Main Article

ENDONASAL CARBON-DIOXIDE LASER ASSISTED DACRYOCYSTORHINOSTOMY VERSES EXTERNAL DACRYOCYSTORHINOSTOMY

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ABSTRACT: This is a prospective, non-randomized study to evaluate and compare the results, morbidity and surgical time for endonasal carbon-dioxide laser assisted dacryocystorhinostomy and external dacryocystorhinostomy. 70 consecutive patients of chronic dacryocystitis with nasolacrimal duct obstruction were selected for the study. 36 patients undertook endonasal CO2 laser assisted dacryocystorhinostomy and 34 had external dacryocystorhinostomy. Selection of the type of operation was left to the patient’s choice. All the patients had preoperative counseling and both the procedures were explained in detail with their advantages and disadvantages. Patients not willing for the external incision were selected for endonasal laser assisted dacryocystorhinostomy and others were operated via external approach. Silicone tubes were put in all the patients for three months after surgery. The final follow up was 12 months after the removal of silicone tubes. The patency of the lacrimal passage was confirmed by irrigation, and patients were questioned about their symptoms.

The success rates, 12 months after removal of silicone tubes were 100% in endonasal CO2 laser assisted dacryocystorhinostomy and 88.24% in external dacryocystorhinostomy. The surgical time of endonasal laser assisted dacryocystorhinostomy was 38 minutes as compared to 62 in external dacryocystorhinostomy. Complication rate in both groups was almost equal.

Thus, we came to the conclusion that Endonasal CO2 laser assisted dacryocystorhinostomy is a better surgical option to external dacryocystorhinostomy in cases of chronic dacryocystitis with nasolacrimal duct obstruction, with shorter surgical time.

Key Words: Dacryocystorhinostomy, Endonasal, Laser

INTRODUCTION

The traditional treatment of nasolacrimal duct obstruction is external dacryocystorhinostomy. Its success rate varies from 82-99%. But has the disadvantage of facial scar, excessive intra-operative bleeding and disruption of medial canthus anatomy.[1] Endonasal laser assisted dacryocystorhinostomy is an alternative to the standard external dacryocystorhinostomy because it avoids the cutaneous incision, excessive tissue trauma and postoperative morbidity.[2-3] Over all results of this procedure varies from 58% to 100%.[4-12] Caldwell[13] described endonasal approach to nasolacrimal sac but because of poor visualization of the endonasal anatomy it did not gain popularity. In 1990 for the first time, a window between the nasal cavity and lacrimal sac using Argon laser and operating microscope was created.[14] Site of entry was visualized by introducing a fiber-optic light needle into the lacrimal sac through the canaliculus. Subsequently, various types of lasers KTP/CO₂, KTP, Holmium: YAG, Argon, Ho: yAG and Nd: YAG were used to create the bony window with varying results. We used CO₂ laser to ablate the mucus membrane of the nose and medial wall of the sac and diamond bur to make the bony window. To compare the results, surgical time and morbidity of endonasal CO₂ laser assisted dacryocystorhinostomy and external dacryocystorhinostomy, we evaluated the results of 70 consecutive patients, who underwent dacryocystorhinostomy operations for the treatment of nasolacrimal obstruction from November 1999 to December 2001.

Patient selection

70 consecutive patients with primary diagnosis of chronic dacryocystitis with nasolacrimal duct obstruction were
selected for the study. Diagnosis was established by syringing of the lacrimal passage and dacryocystogram. Patients with common canaliculi block and punctual stenosis were excluded. All these patients had preoperative counseling and both the procedures (External dacryocystorhinostomy and Endonasal CO2 laser assisted dacryocystorhinostomy) were explained in detail with their advantages and disadvantages. Patients not willing to get the skin scar in the postoperative period were selected for endonasal CO2 laser assisted dacryocystorhinostomy. In rest of the patients external dacryocystorhinostomy was performed. Of the total 70 procedures, 34 were external dacryocystorhinostomy and 36 were endonasal CO2 laser assisted dacryocystorhinostomy.

**MATERIALS**

Age of the patient ranged from 15 to 69 years with mean age of 30.1 years. 17 patients were male and 53 were female. 32 procedures were on right side, 38 on left side. 40 cases had only watering from eye as a symptom, 16 complained of purulent discharge, 13 presented with swelling at the medial aspect of the eye and one case had fistula connecting the lacrimal sac and skin. Duration of symptoms ranged from 1 year to 18 years with mean duration of 7.6 years. 16 patients had past history of syringing and probing, 8 had failed external dacryocystorhinostomy and 1 had failed external as well as endonasal dacryocystorhinostomy [Table 2].

**METHODS**

All operations were performed under general anesthesia. Nose was packed with 1:10000 saline with adrenaline soaked packs, half an hour before surgery. Intravenous injection of Clavulanate potentiated amoxycillin 1.2 grams was given at the time of induction of anesthesia as antibiotic prophylaxis. In all patients, Dobkins silicon tube stent was inserted in the lacrimal passage and chlormphenicol + dexamethasone eye drops were given for 10 days. Nasal douching with hypertonic saline was started 24 hours after surgery for 10 days along with Beclomethasone and decongestant nasal sprays. First follow up was after 7 days in the out patient department. Skin sutures of external dacryocystorhinostomy were removed and nasal cavities of all patients were cleaned of crusts and positions of the tubes were checked. Subsequent follow-ups were 1 month and at the end of 3 months after operation. Silicone tubes were removed after 3 months by cutting between the superior and inferior puncti and delivered from the nasal cavities. Patients were further followed up after every 3 months for 12 months.

**Surgical techniques**

Otolaryngologist preformed the endonasal CO2 laser assisted...