**Abstract**

Nasolacrimal duct obstruction can be presenting with chronic epiphora and swelling of the lacrimal sac. Dacryocystorhinostomy (DCR) is a surgical procedure which involves the diversion of lacrimal flow into the nasal cavity by creating an opening at the level of lacrimal sac. This operation can be performed by external or endoscopic endonasal approach. The results of endoscopic endonasal DCR are not only encouraging but are associated with many other additional advantages such as avoidance of scar, preservation of medial canthal anatomy, better visualisation resulting in less intraoperative trauma and blood loss [2]. Many modifications like LASER assisted endoscopic DCR, use of silicon tube for stenting, mitomycin-C application etc. have been described. However, insertion of silicon stent in endonasal DCR is most commonly used procedure. On the other hand, some studies indicate that silicon stent itself is a reason for surgical failure. Study by Rajesh et al, 2018 found a success rate of 90.9% and 85.7% for group A (stent not used) and group B (stent used) respectively. The statistical evaluation among these groups does not show any significant difference [3]. Complications that can arise following stenting are nasal adherence, retrograde DCR tube displacement and symblepharon [4]. Whereby, the complications of endoscopic DCR are including intra-operative haemorrhage which required nasal packing, post-operative ephymosis and eyelid oedema [3].

**Results**

The demographic data as is shown in Chart 1 and Graf 1. Sixteen patients (80%) presented with epiphora and four patients (20%) presented with other complains such as medial canthal swelling, inferior orbital swelling, corneal ulceration and incidental finding. The commonest cause for endoscopic dacryocystorhinostomy was nasolacrimal duct obstruction in fourteen patients (70%). Other causes are including dacryocystitis in three patients (15%), tumour cases in two patients (10%) and dacryocystitis in one patient (5%). Fifteen patients (75%) were investigated using dacryocystography (DCG), four patients (20%) with computed tomography (CT) of paranasal sinus and orbit, and one patient (5%) using both DCG and CT. Seven patients (35%) had silicone stent (Figure 1), five patients (25%) had stenting with O’ Donoghue, five patients (25%) no stent, two patients (10%) with silastic stent and one patient (5%) with Boven stent. The stent was in situ for at least 3 months up until 6 months (Figure 2). Post-operative complication revealed bleeding in 2 patients (10%). All patients are treated with Ameoicillin Clavulanate (Augmentin) postoperatively, antibiotic eye ointment and nasal irrigation with 0.9% normal saline for one month. Six patients (30%) had recurrence of disease due to stenosis of the sac after 3 years whereas 14 patients (70%) had no recurrence.

**Introduction**

Nasolacrimal duct obstruction can be presenting with chronic epiphora and swelling of the lacrimal sac. These can lead to subsequent dacryocystitis and recurrent conjunctivitis [1]. Dacryocystorhinostomy (DCR) is a surgical procedure which involves the diversion of lacrimal flow into the nasal cavity by creating an opening at the level of lacrimal sac. This operation can be performed by external or endoscopic endonasal approach. The results of endoscopic endonasal DCR are not only encouraging but are associated with many other additional advantages such as avoidance of scar, preservation of medial canthal anatomy, better visualisation resulting in less intraoperative trauma and blood loss [2]. Many modifications like LASER assisted endoscopic DCR, use of silicon tube for stenting, mitomycin-C application etc. have been described. However, insertion of silicon stent in endonasal DCR is most commonly used procedure. On the other hand, some studies indicate that silicon stent itself is a reason for surgical failure. Study by Rajesh et al, 2018 found a success rate of 90.9% and 85.7% for group A (stent not used) and group B (stent used) respectively. The statistical evaluation among these groups does not show any significant difference [3]. Complications that can arise following stenting are nasal adherence, retrograde DCR tube displacement and symblepharon [4]. Whereby, the complications of endoscopic DCR are including intra-operative haemorrhage which required nasal packing, post-operative ephymosis and eyelid oedema [3].

**Methods and Materials**

A retrospective review of patients underwent endoscopic dacryocystorhinostomy in Universiti Kebangsaan Malaysia Medical Centre over a 10 years period.

**Objective**

To study the outcome of endoscopic dacryocystorhinostomy in Universiti Kebangsaan Malaysia Medical Centre over a 10 years period.

**Discussion**

Dacryocystorhinostomy (DCR) can be performed by external approach, endoscopic transnasal approach or transcanalicular multiodiode laser [5]. The external DCR procedure can cause cutaneous scarring, disruption of the medial canthus and excessive intra-operative bleeding. Advantages of endoscopic DCR includes the absence of a cutaneous scar and decreased operative duration. Majority (65%) of our patients are females. This trend is noted in the local [6] and foreign studies [1][5][7]. Probable reasons for this trend may be that the disease is more common in females due to narrow lumen of nasolacrimal duct [6] and the need to avoid facial scar for cosmetic reasons [7]. Mean age of our patients is 59.25 years which is consistent in most studies where majority of the patients presented in their fifth decade [1][7].

Our diagnostic protocol included endoscopic endonasal examination, dacryocystography (DCG) and computed tomography (CT) scan. A study by Muscatello et al in 2005 employed DCG and CT scan imaging as the investigation tools to diagnose nasolacrimal duct obstruction. DCG helps to locate the site of obstruction whereas CT scan should be reserved for cases with congenital facial bone abnormalities or suspected tumour cases to look for the extension. Complications reported with endoscopic DCR are haemorrhage, difficulty in localisation of lacrimal sac, restenosis of rhinostomy site, granulation tissue formation, retrograde displacement of DCR tube, punctal cease-wiring and adhesion formation [8]. Adequate training and experience in endoscopic surgical techniques along with safe and proper use of appropriate equipment is an essential prerequisite for performing the endoscopic DCR. We encountered worse than normal bleeding in 2 (10%) which prevented adequate view through endoscope but was managed by placing the vasoconstrictor pack for 10 minutes and by lowering the blood pressure of the patient. There are six patients develop restenosis of the rhinostomy site where redo surgery was performed in three. Six patients (30%) reported with recurrent disease after 3 years whereas 14 patients (70%) had no evidence of recurrence. The low recurrence rate suggests that endoscopic DCR has good outcome. Other study by Törbás et al in 2012 suggests overall success rate between 81% to 96% with follow-up ranging between 6 months to 1 year.

**Conclusions**

Endoscopic endonasal DCR which is the procedure of choice for a centre is a safe procedure associated with high success rate and minimal complications.

References

[3] Rajesh P., Pramod K Y., Amit K P., et al. Outcome of primary endoscopic DCR has good outcome. Other study by Törbás et al in 2012 suggests overall success rate between 81% to 96% with follow-up ranging between 6 months to 1 year.

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**Chart 1 : Demographic data**

- **Male**: 65%
- **Female**: 35%

**Graf 1 : Race**

- **MALAY**: 30%
- **CHINESE**: 20%
- **INDIAN**: 30%
- **OTHERS**: 20%