

# Close Intubation of Lacrimal Drainage System in Children

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**A retrospective study was conducted at Eye Deptt. Lahore General Hospital Lahore for epiphora in children . We performed closed intubation in 19 children where syringing and probing had failed twice at least . All the patients were done under General Anesthesia. In three patients we had collaboration of ENT surgeon. We had success rate of 84.2 % . Our procedure failed in three patients, we had to do dacryocystorhinostomy (DCR) in one 8 year old patient. The rest of the two patient had no relief of epiphore and discharge.**

**Key words: Lacrimal apparatus, close intubation, epiphora.**

Closed intubation is the procedure in which silicone tube is passed into the lacrimal drainage system, without incising the skin, lacrimal sac or making hole in the nasal wall. So using the natural passage as such. This is an attempt to avoid dacryocystorhinostomy (DCR). Which is less effective at early age with growing bones.

Epiphora affects almost 20% of all the neonates 95% become symptomatic during the first month of life, spontaneous remission occur throughout the years and 96% resolve by the age of the first year<sup>1</sup>. Considering the study the probing can be delayed up to one year. The parents can be encouraged for conservative, non invasive methods, as the massage of lacrimal sac area, thereby increasing the hydrostatic pressure<sup>2</sup>, and the medicines like astringents and antibiotics according to the circumstances.

However the difference of opinion exists for optimal time of probing . It is generally agreed that the probing should not be done up to be age of 6 months<sup>3</sup>. Other authorities believe spontaneous remission after 12 months, Where canalization occurs in 95%. Some of children with probing and syringing of the lacrimal drainage system still do not respond and they require more aggressive management like close intubation for persistent epiphora.

## Martial And Methods.

For the last 5 and 1/2 years, from Jan 1994 to June 1998 . 19 patients were admitted for closed intubation. One patient for bilateral intubation and 18 were unilateral. .19 children with 20 procedures were attempted. Age ranged from 1 to 6 years, , where one was of 8 years. Mean age was 4.1 years. Male to female ratio was 11:8 .

In all cases a clinical diagnosis of congenital nasolacrimal duct obstruction was made on basis of typical epiphora with persistent and recurrent discharge . In all patients probing and syringing was attempted for two time with minimum interval of 6 weeks. 9 patients were probed else where for once. The rest were probed in Eye Deptt. at Lahore General Hospital Lahore.

These patients were admitted in the ward and were prepared for general anesthesia with endotracheal intubation. Which is necessary for this procedure. ENT

surgeon was requested to attend the Eye operation theatre at three occasions, whose presence helped in localization of metallic probes at inferior meatus in the nose during the procedure. In one case ENT surgeon had fractured the inferior turbinate. In other reported studies fracture of turbinate in all cases was done with success rate of 94% 4-5.

## Procedure:-

All children were operated under general anesthesia with endotracheal tubes. The nasal cavity on affected side was packed with cotton gauze, soaked in xylocain 2% with adrenaline 1 in 200000 for 10 minutes. This gives nasal decongestion and helped in better visualization of the nasal cavity. Upper and lower puncti are dilated with punctum dilater. Bowman probe is passed very gently into the lacrimal draining system till this is assessed to be in the nose. This is confirmed by a similar probe under the inferior turbinate which is difficult by Ophthalmologist but ENT surgeon makes localization and visualization very easy. After success full probing the metallic probes of silicone tubes are passed into puncti, canaliculi, sac and into the nasolacrimal duct. The advancing ends of the probes are slightly turned, so that they are easily located at the terminal end of nasolacrimal duct under the inferior turbinate.

We did not use groove director for pulling the metal probes some the nose. Instead after locating the lower end this was grasped with hemostate (artery forceps) , firmly and pulled out gently. Probes are passed from upper canaliculus and pulled out through nose, then from the lower canaliculus both, tubes outside the nose are tightened together and are fixed on the cheek by plastic.

Care is taken not to pull the tubes too tight or too loose. Nose is re-packed for complete haemostasis or oozing of blood, because mucosa of inferior turbinate gets traumatized, or for fracture of inferior turbinate. Patients were sent back to the ward for an overnight stay.

