

## ENDONASAL DACRYOCYSTORHINOSTOMY WITH NO FLAP, NO DRILL, NO STENT AND NO PACK: OUR EXPERIENCE

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**ABSTRACT:** This study was done in 92 patients presenting to the department of ENT, Shanthiram Medical College, Nandyal, Andhra Pradesh with nasolacrimal duct obstruction. Our technique consists of mucosal flap elevation, complete exposure of sac with chisel and a large marsupialization of sac. We have achieved 85% success rate using this technique with follow up period of 6 months to 4 years. This technique is simple, cost effective and easy to learn and teach. In our study majority of failures were cases having a small and atrophic sac. We recommend preoperative dacryocystography to identify cases with healthy sac which can help increase success rate of this technique.

**KEYWORDS:** Endonasal Dacryocystorhinostomy, Dacryocystitis, DCR Stent, Nasolacrimal duct.

**HOW TO CITE THIS ARTICLE:** B. Durga Prasad, G. Shaul Hameed, P. Ravi Babu, L. Soumya. "Endonasal Dacryocystorhinostomy with No Flap, No Drill, No Stent and No Pack: Our Experience". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 45, November 05, 2015; Page: 8124-8126, DOI: 10.18410/jebmh/2015/1089

**INTRODUCTION:** Dacryocystorhinostomy is a surgical technique where the normal lacrimal flow of tears are by passed because of a block in normal pathway most commonly the nasolacrimal duct. Dacryocystorhinostomy (DCR) can be done through a nasal endoscope or the traditional external approach. The external approach was first described by Toti in 1904.<sup>1</sup> However, the first intranasal approach was described by Caldwell as early as 1883. But the popularity of intranasal approach for DCR was limited throughout the twentieth century due to poor visualization of surgical site.<sup>2</sup> After the advent of nasal endoscopes there has been a renewed interest over the past decade in endoscopic DCR. Mc Donough and Meiring described the first endonasal DCR in 1989.<sup>3</sup> Advantages of endonasal DCR are no facial scar, no division of medial canthal ligament and preservation of pump action of lacrimal sac of the orbicularis oculi muscle.<sup>4,5,6</sup> Endonasal DCR has been gaining popularity largely due to technological advances in endoscopes and other modern instruments of rhinologic surgery<sup>7</sup>. Failure rates with external DCR have been attributed to many factors including position and size of the ostium, common canalicular obstruction, scarring within the anastomosis due to infection or non-absorbable suture material, persistent mucocele and sump syndrome.

Endonasal DCR is a surgical attempt to avoid these complications with similar or better results.<sup>8</sup>

**MATERIALS AND METHODS:** This study was done in the Department of ENT, Shanthiram medical college & General Hospital, Nandyal. 92 patients attending ENT outpatient department with complaints of epiphora were selected for study.

Preoperatively all cases were evaluated in the department of ophthalmology by lacrimal syringing. Patients having regurgitation of fluid from upper punctum on syringing i.e. with nasolacrimal duct obstruction were selected. Diagnostic nasal endoscopy was done in all cases to identify septal deviations and other nasal or sinus pathology. X-Ray waters view of paranasal sinuses were done to identify cases with sinusitis.

Patients with canalicular obstruction and traumatic obstruction were excluded from the study. However bilateral disease and lacrimal fistula were not considered as contraindications. Septal deviations and chronic sinusitis were treated simultaneously by septoplasty and middle meatal antrostomy. Informed consent was obtained from all patients after explaining the procedure and risks of surgery.

All cases were operated under local anaesthesia except one male patient aged 12 yrs was operated under general anaesthesia. Follow up period ranged from 6 months to 4 years. All the cases were operated by the first author. 4mm rigid 0 and 30 degree nasal endoscopes were used (Karl Storz, Germany).

