

## Success Rate And Complications of Bicanacular Silicone Intubation For Congenital Nasolacrimal Duct Obstruction

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**Abstract:** This study was conducted to see the clinical effectiveness and complications of bi-canalicular intubation of silicone tube in congenital nasolacrimal duct obstruction in pediatric age group at Al-Ibrahim Eye, Hospital, ISRA Postgraduate Institute of Ophthalmology. 113 of 172 patients were treated from January, 2015 to January, 2016. The age range was 23.3 months to 10 years. According to protocol for bi-canalicular nasolacrimal silicone intubation in lacrimal surgery in our institute, the silicone tubes remained in situ for weeks on average 14 weeks (SD 5.1). The current study found the success rate of 99 % with no watering and no discharge after 4 to 6 months removal of tube under general anaesthesia with no harm to other ophthalmic structures. The mean follow-up since intubation was 3.3 months (SD 17.8, RANGE 6 TO 6.6 months) (p value <0.013). This study concluded that bi-canalicular silicone intubation is effective in children as an alternative method for lacrimal system intubation.

### I. Introduction

Congenital nasolacrimal duct obstruction (CNLDO), an extremely common cause of epiphora in the pediatric population, is caused by a failure of nasolacrimal duct canalization.<sup>1</sup> The obstruction is usually at the level of the Hasner valve, at the distal end of the duct.<sup>2</sup> Fortunately, spontaneous resolution occurs in most of the cases by the age of 1 year.<sup>3</sup> Up-to-date many modalities have been suggested and tried to get and maintain permanent opening. One of these tried and tested non-invasive method is Nasolacrimal duct silicone intubation used by many ophthalmologists for preventing rhinostomy closure.<sup>4,7</sup>

Nasolacrimal duct silicone intubation is generally reserved for patients with persistent obstruction after failed probing or as a primary method in older children.<sup>5</sup> This procedure has been advocated to reduce the need for dacryocystorhinostomy.<sup>6</sup> This method involves probing the nasolacrimal duct followed by placement of a silicone tube stent in one or both canaliculi. The current study was carried out to see the clinical effectiveness and complications of bi-canalicular (BCI) intubation of silicone tube in congenital nasolacrimal duct obstruction (CNLDO) in pediatric age group.

### II. Material And Methods

**2.1 Patients:** The surgery was performed in 113 eyes of 172 patients from January 2015 to January 2016 in our hospital. Tubes were left in place for 4 (hard stop) to 6 months (soft stop). The age range was 23.3 months to 10 years. Patients with previously diagnosed CNLDO and failed conservative and failed probing and syringing were included in this study. While children with Congenital ectropion, secondary causes of watering, congenital glaucoma, blepharitis, conjunctivitis and acute dacryocystitis were excluded.

#### 2.2 Surgical procedure:

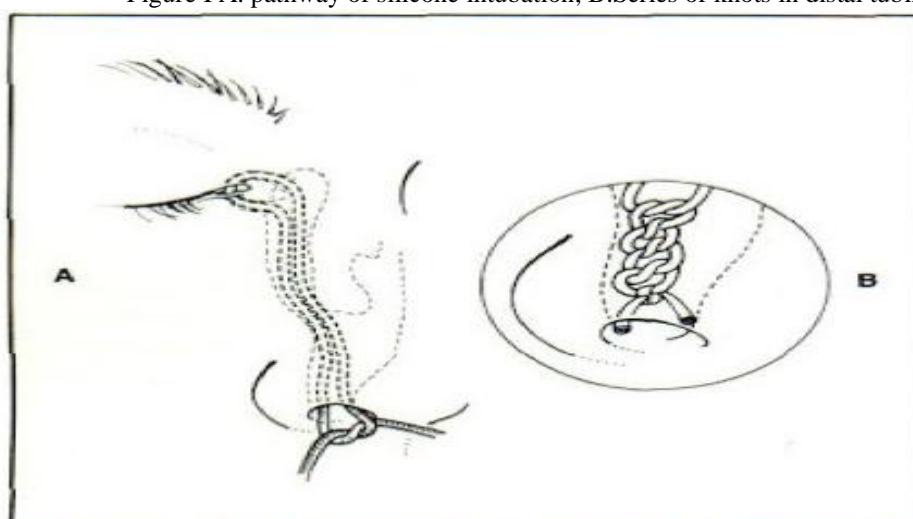
Under general anaesthesia, the nose was packed with cotton soaked in Xylometazoline 10 mg/ml HCL with adrenaline. Sandoz. The inferior and superior puncta were dilated. The Bowman probe was then passed gently through the inferior canalicular system, overcoming any obstructions, until a hard stop was felt in the lacrimal sac. (Spring test.) The probe was then rotated to pass down the NLD to enter the nasal cavity under the inferior concha. The probe was then withdrawn via inferior punctum. The Silicone probe was inserted into the canaliculus and advanced to the nose (Figure 1A). The guide was threaded through the probe and removed from the nose using a Crawford hook. The Ritleng probe was then removed from the lacrimal system. With the second method, intubation was carried out using a silicone tube connected each of its extremities to a malleable steel guide. The probe was retrieved by placing a grooved director under the inferior turbinate to guide the probe out of the nose, after which the steel guide was cut from the silicone tube. Silicone stent after passing through both the puncta down through the nasolacrimal duct into the nasal cavity, the two ends of silicone tubes were tied up in 5-6 knots (Figure 1B). All patients were instructed to use topical moxifloxacin 3 times daily for 3 months. The tubes were removed in the outpatient department by cutting the tube between the lacrimal puncta.

### III. Results And Discussion

The nasolacrimal duct intubation can be done through the both puncta or through a single punctum.<sup>8</sup> BCI nasolacrimal duct silicone intubation involves passage of the silicone stent through the inferior and the superior puncta and then through the nasolacrimal drainage system into the nose. The data was analysed through SPSS version 21 and p value > 0.05 was considered significant. The purpose of current study was carried out to evaluate the success rate of bicanacular silicone intubation in patients with nasolacrimal duct obstruction and our study found the success rate of 99 % with no watering and no discharge after 4 to 6 months removal of tube under general anaesthesia with no harm to other ophthalmic structures (Table 1). Mean follow-up time after tube removal was 6 months. These results were consistent with the study conducted by Moin.M, et al (2016) who concluded that silicone intubation is a better option for treating congenital nasolacrimal duct obstruction.<sup>3</sup> According to protocol for BCI nasolacrimal silicone intubation in lacrimal surgery in our institute, the silicone tubes remained in situ for weeks on average 14 weeks (SD 5.1). The mean follow-up since intubation was 3.3 months (SD 17.8, RANGE 6 TO 6.6 months) (p value <0.013). No major complications were noted. Slight nasal bleeding was observed in two cases, which was easily controlled. None of the patient developed dacryocystitis or dacrolithiasis during silicone tube-wear. In 1 case, the silicone tubes fell out early accidentally.

Table I: showing demographic data		
Total no of eyes	113	P value
Age range	23.3 months to 10 year	
Mean Follow up time	3.3 months± 17.8	<0.013
Primary Success	112 eyes (99%)	< 0.028

Figure I A. pathway of silicone intubation; B. Series of knots in distal tubing



### IV. Conclusion

The technique proved to be effective in children as an alternative method for lacrimal system intubation and is atraumatic, easy to perform, time saving and better tolerated procedure.

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