirmed on syringing. On objective grading of the scars by ophthalmologist at the final follow up it was observed that 85 patients had invisible scar. Whereas, 2 had moderately visible scar and 3 patients had minimally visible scar. Subjective grading revealed 85 scars to be invisible, 2 moderately visible and 2 minimally visible.

Conclusion: Post-operative cosmetic as well as functional results of subciliary incision in external Dacryocystorhinostomy were found to be highly encouraging.

Key Words: Dacryocystorhinostomy, Sub-ciliary incision, Nasolacrimal duct, Dacryocystitis, Mucocele.

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INTRODUCTION

Dacryocystorhinostomy has been a standard procedure for the treatment of Naso lacrimal duct obstruction (NLDO) which results in chronic Dacryocystitisor Mucocele. This procedure was modified by Dupuy Dutemps and Bourguet who suggested ideas for anastomosis of the flaps of the lacrimal sac and nasal mucosa; and use of stent.[1] The objective of introducing these variations has been facilitation of the surgeon by avoiding bleeding, improving cosmetic result and making patient free of watering from eyes.

In DCR, incision is routinely placed either 3mm medial to the inner canthus or 11mm from the inner

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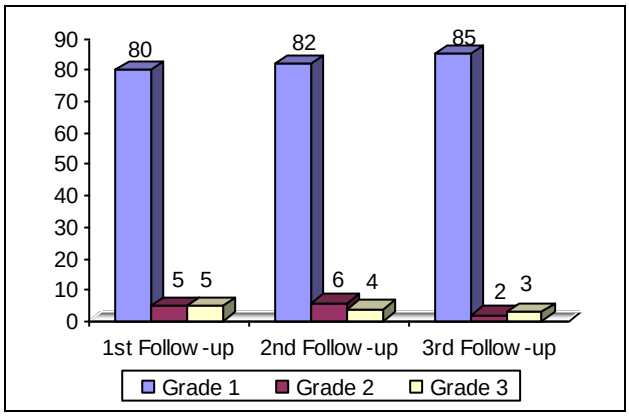
canthus on the other side of the angular vessels.[2] Both incisions avoid cutting angular vessels located 8 mm medial to the inner canthus. Although this incision provides adequate exposure, there still remains the risk of damaging angular vein, inadvertently, resulting in massive intraoperative bleed. A newer incision is the subciliary incision or the lower eyelid crease incision placed horizontally in the lower eyelid relaxed skin tension lines.[2] It not only spares the angular vein by anatomical site but because it is placed horizontally in the lower lid relaxed skin tension lines, it also provides excellent cosmetic results.[3] This masks the scar as is desired by most of the patients especially women. Dacryocystitis is more commonly found in women and cosmetic appearance is a major concern to most of them especially the younger one.[4] The Subciliary incision also retains the access and advantages of external DCR procedure.[5] lacrimal sac is entered from the site of nasolacrimal duct. The osteotomy site is very low. This prevents sump syndrome. Patients are able to wear spectacles from 1st post-operative day.[3] This study was undertaken to assess the functional as well as cosmetic results of DCR using Subciliary incision.