The nasal cavity was packed with ribbon gauge soaked in 1:100000 4% xylocaine with adrenaline at least 5 minutes prior to surgery. After mucosa is adequately anaesthetized 1:100000 2% xylocaine with adrenaline is injected in front of middle turbinate and packed again with ribbon gauge soaked in 4% xylocaine for 15 minutes. A 'C' shaped incision is given in front of middle turbinate with plester flag knife and flap raised with circular knife (Fig. 1). Flap should be adequate enough only to expose

Submission 28-10-2015, Peer Review 29-10-2015,

Acceptance 30-10-2015, Published 04-11-2015.

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DOI: 10.18410/jebmh/2015/1089

the sac and not the bone as this may lead to cicatrization and closure of neo-ostium. The flap is cut using straight blakesley forceps. Lacrimal crest is punched inferiorly with curved 2mm kerrison punch and sac movements identified by gentle pressure over medial canthus. A 2mm chisel is used to chisel lacrimal bone starting from inferior punched portion and proceeding superiorly to expose bone over common canaliculi. The chiseled bone is removed and sac exposed widely (Fig. 2). Lacrimal syringing is done so that the sac bulges separating medial and lateral walls. A no 11 surgical blade is used for incising the sac. Two flaps are fashioned and small medial flap is trimmed whereas the lateral flap of the sac is used to cover the raw bone (Fig. 3 & 4). Patency of the neo-ostium is confirmed by syringing. Pieces of gel foam are placed around the neo-ostium and a nasal pack is avoided. Post operatively patients are prescribed antibiotics, ophthalmic drops and saline nasal irrigation to prevent crusting. Follow up is done on 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup> day and every 15 days for next 2 months and monthly for 6 months. Patients are advised to apply gentle pressure over the medial canthus intermittently 30-40 times per day for at least 15 days postoperatively. This technique augments the natural lacrimal pump and provides continuous flow of tears through the neo-ostium thus preventing it from healing.

**RESULTS:** In this study, females were greater than males and age distribution is between 31-75 yrs. Both sides were affected almost equally with no significant preponderance to either side. All were primary cases. 10 cases had bilateral disease and one case presented with lacrimal fistula. 2 patients had gross septal deviation that made instrumentation difficult and 3 patients had chronic sinusitis. Septoplasty and middle meatal antrostomy were performed in these cases simultaneously. 5 cases lost follow up. Absence of epiphora and patency on syringing were considered as criteria for successful outcome. Regurgitation of fluid from upper punctum on syringing was considered as failure of surgery.

Of 87 cases 85% (74 cases) demonstrated patency on syringing. 10.5% (9 cases) were failures and 4.6% (4 cases) returned with regurgitation on syringing 4-6 months postoperatively. Failures were due to small constricted sac with thick walls resulting from chronic inflammation and granulations blocking the neo-ostium postoperatively. 2 patients had lower eyelid swelling which resolved with intravenous antibiotics and anti-inflammatory drugs. No major complications were noted.

**DISCUSSION:** Endonasal DCR has attained significance over the past decades. Presently the treatment for chronic dacryocystitis can be grouped into external DCR, endonasal DCR with and without stents. However, gold standard treatment for chronic dacryocystitis is controversial.<sup>4</sup>

In our study we have achieved a primary success rate of 85%. The success rate described in literature ranges from 82% - 95% without stent and flap.<sup>9,10,11,12</sup> Majority of failures in our study were due to atrophic sac, which can

be decreased by careful selection of cases. Selecting patients having good outline of sac in preoperative dacryocystography would have increased our success rate. HR Jin et. al<sup>13</sup> achieved a success rate of 83% and Ganesh Chandra gayen et. al<sup>7</sup> achieved a success rate of 87.5% without using a flap, which is near to our study. Hardik et. al,<sup>4</sup> Kakkar<sup>14</sup> and Untu et. al<sup>15</sup> did not find significance in use of silicon stents. But Viswakarma et. al<sup>16</sup> reported 98.5% success rate with silicone stents in a prospective study of 272 patients. Our technique has many similarities to a new technique described by Priyo O Kumar et al.<sup>8</sup> He reported a success rate of 100% without using a flap or stent. SH Mohammad et. al<sup>17</sup> reported an acute fall in success rate of stent group from 70% to 57% and 97% to 89% in patients without a stent at 33 months' follow up. Singh et.al<sup>18</sup> reported 92.6% success without stent. The question of whether stents helped, hindered or ultimately had no affect on DCR in general remains unclear. Other factors such as postoperative trauma, infection and size of rhinostomy may be much more important in surgical success.<sup>4</sup>

