Nasolacrimal Intubation as a Treatment for Partial Canalicular Atresia

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Congenital punctal and partial canalicular atresia is a rare abnormality in children. A new minimally invasive technique involving opening of the punta and intubation of the atretic canaliculi with silicone tube is described.
Key words: Nasolacrimal duct, intubation, canalicular atresia

Congenital excretory anomalies of the lacrimal system can occur in the form of congenital punctal atresia, congenital canalicular atresia and congenital nasolacrimal duct obstruction. Atresia of the punctum and canaliculi is a relatively rare anomaly, which may occur alone or may be associated with atresia of the nasolacrimal duct. We describe a case in which atretic puncta and canaliculi were successfully intubated with silicone tubing.

Materials and Methods

A 3 year old male presented in our outpatient department with a history of bilateral epiphora since birth. Patient was born at term with no other systemic abnormality. On examination, there was atresia of the puncta in right upper and lower lids while the left lid had a rudimentary punctum in the lower and absent punctum in the upper lid. Tear lakes were increased on both sides and flouroscein dye dilution test was delayed on both sides. Regurgitation test for nasolacrimal sac was negative. Rest of the eye examination showed a normal anterior and posterior segment.

The patient underwent intubation of the left nasolacrimal duct with silicone tube under general anesthesia. The left nostril was packed with ribbon gauze soaked in 2% lignocaine with adrenaline 1:200,000 solution. The rudimentary inferior punctum was opened with 18 gauge needle under microscope and a number 0, Bowman's probe was passed down to the nose successfully. As there was no punctum superiorly a mark was made on the upper lid margin 2 mm nasal to the inferior punctum. Then the upper lid margin was cut at that point for a few millimeters with a number 11 blade under the microscope. A rudimentary upper canaliculus was found and a number 0 Bowamn's probe was passed with difficulty down to the nose. Nasal packing was removed and then the presence of this Bowman probe beneath the inferior turbinate was confirmed with a larger Bowman number 4 probe. The inferior turbinate was infractured with a Freer periosteum elevator. Later two metallic intubation probes attached to silicone tubing (Lacrimal intubation set, Eagle Laboratories California, USA) were passed sequentially from the superior and inferior puntum and retrieved from the nose with a straight artery forceps (fig. 1). The silicone tube being swaged to the metallic probes came down through the inferior meatus and was looped between the two puncta superiorly. The two ends were tied to each other in the nose a few millimeters below the inferior meatus. The anterior margin of the cut upper lid margin was stitched with 6/0 vicryl suture. There was clinical improvement postoperatively and he had a persistently decreased tear lake on the left side on his last visit one month after surgery. The silicone tube will be removed after 6 months.

A similar procedure was tried on the right side 10 days later but no canaliculi were found after cutting the upper and lower lid 2-3 millimeters lateral to the medial canthus. Since the patient has canalicular atresia, the parents have been advised to have right conjuntivo-dacryocytorhinostomy of their child at 5 years of age to relieve epiphora.

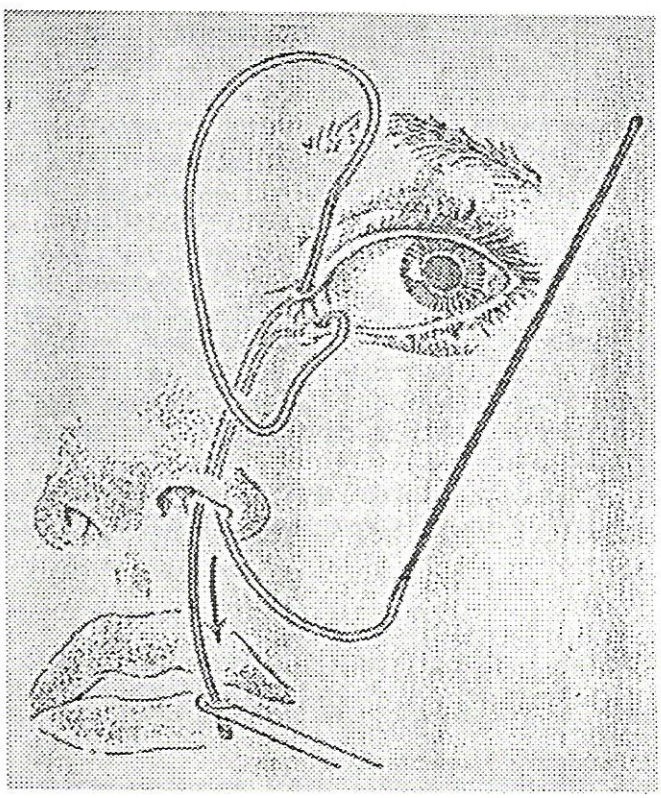

Figure 1. (Krap SP, Crawford JS. Silicone tube intubation in disorders of the lacrimal system in children. Am J Ophthalmol 1982;94:290).

Discussion

The nasolacrimal duct originates as a solid cord of cells, which is completely canalized by the eighth month of fetal life. The canalization starts from the center and proceeds superiorly and inferiorly. Most ducts not open at birth will open spontaneously during the first 6 months [1]. Congenital excretory anomalies of the lacrimal system can occur in the form of congenital punctal atresia, congenital canalicular atresia and congenital nasolacrimal duct obstruction. Congenital nasolacrimal duct obstruction at the lower end is the most common abnormality. Massage to the nasolacrimal duct overcomes the obstruction in majority of the children by the end of one year. 90% of the children having persistent epiphora after 12 months of age are cured by first probing and a further 6% by the second. Usually intubation of the nasolacrimal duct with silicone tubes is done after the first or second probing. The tubes are removed after 6 months and have a success rate of 86%[2,3,4]. Balloon dilation of the proximal and distal nasolacrimal duct is the newer treatment option instead of silicone intubation[5]. Persistent epiphora after intubation is treated with dacryocystorhinostomy.

Punctal atresia in adults is usually treated with one, two or three snip procedure but it has the disadvantage of disrupting the lacrimal pump. We performed this minimally invasive procedure of nasolacrimal intubation in our case because of relative elasticity of structures in children. A variety of substances have been used for intubation, including polyethylene and nylon[3]. In 1967 Gibbs used silicone tubes in patients with obstructed canaliculi. Unlike other material, silicone is nonirritating, flexible, and easy to knot. Silicone tube left in situ keeps the canaliculi and nasolacrimal duct distended for 6 months leading to permanent dilation of the narrowed ducts.

Other option in such cases with canalicular atresia and patent nasolacrimal duct is the retropassage of silicone tubes from the lacrimal sac[6]. This is an invasive procedure requiring routine dacryoscystorhinostomy incision. Our method is minimally invasive and easier to perform for cases with partial canalicular atresia.

Reference:

1. Duane's Foundations of Clinical Ophthalmology.J.B. Lippincott Company 1993. Vol 3, Chap 7:38-39.
2. Dortzbach et al. Silicone intubation for obstruction of the nasolacrimal duct in children. Am J Opthalmol 1982;94:58.
3. Krap SP, Crawford JS. Silicone tube intubation in disorders of the lacrimal system in children. Am J Ophthalmol 1982;94:290.
4. Kushner BJ. Congenital nasolacrimal system obstruction. Arch of Opthalmol 1982;100(4):597-600.
5. Becker BB, Berry FD, Koller H. Balloon catheter dilation for treatment of congenital nasolacrimal duct obstruction. Am J Ophthalmol 1996;121(3):304-9.
6. Ophthalmic Plastic and Reconstructive surgery (2nd edition). Mosby year Book Inc. 1998. Chap 34:657.