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SURGICAL MANAGEMENT OF EPIPHORA

Orthodontology

Dr. Mehul Sanghavi Professor, Ophthalmology, Vyas Medical college. Jodhpur

KEYWORDS

INTRODUCTION

Epiphora is a term reserved for overflow of tears from the eye due to an obstruction of the nasolacrimal passage.[2] External dacryocystorhinostomy (E-DCR) was first described by Toti in 1904 and since then it had undergone several modifications. It is possible to achieve in a larger proportion of cases an accurate and a large anastomosis with the nasal mucosal wall with a very high success rate. Causes of failure in conventional dacryocystorhinostomy could be attributed to in propriate size and location of ostium, scarring of anastomosis, Sump syndrome and failure of silastic intubation. Endoscopic endonasal surgical dacryocystorhinostomy (EES-DCR) was described at the turn of the 20th century but difficulties were encountered in visualization. Currently with the advent of small calibre endoscopes, it is experiencing resurgence. The main advantages of the procedure are absence of facial scar.[1]

Materials and Methods

During the period of November 1st 2006 to October 31st 2007 thirty dacryocystorhinosotomies ware done at our hospital. Of which ten were done using E-DCR technique, ten were EES-DCR and the remaining ten were EEL-DCR. All patients presented with complaints of epiphora. Nasolacrimal duct block was diagnosed by regurgitation of fluid and mucous on sac syringing. All patients had an ENT reference to rule out atrophic rhinitis, nasal infection, sinusitis, polyps, nasal, septum deviation, etc. Pre-operative laboratory investigation consisted of a complete blood count, erythrocyte sedimentation rate, urine routine and microscopy, blood sugar random, bleeding tine and clotting time. All patients had pre-operative medications decongestant nasal drops 3times/ day prior to surgery. Injection ethamsylate was given as a pre medication to all patients who underwent E-DCR to deduce intraoperative bleeding.

The following procedure was adopted for E-DCR:

The position adopted was supine with a slight head up tilt to reduce bleeding. Nose packed with 4% xylocaine in 1:200000 adrenaline 10 minutes prior to surgery. An external block using 2% xylocaine with adrenaline was given to anaesthetize the infra-orbital nerve. The inferior punctum was dilated and a lacrimal probe was passed in to the sac through the canaliculus. A J-shaped incision was taken 3mm medical to the inner canthus. Orbicular was split along the line of the incision and a lacrimal retractor inserted so as to retract it with the skin. The periosteum over the lacrimal crest was incised and separated from the lacrimal from the lacrimal fossa to expose the lacrimal bone. The bony crest was removed with a gouge and punch till the nasal mucosa was reached. The gap in the bone was enlarged to make the anastomosis of sac and nasal mucosa possible. The sac was opened through the periosteum and its nasal wall and the entrance of the common canaliculus inspected and tested for patency. A flap was dissected in the nasal mucosa and that was seen through the bony window and these were sutured to the flap made in the sac. All the structures were replaced and sutured in layers.[2]

The following procedure was adopted for EES-DCR:

The position adopted was supine with a slight head up tilt to reduce bleeding. Noses packed with 4% xylocaine in 1:200000 adrenaline 10 minutes prior to surgery. An external block using 2% xylocaine with adrenaline was given to anaesthetize the infra-orbital nerve. The inferior punctum was dilated and a lacrimal probe was passed in to the sac through the canaliculus. Using an endoscope the area in front of the anterior end of the middle turbinate was infiltrated with 2:200000 adrenaline in 2% xylocaine. Using a sickle knife and Takahashi forceps 1cm of nasal mucosa and upper half of the uncinated process just posterior to the maxillary line were removed. The lacrimal bone overlying the lacrimal sac was drilled with a cutting burr. The sac was identified tented up with a lacrimal probe and a medial wall of the sac was excised. Silastic tube intubation was done.

