

# A New Stent for Use in Patients with Choanal Atresia

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## Introduction

Choanal atresia is a congenital condition with obliteration of the posterior nasal apertures. A number of techniques have been described to cannulate the posterior nares. The use of stents remains controversial<sup>1</sup>. Traditionally endotracheal tubes have been fashioned for this purpose. Stents cause a foreign body reaction and infection resulting in granulation tissue formation and restenosis. However they are important in maintaining the patency of the nares post-operatively and may reduce the number of recannulation procedures required<sup>2</sup>. A new stent for use in children with choanal atresia is described. It is undergoing evaluation in a number of tertiary centres.

## Stent Design

The stent comprises of two hollow tubes connected by a transverse bridge. It is held together by a nylon thread which runs through the tubes and intervening bridge. The two hollow tubes have tapered ends with perforations for engagement with guide wire hooks. Once inserted into an infant a locking plate slides over the tapered ends to keep the stent in place.

## Insertion

A Boyle Davis mouth gag is inserted in the infant's mouth. The two guide wires are inserted into the nostrils and retrieved through the mouth. The stent is then engaged using the guide wire hooks. The guide wires and attached tapered ends of the stent are then retrieved from the nose. The guide wires are removed and gentle traction is applied on the stent so that the transverse bridge lies against the

posterior septum. A locking plate is applied over the tapered ends and can be adjusted to avoid pressure necrosis as the baby grows. The tapered ends are cut at the yellow dots to provide a lumen through which the baby can breathe. Suction and saline irrigation are used to maintain patency.

## Removal

Removal is achieved by cutting one side only at the red dot which results in the nylon thread being cut. The stent will become separated in the nasopharynx and each limb can be retrieved separately through each nostril.

## Advantages

The stent is made of silicon. It is inert and should not cause granulation tissue formation. It is designed to protrude beyond the posterior nares and thought to reduce the likelihood of tissue overgrowth and restenosis. There is no need to suture the stent. It can be placed quickly which should reduce the surgical procedure time by half. It is stable in the nose and does not hinder epithelialization by excessive movement. Pressure on the columella is avoided by an adjustable flange which is important as the baby grows. The stent can be safely left in place for 3 months. Removal does not require another general anaesthetic. The stent is radio opaque and can be detected with an x-ray. It is currently available in two sizes.

## References

1. Transnasal endoscopic repair of choanal atresia: why stent? Shoem, S.R. Otolaryngol Head Neck Surg. 2004 Oct;131(4):362-6
2. Congenital bilateral choanal atresia Sadek S Int J Paediatr Otorhinolaryngol 1998 Jan;42(3):247-56