METHODS

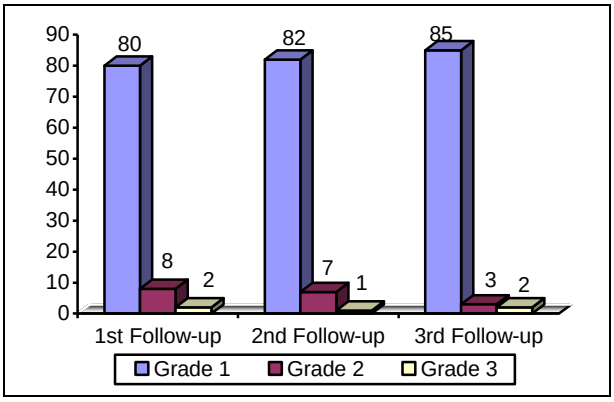
This quasi experimental study with non-probability convenience sampling was carried out at the Oculoplasty clinic, Isra Post-Graduate Institute of Ophthalmology, Al-Ibrahim Eye Hospital, Malir Karachi. The institutional ethical committee approval was taken. Patients in the age group of 20 to 70 years having epiphora were recruited from July 2016 to March 2017. They were subjected to ocular and adnexal examination including syringing and probing. Investigations like Dacryocystogram, skull x-ray, MRI were advised when indicated to rule out local and systemic pathologies. Patients with diagnosis of NLD obstruction, chronic Dacryocystitis or Mucocele were included. Patients with scar in lower eyelid, Epicanthus, Acute-on-chronic Dacryocystitis, punctal and canalicular disorders, ectropion or entropion of inferior punctum, common or individual canalicular obstruction, neoplasm of the lacrimal sac, tuberculosis of the lacrimal sac, osteomyelitis of the lacrimal bone, severe atrophic rhinitis, nasal polyp, granulomas, neoplasms of nasal cavity, and patients who did not give consent for follow-up, were excluded from the study. Surgery was done by a single surgeon under Local (2% Xylocaine admixed with 1:100,000 adrenaline) or General Anesthesia as per patient requirement and desire. After administering anesthesia, nasal packing was done. A 10 – 15mm subciliary incision extending from the punctum medially to mid pupillary line laterally, was given 1-2 mm inferior to the gray line of the lower eyelid, parallel to and along the length of the lower eyelid margin. Muscle and periosteum were retracted. Lacrimal sac was exposed. Standard DCR was performed. At the end of the surgery muscle was closed with 6/0 Vicryl and skin with Prolene 6/0 sutures. Whilst closing skin, care was taken to avoid punctal ectropion. Patients were followed up for 6 months. Post-operatively oral and topical antibiotic and anti-inflammatory medicines were advised. Patients were examined on 1stpost-op week, and then 1st, 3rd and 6th post-op months. They were assessed for cosmetic as well as functional outcome. Functional success was assessed for patency via syringing with normal saline and cosmetic improvement by photographing the inner canthus with a Nikon D70S digital camera with a macro lens and resolution of 3008 × 2000 pixels at 1, 3 and 6 months post operatively. The ophthalmologist and the patient himself graded the Subciliary incision scar. The resulting scar was judged according to a four level scar grading scale (1 = unapparent, 2 = minimally visible, 3 = moderately visible, 4 = very visible)[4]. Statistical analysis was done using SPSS version 23.0. Qualitative variables were presented as frequency and percentages. Pie and Bar charts were made for categorical variables.

RESULTS

Out of 100 patients, 40 were male and 60, female. 10 patients were lost to follow-up out of whom 6 were females and 4 males. Cosmetic and functional success was noted in 90 (90%) eyes. Pre-operative irrigation with normal saline revealed complete blockage of nasolacrimal duct in all the patients. At the final follow up, objective grading of the scar by the ophthalmologists reported 85 scars to be invisible (grade 1), 3 to be minimally visible (grade 2), 2 to be moderately visible (grade 3)and 0 to be very visible (grade 4). Subjective scar grading by the patient reported 85 scars to be invisible (grade 1), 2 scars to be minimally visible (grade 2) and 3 as moderately visible. No post-operative complications were observed in any of the cases.



Graph 1: Subjective Grading of Scar.



Graph 2: Objective Grading of Scar.

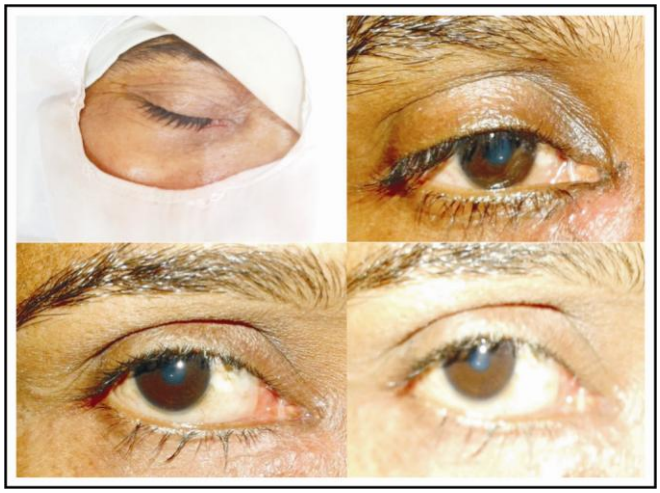


Fig. 1: Subciliary incision, first post-op month, 3rd post-op month, 6th post-op month.

