 DOI: 10.18231/2455-8478.2017.0037

# To study the long term outcomes of external dacryocystorhinostomy: A retrospective study

**Prakash Kumar[1,*], Sanjeev Kumar[2], Bimal Chandra[3]**

[1]Assistant Professor, [2]Associate Professor, [3]Professor, Dept. of Ophthalmology, Narayan Medical College & Hospital, Sasaram, Bihar

***Corresponding Author:**
Email: drshahiprakash@gmail.com

## Abstract

This retrospective study describes the surgical outcomes of primary external DCR. We reviewed the medical records of total twenty four patients who had undergone primary external DCR in the last two year period in our institution. The evaluation included the following parameters: age, gender, duration of disease, surgical outcome, complication rate, and patient satisfaction. The followup period was up to one years after surgery. Procedure success rate was 91.66% with fair amount of patient satisfaction.

## Introduction

DCR (Dacryocystorhinostomy) is an operation that creates a lacrimal drainage pathway into the nasal cavity to facilitate drainage of the previously obstructed excreting systems. This operation is indicated for nasolacrimal duct (NLD) obstruction. The causes of NLD obstruction are idiopathic, iatrogenic, congenital, traumatic, lithiasis, and infection. Suspicion of obstruction may be confirmed by syringing, Jones test and Dacryocystorhinography(DCG).

Classically DCR had been performed by using an external approach. This was first described by Addeo Toti[(1)] in 1904. External DCR is the standard treatment of nasolacrimal duct obstruction with success rates consistently above 90%. Alternative pathway of DCR by intranasal pathway was described by Caldwell in early as 1893.[(2)] It was modified by West in 1910[(3)] later on with the introduction of rigid nasal endoscopic approach.

Although external DCR is still regarded as gold standard ,endoscopic DCR is evolving as an equally effective alternative in the recent pass.[(4)] Various studies have been shown that that success rate for both the procedures ranges from 63%-97%.[(5,6)]

The wide range of success rate is likely due to surgical variability, patient demographic and lack of standardized outcome measures.[(6)]

External DCR was regarded as the gold standard treatment for treating nasolacrimal duct obstruction at the turn of the century. Endonasal DCR has gained increasing popularity and acceptance in the last decade for the treatment of primary acquired nasolacrimal duct obstruction (PANDO). In our study, lacrimal bone removal was done by Kerrison punch or lacrimal trephine. In endoscopic or endonasal DCR numerous variations had been used for creation of bony opening at the level of lacrimal bone using a bone rongeur,[(7)] power drills[(8)] or Lasers.[(9)]

Aim of the study was to evaluate the long term outcome of external DCR regarding the success rate, operative time, intraoperative and postoperative complications and patient satisfaction.

## Materials and Methods

The present study was conducted in the department of ophthalmology Narayan medical college and hospital, Sasaram. This is a retrospective study. In this study we reviewed the medical records of 24 cases of primary acquired nasolacrimal duct obstruction(PANDO) who underwent external DCR between september 2014 to december 2016.

Inclusion criteria:

1. All the cases of PANDO
2. Chronic dacryocystitis

Exclusion criteria:

1. Cases of canalicular / punctal obstruction
2. Secondary acquired nasolacrimal duct obstruction(SANDO)

**Surgical techniques**: All the patients underwent the surgical procedure under local anaesthesia. The nasal cavity of the side to be operated was packed with gauze soaked in xylocaine jelly 2% and adrenaline 1 in 100000. Curvilinear skin incision about 14 to 16 mm was given medial to the medial canthus above the medial canthal ligament avoiding the angular vein. Lacrimal crest was visualized, periosteum elevated, the anterior lacrimal crest in the bone for lacrimal fossa were removed. To remove the bone from the lacrimal fossa we used two sets of instruments first Kerrision punch/rongeurs of different sizes (1.5mm, 2mm and 2.5mm) and second trephines(5mm).

The surgical outcome was evaluated on following parameters(surgical time, intraoperative complications like haemorrhage, loss of nasal flap, laceration of nasal flap, lacrimal sac flap loss, orbital injury, and postoperative epiphora based on Munke's score.[(10)]

We followed the cases records of cases upto 24 months of post-operative period.

## Observation and Results

In our study, total 14 females and 10 males had underwent external DCR.

**Table 1**

| | |
|---|---|
| Age (Mean) | 50.75 |
| Gender | Female-14 (58.33%) |
| | Male-10 (41.66%) |
| Lateralization | Right-12 (50%) |
| | Left-12 (50%) |

Overall success rate of external DCR was 91.66%.

**Table 2**

| | |
|---|---|
| Success Rate | 91.66 |
| Mean Operative Time | 57.25 minutes |

Complication encountered during our study were intraoperative (excess bleeding, lacrimal sac flap loss, loss of nasal mucosa) and postoperative(reactionary haemorrhage and wound infection).

**Table 3: Intra-operative complications**

| | |
|---|---|
| Excess bleeding | 1 |
| Lacrimal sac flap loss | 2 |
| Loss of nasal mucosa | 1 |
| Orbital injury | 0 |
| SF rhinorrhea | 0 |
| Post-Operative Complication | |
| Reactionary haemorrhage | 1 |
| Others(Wound infection) | 1 |
| Total | 6 |

**Table 4**

| patients satisfaction scale reading(1=extremely dissatisfied to 10=extremely satisfied | number of patients(n=24) |
|---|---|
| 1-3 | 4 |
| 3-6 | 4 |
| 6-9 | 14 |
| 10 | 2 |

## Discussion

Advantage of the external approach include excellent success rates reported to be upto 90-95%. A large osteotomy is created with direct visualization of lacrimal sac abnormalities such as lacrimal stones, foreign bodies or tumors. Direct suturing of the nasolacrimal sac and lateral nasal mucosal flaps allow for optimal opposition and primary intention healing of the flaps to create the bypass system. Disadvantages include a visible scar compared to the internal approach.

Anastomosis of posterior flaps does not seem to affect success rate of external DCR. Creating the anterior anastomosis is technically simpler and does not seem to negatively influence the outcome of DCR surgery.

Osteotomy and creation of the bony lacrimal window is a crucial step during any DCR surgery. Creation of a large bony stoma does not mean successful procedure since minimization of intraoperative tissue damage and postoperative scarring is another key point for success.[11,12]

The creation of the bony window can be achieved by many technical variations including Chisel and hammer, kerrison and Citelli` bone punch, lacrimal trephine, and drills. Each instrument has been well described in literature with different results and consequences, but comparison between those instruments and surgical outcome is still inconclusive.[13]

Around 66.66% (n=16) patients are fairly satisfied with the surgical outcome having satisfaction scale reading of six or more than six.

It is important to know that the surgery of the lacrimal sac is not without complication. Loss of vision due to orbital haemorrhage[14] or orbital cellulitis[15] has been reported. There might be a complication leading to corneal ulceration due to trauma at the time of surgery.

In our case series we did not found any serious complications except reactionary haemorrhage one in each group and one case of late wound infection that may be due to poor wound hygiene.

## Conclusion

Overall success rate of external DCR in our study was 91.66% with fair amount of patient satisfaction.

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