The following procedure was adopted for EEL-DCR:

The position adopted was supine with slight head up tilt to reduce bleeding. Nose packed with 4% xylocaine in 1:200000 adrenaline 10 minutes prior to surgery. An external block using 2% xylocaine with adrenaline was given to anaesthetize the infra-orbital nerve. The inferior punctum was dilated and a lacrimal probe was passed in to the sac through the canaliculus. Using an endoscope the area in front of the anterior end of the middle turbinate was infiltrated with 2:200000 adrenaline in 2% xylocaine. Using a sickle knife and Takahashi forceps 1 cm of nasal mucosa and upper half of the uncinated process just posterior to the maxillary line were removed. The laser probe was passed along the canaliculi and the opening in the bone was made using the holmium-YAG laser. Silastic tube intubation was done.

Protocol followed post-operatively was a systemic antibiotic and an anti-inflammatory agent for 5 days, nasal decongestant drops and topical antibiotic eyedrops. Syringing was done on table and was repeated on post-operative day1, 1week and at every visit thereafter. Suture removal was done at 7-10 post-operative day.

RESULTS

Successful surgery was defined as resolution of symptoms with a patent duct on syringing at final follow up.

Failure was defined as either persistence or recurrence of symptoms of epiphora or regurgitation of fluid or mucous on syringing.

Patients were followed up on post-operative day 1, day 7 and then at 4 weekly intervals for a total of six months. Suture removal in cases of E-DCR was done at 7th post-operative day.

Out of the 10 patients who underwent E-DCR all 10 were found to be symptom free and had a patent sac on irrigation at the final follow up; having a success rate of 100%. Amongst the 10 patients who underwent EESC-DCR, 8 patients had a successful outcome. Of the 2 cases that were categorized as failure one had persistence of symptoms and nasolacrimal duct obstruction post operatively. The second failure had recurrence of symptoms 4 weeks post- operatively; thus, having a success rate of 80%. Out of the 10 cases of EEL-DCR one case was lost to follow up. Out of the remaining 9, there were four failures with a recurrence of symptoms attributing a success rate of 55.55%.

DISCUSSION

Dacryocystorhinostomy is an important treatment in the relief of tearing. Through the years there have been several advances in this procedure. Once performed only from an external approach, the advent of rigid endoscopes and endoscopic instrumentation had made the endonasal approach a reality.

Endoscopic dacryocystorhinostomy has the following potential advantages over the standard external dacryocystorhinostomy approach.[4]

1. Main advantage is that of avoiding facial scars between eye and nose by approaching the nasal cavity.
2. Local anaesthetic usually used in compliant patients.
3. Accessing the rhinostomy directly limits tissue damage, surgical trauma and reduces the chances of fibrosis.
4. Diagnosis and management of predisposing of concomitant nasal

and paranasal disorders that may contribute to nasolacrimal duct obstruction simultaneously in one sitting.
5. Bilateral cases are performed simultaneously.
6. The possibility of failures being endoscopically investigated.
7. Active dacryocystitis/ nasal infection is not a contraindication as with the external approach.
8. Reduced operating time.
9. Reduced intra operative bleeding.
10. Reduced morbidity.
11. Performed as an outpatient, day surgery basis.
12. Increased cost effectiveness.

Laser assisted procedures are potentially fast and have an excellent haemostasis, However, they induce more fibroblastic activity resulting in excessive scarring and stenosis of the rhinotomy compared with non-laser dissection.

However, the advantages of E-DCR over endonasal approach are-
1. Bigger size of anastomosis reduces chances of a failure.
2. Since the ostium created in the bone is larger than that created Endo nasally the chances of regrowth of bone are less.
3. Almost 100% success rate.

CONCLUSION

At the end of six months E-DCR had better results than the endonasal approach. There also was a statistically significant difference between the two endonasal groups with the success rate being higher for EESC-DCR than EEL-DCR. Laser DCR has an added advantage in failed dacryocystorhinostomy surgery. Patient undergoing a revision dacryocystorhinostomy have altered anatomy of the region due to previous surgery. EEL-DCR canalicular intubation thus has an advantage during revision surgery.

Hartikainen et al [4] 1998 concluded from their study the success rate of EESC-DCR as 75%; E-DCR as 97% which was consistent with our study.

Moore et al [5] 2002 Concluded from their study the success rate of EESC-DCR 83%; EEL-DCR as 71%. The discrepancy in the success rate for EEL-DCR in our study group was probably due to inclusion of patients who were undergoing a secondary DCR in this category.

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