This procedure took 20 minutes by us. In collaboration with ENT surgeon, it took 15 minutes because of earlier localization in nasal cavity. We removed nasal packing after an hour in the ward, After 24 hours, the tubes were shortened upto the external nostril, we left

the tubes freely in the nose, and advised the parents to pull the tubes slightly so as to facilitate the drainage of lacrimal secretions by capillary action. We discharged on antibiotic drops and planned to keep the tubes in situ for 6-12 months.

We did not stitch the lower ends of the tubes to nasal mucosa<sup>6</sup>. They were left free in the nasal cavity. This helped in easy removal of tubes, by cutting one tube near the knot and pulling gently out of the nose, under a drop of topical anaesthetic in the eye. No general anaesthesia was required.

### Results

We had follow up of 3 to 17 months. We attempted 29 intubation in 19 children successfully (100%).

Of 20 intubations, 16 children with 17 intubations, has complete resolution of symptom (85%). Three intubated children had complete failure as epiphora and discharge persisted (15%). One (5%) was of the age 8 years and the tubes were left for two months, it showed no improvement and the tube was removed. We have to do dacryocystorhinostomy (DCR) in that patient, rest of the two children were from Sialkot and Azadkashmir of the ages 5 and 4 years respectively did not show any remarkable improvement. After six week we planned to re-intubate them. Parents did not agree to the advice and we could not follow them.

Of the successful series, one (5%) patient had complete severing of upper and lower canaliculi (cheese-wiring effect). The tube was not broken nor knot was undone. It was surprising that the child was totally symptoms free after six months. Five tubes were broken (25%) after four and half month and two after six months (10%). Four patients had tubes in situ for ten months (20%) and the two for 17 months (10%) 3 intubation after 4 months could not be followed (15%). On every visit these were examined care fully for the puncti, tube, conjunctiva and cornea. Cheese-wiring effect as observed in three patients (15%), one was complete and other two were incomplete. Parents occasionally complained of the tubes lost into the nose. However children learnt to bring it out by blowing out the nose.

In our series no pyogenic granuloma<sup>7</sup>, corneal or conjunctival abrasion or irritation was observed, the silicon tubes were well tolerated. Anderson et al. <sup>8</sup> advocates it most important recent advance in lacrimal surgery but warns about awareness of indication, Limitation and complication.

### Discussion:-

Keith in 1968, tried intubation for epiphora followed by Quickert and Dryden in 1970. Latter on numerour studies were done in North America. Polyethylene tube was used initially and silicone tubes were used latter which is softer and has advantage of fewer complications <sup>8</sup>. The management of epiphora in persistent case is easy with closed intubation. Dacryocystorhinostomy (DCR) is an other procedure of choice which is not only difficult

but it is less likely to be success full in children than in adults<sup>8</sup>.

On comparative study with other workers who has done this procedure, our results are almost similar (85%) to them. Our total number of patient is still very small as compared to them.

Welsh and Katowitz has success rate of 83.3% in 192 cases, with retention of silicone tubes for six months. Hussain.H. and Nasr has performed silastic intubation in 129 cases, considering it as non invasive, closed intubation of lacrimal system.

Dortzbach et al<sup>10</sup> and Durso et al<sup>11</sup> showed 84% success in 63 intubation with mean intubation time of 3.2 months. Leone and Van Gemert, in their series of 100 intubation combined with fracture of inferior turbinate, the success rate was upto 99% within 6 months time. However their observation about the age is upto 2 years, beyond which their success rate falls<sup>8</sup>. This goes against our observation where age in majority of the patient is more then two years.

Best success rate depends upon accurate location and recovery of silicon tube in inferior meatus and minimal mucosal damage. Assistance of ENT surgeon also helps in completion of accurate procedure. Repeated probing, fracture of inferior turbinate and presence of tubes in nasolacrimal passages prevents recurrent obstruction. This technique can avert dacryocystorhinostomy (DCR) in many cases if done properly and adequately. Our results and procedure is the first reported study in Pakistan to our knowledge it is well comparable to other studies already mentioned. We had result with the tubes left in situ for 6 months.

### Conclusion

Closed intubation may avoid dacryocystorhinostomy (DCR) in more then 85% of children with persistent epiphora after the age of 1 year. It is considered to be a minor procedure as compared to the major procedure of dacryocystorhinostomy (DCR) which is more rewarding in adults.

Considering the results locally as well as abroad are comparable, less invasive and more rewarding procedure should be adopted

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