Original Research Article

Post operative outcomes in endonasal dacrocystorhinostomy

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Abstract

Chronic dacryocystitis is more common in females than male because of narrow nasolacrimal duct in women as compared to men. Due to slightly narrow NLD the obstruction occurs more frequently in females. The lacrimal disorders are less common as the NLD is wide and short in them. In unilateral cases of nasolacrimal duct obstruction, left is more commonly affected than the right. The nasolacrimal canal may be uniform throughout or may be constricted at the upper orifice or in the middle portion. The standard procedure for DCR has involved stenting the rhinostoma with a silicone tube at the end of the operation. the prospective part of this study reveals that silicone tubes do not provide any further benefits. Moreover, in this study successful ENDCR had a positive impact on the patients' well-being. **Methods:** Post-Operative Outcomes in Endonasal Dacryocystorhinostomy" was conducted in Department of Otorhinolaryngology. Darbhanga Medical College and Hospital, Bihar from May 2016 to June 2017. This study includes 50 patients fulfilling criteria of inclusion. Those who consented for surgery were then listed for an endonasal DCR. **Results:** The maximum number of cases belonged to the age group of 31-40 years. A female preponderance was noticed with 38 (76%) females. Left side preponderance was noticed with 30 (60%) left sided cases. Left side is more affected because the nasolacrimal duct obstruction. Inflammation of the lacrimal sac is possible only if there is stasis of the contents of the sac. This stagnation of tears may occur due to an actual obstruction or due to the congested and edematous mucosa. A total success rate was observed in 88% of cases. Conclusion: The secondary success rate for endoscopic DCR was found to be 100%. It is a minimally invasive surgery as it a direct approach to the lacrimal sac and no other structure is dissected. Bleeding stops almost at the end of the procedure requiring packing for only a few hours. All the patients were discharged within 24 hours after the surgery, as the bleeding stopped almost immediately after the surgery and required very few nasal packs

Key Word: dacryocystitis, rhinostoma, lacrimal sac, nasolacrimal duct

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INTRODUCTION

The outcomes of DCR were not significantly different between patients aged ≥65 years and those aged <65 years. Generally, the success rate is significantly higher in younger patients[1-3]. A possible reason for this result is that the nasal mucosa is more friable with decreased contractility of blood vessels in elderly individuals, leading to increased bleeding. However, we achieved a high success rate even for elderly individuals aged ≥65 years in our study. A possible explanation is the difference in patient stratification by age among different studies; previous studies defined young patients as those aged <50 or <55 years[1,3]. Another reason can be as follows. With an increase in age, the number of fibroblasts decreases and some fibroblasts exhibit degeneration. A decrease in the number and activation of fibroblasts results in decreased synthesis of fibrous components. Therefore, with an increase in age,

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scarring is less and the epithelium at the osteotomy site is less likely to regenerate[2].Our surgery with recanalization of presaccal canalicular obstruction was effective in 72.7% (16 of 22) eyes. Canalicular obstruction is the most difficult area of lacrimal drainage obstruction to treat[3]. Why did we get good results in both patients with and without canalicular obstruction? We think the most important reason is that the normal portion of the canaliculus was sufficiently dilated before trephination and the trephine was advanced as gently as possible following the presumed normal anatomical direction into the lacrimal sac 28. In fact, Yung and Hardman-Lea[3] reported a success rate of 73% in patients with canalicular obstruction. Baek *et al*[4] reported that complete success was achieved in 29 of 31 eyes (93.5%) after endoscopic DCR followed by canalicular trephination and silicone stent intubation. These findings indicate that DCR surgery with recanalization of presaccal canalicular obstruction can be used to treat patients with dacryostenosis[5], although surgeons should avoid creating false passages through the submucosa of the canaliculus[4].