Functionally 83 patients attained successful surgical outcome which was confirmed by syringing done at 1st week, 1st, 3rd and 6th months. This showed patent osteotomy. Out of these, 47 were female and 36 were male. In 7 patients, the expected functional outcome of surgery was not achieved.

DISCUSSION

External DCR has long been the standard procedure for treatment of NLDO.[1,2] Although alternative techniques to the procedure, namely endonasal and endolaser DCR have been developed and have their own set of advantages and disadvantages, external DCR continues to be the gold standard.[5,6,7,8]

The conventional incision of external DCR results in conspicuous scar and also carries higher risk of damage to the angular vein. Various incisions have been tried to improve cosmetic appearance whilst maintaining the functional outcome of DCR.[9,10] Various studies have been conducted to date, to evaluate the post-surgical scar of DCR.[11-17] These include the nasojugal or angular incision, lower eyelid crease incision and the subciliary incision.

Harris, in1989, was the first to demonstrate that external DCR can also be done with a horizontal incision placed on a lower lid crease.[15] This came to be termed as the subciliary incision. The subciliary incision has been tried for other ocular surgical procedures too. Studies have shown that there is hardly any noticeable scar at even the first month after surgery and gives excellent cosmetic results especially in the young patients.[6] There occurs minimal bleeding intraoperatively, as the angular vein is spared. Lacrimal sac is entered from the site at the NLD entrance. The osteotomy site is very low. This prevents sump syndrome. Medial canthal tendon remains undamaged. Patients can start wearing glasses soon after surgery. No special equipment is required. Advantages of external DCR are also maintained and only one assistant is required. In terms of patient satisfaction and objective assessment, studies have shown satisfactory results.[18-20]

Our results are comparable with the other researchers who conducted research on cosmetic results of subciliary incision in DCR. Study conducted by Dave T.V. et al showed 47% scars to be invisible and 88% to be minimally visible.[4] Their sample included 16 patients. Akaishi PM et al, also showed successful functional outcome.[6] They included 25 patients in their study. Cosmetic assessment given as a mean score was 2.19 at one month, 1.65 at 3rd month and 1.44 at 6th month.[6]

Another study included 36 patients out of whom 95% attained functional success. At 3rd month after surgery, the subjective and objective outcome of scar was 100% for both.[16]

Results of our study confer with results of the above-mentioned studies. Sample size of our study is bigger than all of these. In terms of patient satisfaction and objective assessment, various other studies have also been conducted with comparable results.[17-19]

Hence, this provides strong evidence that the subciliary incision poses no hindrance in the functional outcome of external DCR. It is a surgeon-friendly and a patient-friendly incision. In our study no post-operative complications were noted, although, punctal ectropion, scar hypertrophy and pigmentary changes have been reported in Indian population.[5]

CONCLUSION

The subciliary incision is a cosmetically appealing approach for external dacryocystorhinostomy. The ideal outcome of healing of scar within six months is desirable for the surgeon and the patient. Use of Subciliary incision in external DCR is a friendly approach for both the surgeon and the patient.

Ethical Approval

The study was approved by the Institutional review board/Ethical review board.

Conflict of Interest

Authors declared no conflict of interest.

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Authors' Designation and Contribution

Nazia Qidwai: Assistant Professor: *Study Design, Data collection, Manuscript writing, final review.*

Ashraf Dawood: Associate Professor: *Study Design, Manuscript writing, final review.*

Munawwar Hussain: Assistant Professor: *Study Design, final review.*

Mujahid Inam: Assistant Professor: *Study Design, final review.*

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