

Laser DCR with ‘Bari Device’ in Elderly patients- A longitudinal study

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Abstract

This prospective Cohort study was done during the period of January 2012 to January 2016 on elderly patients having symptoms due to acquired nasolacrimal duct obstruction (NLDO) to observe the outcome of Laser DCR with ‘Bari Device’. Fifty six eyes of 54 patients aged 60 years and above were included in this study. Transcanalicular Laser DCR was done under local anesthesia (L/A) using 980 nm wavelength diode LASER through fiber optic delivery system. A specially designed medical grade silicon made device (Bari Device) was implanted at the opening site in every case which was removed later on. About 57% (n=32) were female and 42.9% (n=24) were male. Two (3.6%) were failed cases of conventional DCR. Fifty percent (n=28) had left sided , 42.9% (n=24) had right sided and two patients (3.6 %) had both sided problem. Criteria of post Laser success were: 1. Absence of watering and discharge, 2. Disappearing fluorescein dye and 3. Syringing Patency. Forty nine patients, that is 87.5 % showed satisfactory outcome after primary procedure . Success rate increased to 92.86 % with repeat procedure of the failed cases in long term follow up (24 months to 72months).

Introduction:

Acquired nasolacrimal duct obstruction(NLDO) is a common disorder that occurs more frequently in female ^{1,2}. Watering with discharge, repeated conjunctivitis are the common symptoms. Acute on chronic dacryocystitis is a scaring situation to the patients. Dacryocystorhinostomy (DCR) is the standered treatment for acquired nasolacrimal duct obstruction. The goal of DCR surgery is to re-establish tear flow from the lacrimal system into the nasal cavity. This procedure was first described by Toti in 1904 ³ and has been modified many times by many surgeons over the years. Many surgeons prefer dacryocystectomy (DCT) in elderly patients to avoid risk. But post operative watering is the most common irreversible problem to the patient for rest of their life. Approximately for the last 100 years, the gold

standard treatment for NLDO has been conventional external DCR^{1,2}. There are some options of DCR now a days : 1) Conventional or external, 2) Endonasal endoscopic and 3) Recently developed Transcanalicular or endocanalicular Laser DCR. External DCR is the most commonly practiced procedure all over the world till to date. Longer recovery time, external scar, per-operative and post-operative hemorrhage are the common drawbacks that inhibit the patients from this procedure. Endonasal technique was first described by West in 1910. Transcanalicular (or endo canalicular) laser DCR is a recently developed surgical approach for treating NLDO based on the canalization of the lacrimal system. This minimally invasive procedure is becoming popular day by day to both the patients and the surgeons.

Purpose: To see the long term outcome of Laser DCR in elderly patients using ‘Bari Device’

Study Design: Prospective clinical Cohort study

Materials and method:

Fifty six eyes of 54 patients having epiphora due to Nasolacrimal duct Obstruction (NLDO) of 60 years and above age were included in this study. Failed DCR patients(conventional) were also included. Patients

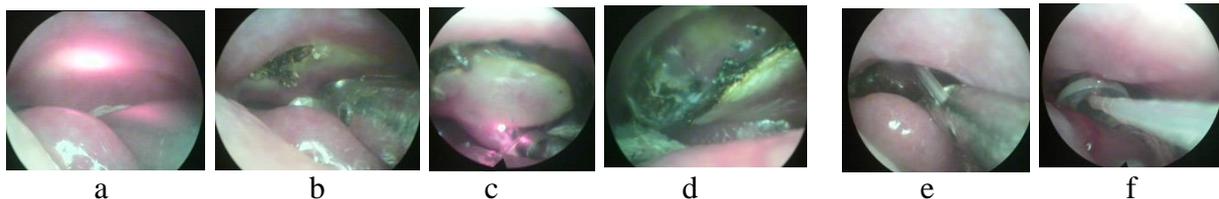


Figure-1: Laser DCR with intubation and Bari Device set

having common Canalicular (C.C) block, same sided gross deviated nasal septum (DNS), acute dacryocystitis cases were excluded.. All patients under went Transcanalicular Laser DCR under Local Anesthesia (L/A) during the period of January 2012 to January 2016.Laser used 980 nm wavelength diode Laser with both closed & bare fiber delivery system. Both puncta were dilated under microscope. Malleable lacrimal probe was inserted through both the canaliculi up to hard stop felt. Then Laser fiber inserted through the lower canaliculus and Laser beam observed endonasally by Sino scope. After proper positioning Laser fired. Primary hole was enlarged making a near round or oval opening as big as possible through both the canaliculi(Fig-2:a,b,c,d).The area cleaned and cotton soaked Mitomycin-C (MMC) applied at the aperture margin for 3 minutes . Silicon tube intubation done & ‘Bari Device’ set with the guidance of tube(Fig-2:e,f). Absorbing pack given in the nasal cavity. Post operative antibiotic (Both oral & eye drop), oral and topical non-steroidal anti-inflammatory (NSAID), oral anti histamine, nasal decongestant was given. Nasal decongestant, oral anti histamine, antibiotic and analgesic were discontinued after first week. Absorbing nasal pack was removed after 7 days, then Nasal cleaning advised with sodibicarb +Normal Saline solution everyday for 1 month. ‘Bari Device’