Effects of Surgical Factors

Meticulous homeostasis is crucial for successful DCR. DCR under local anesthesia minimizes intraoperative bleeding[6]. On the other hand, pain during surgery under local anesthesia can lead to inadequate surgery. From the viewpoint of these advantages and disadvantages, we speculated that the mode of anesthesia affects the outcomes of DCR. In this study, excellent success rates were obtained for endoscopic DCR under local (74%) as well as general (83%) anesthesia. Maini *et al*[7] performed endoscopic DCR under local and general anesthesia and reported no significant differences in improvement in the symptom score between the two modes. On the basis of our findings and those of previous studies, we believe that the mode of anesthesia should be selected at the patient's discretion. The postoperative outcomes in our study were not different between surgeries performed with a radiowave unit and those performed without one. Various types of hot knives have been used to prevent intraoperative bleeding from the site of lacrimal sac removal[3,8]. Furthermore, favorable results have been reported after endoscopy-assisted endonasal laser surgery with an argon laser, a KTP laser[9], a Ho:YAG laser[1], and an Nd:YAG laser[3]. On the other hand, recent reports indicated that laser-assisted surgery is associated with increased thermal damage to the sac, which can lead to unnecessary scarring and subsequent restenosis and potential failure[10,12] The necessity of nasolacrimal intubation remains controversial[4,9,13,14]. Häusler and Caversaccio[15] described that this procedure resembles the classic procedure used for the treatment of effusion in the tympanic cavity using transtympanic ventilation tubes. They suggested that long-term drainage and repetitive or even permanent intubation is necessary in patients with dacryostenosis. On the other hand, Feng *et al*[13] reported that intubation is not preferable because infection and/or granulation tissue can develop around the inserted tubes. In our experience, crust removal for 1mo after surgery can lead to normal epithelialization of the nasal mucosa and prevent the subsequent development of granulation tissue around the osteotomy site. We accordingly recommend intubation after DCR with careful monitoring for granulation tissue formation. Previous studies reported that the optimum duration of nasolacrimal intubation after DCR varies from 4wk to >6mo. Farzampour *et al*[3] reported a significant difference in outcomes between patients intubated for 6mo and those intubated for <5mo. However, Ressiniotis *et al* 33 reported that the likelihood of surgical failure was not higher in patients who did not tolerate intubation and those who were extubated early (1-4mo). Our study found a significantly higher success rate in patients with ≥6mo intubation than in those with <6mo intubation; we speculate that intubation for ≥6mo was necessary for epithelization of the lumen wall after reopening of the stenosed segment.

METHODS

Post-Operative Outcomes in Endonasal Dacryocystorhinostomy" was conducted in Department of Otorhinolaryngology. Darbhanga Medical College and Hospital, Bihar from May 2016 to June 2017. This study includes 50 patients fulfilling criteria of inclusion. Those who consented for surgery were then listed for an endonasal DCR.Patients attending Otorhinolaryngology and Ophthalmology OPD of Darbhanga Medical College and Hospital This study includes 50 patients fulfilling criteria of inclusion. Those who consented for surgery were then listed for an endonasal DCR.

Inclusion Criteria

- Patients coming with complaints of continuous lacrimation.
- Patients who are willing for surgical procedure.

Exclusion Criteria

- Patients not willing for the surgical procedure.
- Patients with any systemic disorders.
- Malignancy.

The Patients were evaluated as follows:

Cases selected were subjected to a complete examination according to some defined pro-forma.

- Detailed ocular and systemic history is taken. Patients were examined with articular reference to the lacrimal apparatus. A detailed ocular examination was done by ophthalmologist. Rhinoscopy was done to look for any significant nasal pathology.
- The patency of the nasolacrimal duct was identified by lacrimal sac syringing with normal saline.
- Routine blood investigation like Hb%, BT, CT. Urine for albumin, sugar and other relevant investigations like dacryocystograph were done when requested.
- Acute dacryocystitis cases were treated on medical line and then subjected for surgery.
- All patients received a course of antibiotic starting one day prior to surgery and continued for 5 days.

Surgical Procedure

Patient should be fit for surgery. Normotensive, afebrile, controlled blood sugar, Hb, BT, CT, within normal limits. Since maximum patients are operated under Local Anaesthesia under controlled sedation minimal investigations are sufficient. Asthmatic patients require special mention because post nasal trickling of blood during procedure causes irritation of laryngotracheobronchial tract can lead to bronchospasm during surgery. Early morning empty stomach or fasting for at least 6 h prior to the procedure is usually sufficient. In hot humid weathers drinking water is allowed up to 2 h before surgery

RESULTS

Table 1: Age Distribution

Age (in years)	No. of Patients	Percentage (%)
1-10	3	6
11-20	4	8
21-30	11	22
31-40	22	44
41-50	8	16
51-60	2	4
Total	50	100

Table 2: Sex Distribution

Sex	No. of Patients	Percentage (%)
Male	12	24
Female	38	76
Total	50	100

Table 3: Laterally of symptoms

Laterality	No. of Patients	Percentage (%)
Right	18	36
Left	30	60
B/L	2	4
Total	50	100

Table 4: Lacrimal sac syringing

Lacrimal sac syringing	No. of Patients	Percentage (%)
Canalicular block with mucopurulent Regurgitation	32	64
Canalicular block with clear regurgitation	18	36
Total	50	100

Table 5: Pathology in nose

Pathology in nose	No. of Patients	Percentage(%)
Normal nasal anatomy	40	80
DNS to right	6	12
DNS to left	4	8
Total	**50**	**100**

Table 6: Site of DCR Surgery

Site	No. of Patients	Percentage (%)
Right DCR	18	36
Left DCR	30	60
Bilateral DCR	2	4
Total	50	100

Table 7: Outcome of surgery

Outcome	No. of Patients	Percentage (%)
Success	44	88
Failure	6	12
Total	50	100

DISCUSSION

Table 1 shows age distribution of the patients.

