

# The Use of T-tube Cholangiocatheter Stents in the Treatment of Pediatric Tracheomalacia

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## INTRODUCTION

Tracheomalacia are usually caused by anterior great vessel compression on trachea that had intrinsic defect in cartilage maturation and is a common disorder in neonate and infants, which can lead to life-threatening airway occlusion.<sup>[1]</sup> Many stents are effective in relieving lower tracheomalacia and bronchomalacia in select patients,<sup>[2,3]</sup> however, only patients in whom conventional therapy, including 6 week of intubation, positive pressure, and steroid has failed should be considered for stent placement or Aortopexy. In this case we are to show how t-tube cholangiocatheter is effective and easy available in sever tracheomalacia patients with intrinsic defect has obviated the Aortopexy or difficult tracheostomy care in small neonate who had failed to respond to conservative therapy.

## CASE REPORT

A 42-day-old baby boy who underwent mechanical ventilation in the second day of life gradually weaned

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## ABSTRACT

Tracheomalacia is a common disorder in neonate and infants, which can lead to life-threatening airway occlusion, because of external pressure or intrinsic defect of tracheobronchial cartilage. Aortopexy and Stents are effective in relieving tracheomalacia in the latter patients. In this case we are to show how t-tube cholangiocatheter is effective and easy available in sever tracheomalacia neonates with intrinsic defect. It can be easily replaced and causes no infection, erosion, or sever complication in 9 months period.

**Key words:** Stent, tracheomalacia, t-tube cholangiocatheter

off from the respirator but while extubated, he could not tolerate extubation. He had severe tracheomalacia on rigid bronchoscopy. Patient had Echocardiography and spiral computed tomography scan for ruling out of extrinsic pressure, after being certain of abnormal vasculature or mass, we decided to insert some kinds of stent which available. T-tube tracheal stent was rigid and not suitable in size and pliability for trachea of neonate. T-tube cholangiogram has the same shape but a very pliable and suitable size #16 (SUPA/Iran) with low cost for small neonate. We performed 1-2 cm incision above sternal notch and through a tracheotomy and trimming the catheter to appropriate size was placed [Figure 1]. He tolerated the tube and discharged and 9 months later tube can be discontinued.

## DISCUSSION

Tracheobronchial obstruction is associated with a significant morbidity and mortality. The purpose of this study is to review the results of a new available stent through tracheotomy in a neonate with tracheomalacia, and with special concern on safety and clinical effectiveness. Although placement of other stents such as covered retrievable expandable metallic stents are safe for the treatment, ventilator weaning, and dyspnea improvement has been seen in all cases after stent placement.<sup>[4]</sup> The advantages of expandable metallic stents over the other available techniques include delivering in a non-expanded state using flexible over-wire systems through a bronchoscope. The epithelializations of stents



**Figure 1:** T-tube cholangiogram inserted as stent in a neonate with sever tracheomalacia

prevent migration and also ciliary activity can be continued. There are many complications during their usage that are airway inflammation, stent migration, airway erosion, stent fracture and collapse. In these patients computed tomography in assessing airway morphologic features and dynamics distal to the stent, and can be valuable.<sup>[5,6]</sup>

We have also performed Aortopexy in some of our patients, included partial thymectomy and fixation of intra pericardial aortic arch to under surface of sternum. This method advocated in many studies as preferable choice for those who had failed responding to conventional therapy, however, it has its morbidity and complications for small neonate, bleeding, risk of thoracotomy, detachment of fixation, phrenic nerve injury despite being successful in more than of 50% of patients.<sup>[7,8]</sup>

Despite above complication T-tube cholangiocatheter stent is ready available with no migration and can be used

as same as silicone stent in patients with tracheomalacia.<sup>[7]</sup> T-tube cholangiocatheter has lower cost than other material used to for tracheomalacia in another study.<sup>[8]</sup> It can be easily replaced and causes no infection, erosion or sever complication in short period; however, larger trial need to evaluate this method perfectly.

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