removed after 3 to 4 weeks and silicon tube kept in position for 6 to 8 weeks, then removed. Topical antibiotic continued till the tube removal and, topical NSAID continued for 3 to 4 weeks. Patients were communicated over phone for follow up visits. At least 2 follow up were done with endoscopic view. All the procedures were recorded and preserved with date.

Result:

About 57% (n=32) were female and 42.9% (n=24) were male. Two (3.6%) were failed cases of conventional DCR with intact proximal drainage ducts. Half of the patients, that is 28 had left sided, 24 (42.9%) had right sided and 2 patients (3.6%) had both sided problem. Criteria of post Laser success were: 1. Absence of watering and discharge, 2. Disappearing fluorescein dye and 3. Syringing Patency. Forty nine patients, that is 87.5% showed satisfactory outcome after primary procedure in long term follow up (24 months to 72 months).

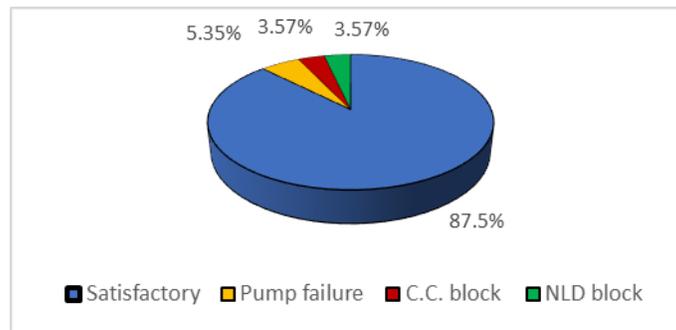


Figure – 2: Outcome of Laser DCR with Bari Device

Seven patients, that is 12.5% developed watering within 3 to 6 months after laser. Three of them showed patency on syringing but had persisting epiphora. Two developed common canalicular block and two had closure of the opening with positive regurgitation. Re-laser was done with repetition of the procedure and became asymptomatic. So satisfactory outcome including repeat procedure was 92.86%.

Discussion:

External DCR is the most common surgical procedure practiced by the surgeons to treat NLDO in adults having good success rate (around 90%). Many studies showed external DCR having better result than transcanalicular microendoscopic techniques^{1,4-9}. M.Alnawaineh et al showed 88.5% success of external DCR in their study where 55.5% patients were more than 65 years who had no history of previous lacrimal surgery¹⁰. Many aged patients suffer from multimorbidity. So external DCR is a troublesome procedure to them. Minimally invasive Transcanalicular laser DCR can be a blessing to them from physical and psychological point of view. But outcome of ongoing Laser DCR procedure is questionable to most of the centers all over the world. A recent study by Upender wali et al showed 60.8% success rate of Laser DCR at 12 month follow up¹¹. Fahrettin et al found 76% success rate in elderly patients at 12 month

follow up¹². Maini et al showed 68 % success in endolaser DCR at 12 month follow up¹³. None of the above studies used any device at the opening site during Laser DCR. In our study long term satisfactory outcome was 87.5% after primary procedure. Three of them showed patency on syringing but had epiphora. Two developed common canalicular block and two had closure of the opening with positive regurgitation(Fig-1). Re-laser was done in the mentioned last two cases and became asymptomatic. So satisfactory outcome including repeat procedure was 92.86 % which is comparable to that of external DCR because of the use of a specially designed device, that is Bari Device. This device helps in many ways : a)Keeps the opening widely open by its central tube during early post operative period. b)Guides the nasal and lacrimal sac mucosae towards each other to make a fistula. c) Prevents synechae formation with the middle turbinate and septum of the nose. d) permits continuous tear flow through the central hole.



Figure -3: (a) Bari Device. (b) Post operative opening of Laser DCR with Bari Device

Long term follow up is of utmost importance to see the real picture of DCR. One of our patients reported with watering after 48 months of the procedure. Post laser DCR endoscopic check up is very important because nasal crust and granulation tissue (if any) should be removed in time to avoid adverse effect on the final outcome.

Conclusion:

Laser DCR with Bari Device is an effective method of lacrimal duct surgery in elderly patients.

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