Most of the patients were in 31-40 yeas age group. The youngest being 8 years and the oldest was 60 years old and the mean age was 33, 18 years. 22 (44%) cases belonged to the age group of 31-40 years. This was followed by 11 (22%) cases in the age group of 21-30 years and 8(16%) cases in the age group of 41-50 years. This was shortly followed by 3 cases (6%) in the age group of 1-10 years and 4 cases (8.0%) in the age group of 11-20 years. There were two cases (4.0%) in the age group of 51-60 years.

Table 2 shows the sex distribution of the patients,

There were 38 (76%)female patients and 12 (24%) male patients. Male: Female ratio 3.16:1

Table 3 shows laterality of symptoms.

There were total 18 cases (36%) with right sided symptoms. There were total 30 cases (60%) with left sided symptoms. There were total 2 cases (4.0%) with bilateral symptoms.

Table 4 shows lacrimal sac syringing

There were 32 (64%) cases with complete block and mucopurulent regurgitation. There were 18 cases (36%) with complete block and clear regurgitation.

Table 5 shows associated otorhinolaryngology problems

Associated nasal pathology was DNS which was seen in 6 patients (12%). DNS to right was seen in 4 (8.0%) patients and DNS to left was seen in 4 (8.0%), rest of them had normal nasal anatomy. Out of these, 4 patients were having symptomatic DNS for which septoplasty was done followed by endonasal endoscopic dacryocystorhinostomy in the same sitting.

Table 6 shows the site of endoscopic DCR Surgery:

2 (4.0%) cases had B/L DC for which B/L DCR was done.

Remaining 48 (96.0%) cases underwent U/L DCR Procedure of which 18 (36.0%) cases underwent Right DCR, 30 (60.0%) underwent Left DCR and 2 (4.0%) underwent B/L DCR.

Table 8 shows outcome of surgery at the end of 6 months:

In 44 (88%) patients the outcome was successful at the end of 6 months and in case of 6 (12%) patients it was unsuccessful. In the combined study population (Studies I-II), the overall success rate after ENDCR was 89% (98/110 operations). However, the success rate in the prospective study was higher than in the retrospective study (93% vs. 81%). This may be explained by an effect of the learning curve and the use of the same standard technical approach. The results in our trial are well in line with those of earlier studies assessing the effect of EN-DCR, where the success rate has varied between 83% (Jokinen and Kärjä 1974) and 96% (Sprekelsen and Barberan 1996). In a study done by JaudoHartikainen*et al*[50] patients who underwent external dacryocystorhinostomy were in the range of 25-86 years. Mean age was 64.8 years. In endoscopic DCR group patients were in the range of 24-90 years. Mean age was 61.0 years.In a study by David S *et al*[16] the men age of patients who underwent external DCR was 34.4 and 41.9 in case of endoscopic DCR. In a study conducted by David S *et al*[17], 80% of those who underwent endonasal DCR were females. A study done by Hartikainen*et al*[18] showed majority of the patients to have left sided symptomatology. It is observed that nasolacrimal duct and lacrimal sac form a greater angle on the right side than left, which increase the chance of stasis and obstruction of nasolacrimal duct and lacrimal duct and lacrimal sac on left side. It is, therefore, attributed as the cause for preponderance of chronic dacryocystitis on left side (Arisi 1960). Studies have shown that ocular origin for inflammation of the lacrimal system is less common than nasal origin (Garfin SW).[19] The chronic infections of the maxillary sinus and ethmoidal cells, septal deviation and acute infection in the nasal cavity may lead to an ascending infection via Hasner's valve. This results in an inflammatory reaction of the nasolacrimal duct followed by swelling, ulceration, scar formation and stenosis. The same pathologic process may occur from recurrent infections descending from the conjunctiva. The pathogenesis of so called idiopathic stenosis is unknown and is a subject of controversy. The complications were more common during punching of the lacrimal bone of while making incision of the nasal mucosa. The bleeding was stopped with ribbon gauze soaked in 2% xylocaine with adrenaline. After attaining perfect haemostasis, surgery was continued. In this study patients had four follow up visits scheduled at the end of 1st week, 3rd week, 3rd month and 6th month. At the end of 3rd week 1 (2%) patients, by 3rd and 6th month 5 (10%) patients were found to be having block with clear regurgitation of lacrimal syringing.

CONCLUSION

The maximum number of cases belonged to the age group of 31-40 years. A female preponderance was noticed with 38 (76%) females. Left side preponderance was noticed with 30 (60%) left sided cases. Left side is more affected because the nasolacrimal duct obstruction. Inflammation of the lacrimal sac is possible only if there is stasis of the contents of the sac. This stagnation of tears may occur due to an actual obstruction or due to the congested and edematous mucosa. A total success rate was observed in 88% of cases. The secondary success rate for endoscopic DCR was found to be 100%. It is a minimally invasive surgery as it a direct approach to the lacrimal sac and no other structure is dissected. Bleeding stops almost at the end of the procedure requiring packing for only a few hours. All the patients were discharged within 24 hours after the surgery, as the bleeding stopped almost immediately after the surgery and required very few nasal packs.

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