In this study, we present a technique that is simple and economical yet equally good compared to any other technique.

**ACKNOWLEDGEMENTS:** We thank our ophthalmology colleagues for their help and cooperation in this study.

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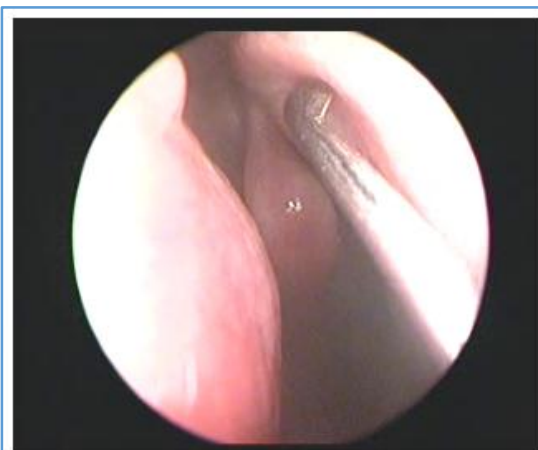


Fig. 1: Incision with plester knife

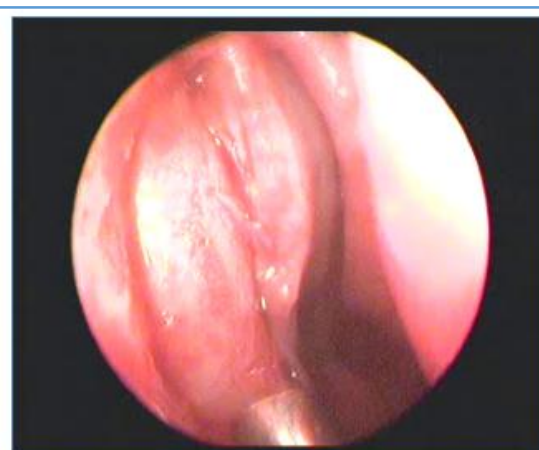


Fig. 2: Wide exposure of sac

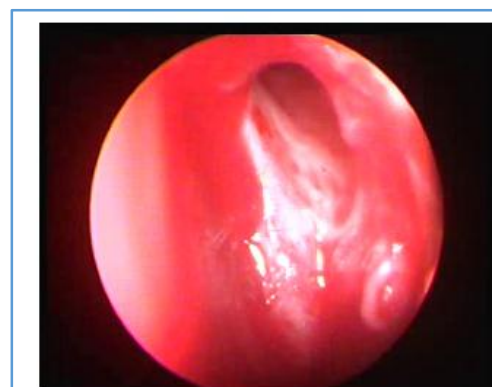


Fig. 3: Large opening made in the sac

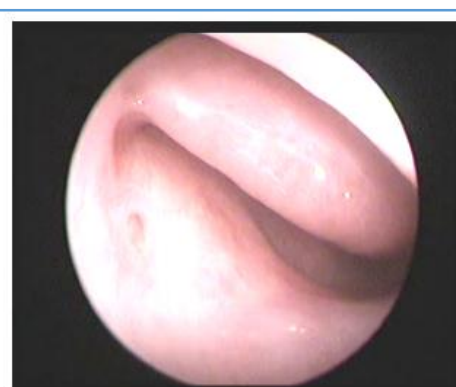


Fig. 4: Neo-ostium in a patient 4 years after surgery. Patency was confirmed by syringing