Pediatric Nasal Obstruction

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KEYWORDS

• Nasal obstruction • Choanal atresia • Pyriform aperture stenosis • Rhinitis
• Rhinosinusitis • Juvenile angiofibroma

KEY POINTS

- Newborns with bilateral congenital nasal obstruction will present very early to the physician with desaturations with feeding.
- Nasal dermoids, gliomas, and encephaloceles are the most common causes of midline nasal masses. A positive Furstenberg sign is diagnostic of an encephalocele.
- Chronic rhinosinusitis and allergic rhinitis overlap significantly and, untreated, can lead to a significant decrease in quality of life.
- Intervention is always needed for removal of nasal foreign bodies to prevent further migration into the esophagus or the larynx, precipitating an airway emergency.
- Anterior bowing of the posterior maxillary wall, along with widening of the sphenopalatine foramen, are hallmark radiologic signs of a juvenile angiofibroma.

INTRODUCTION

Pediatric nasal obstruction is one of the most common problems seen by pediatric otolaryngologists. Typically, this is not an urgent diagnosis but is more commonly associated with reduced quality of life. However, prompt treatment of nasal obstruction can be critical in newborns and infants because of their obligatory nasal breathing. A variety of congenital causes for pediatric nasal obstruction, including choanal atresia, pyriform aperture stenosis, and midline nasal masses can present with respiratory or feeding complaints. As children get older, inflammatory and infectious causes of nasal obstruction are more common and lead to significantly reduced

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quality of life and increased health care expenditures. Within this article, the authors discuss the approach and workup of a child with nasal obstruction, along with a description of commonly encountered causes.

HISTORY

As with other disease processes, obtaining an accurate history, including laterality, is very important to narrow the differential diagnoses (**Box 1**) for nasal obstruction. Newborns with bilateral congenital nasal obstruction will present soon after birth with desaturations or blue spells because they are unable to coordinate feeding and breathing. Left untreated, this results in failure to thrive. Unilateral congenital nasal obstruction typically presents later in life, as feeding is typically not significantly impeded. Birth history, including Apgar scores; family history (including any atopy); parental pregnancy history, including exposure to teratogens; response to allergens; and complete past medical and surgical histories will assist the clinician when narrowing down the differential.

PHYSICAL EXAMINATION

The physical examination should begin with observation for retractions, nasal flaring, visible nasal obstructive masses or other midline defects, and the presence of mouth breathing. If there are signs of respiratory distress, such as cyanosis, labored breathing, or substernal or subcostal retractions, airway management should be initiated. This management may include supplemental oxygen, noninvasive ventilation, or even intubation. Management of feeding through a nasogastric tube may be required. In newborns, a 5F or 6F catheter is passed through the nasal cavity to establish the patency of the posterior choanae. It is important to see the catheter transorally in order to establish patency; the catheter can become coiled in the nasal cavity and seem to pass through the choanae without actually doing so. If there is concern for a skull base defect, and the catheter is not able to be passed, placing a mirror under the nares to check for condensation is a noninvasive evaluation of nasal patency. Anterior rhinoscopy is also useful to examine the septum, inferior and middle turbinates, internal nasal valve, and to assess for polyps or purulence. Flexible and/or rigid nasal endoscopy is very useful in determining the presence of nasal structural obstruction or masses. The ease and success of this evaluation is based on the cooperation of the child and permission of the parent.

IMAGING

Computed tomography (CT) and/or MRI, alone or in combination, are the most common modalities used to assess pediatric nasal obstruction. CT is best used to evaluate the bony skeleton, and MRI is best used to evaluate the soft tissue as well as the extent of intracranial involvement. One advantage of MRI over CT is the lack of radiation exposure. However, in young or uncooperative children, sedation may be required. In pediatric patients who have undergone implant procedures (eg, cochlear implantation), CT is preferred to avoid displacing the implant.

DIFFERENTIAL DIAGNOSIS

As demonstrated in **Box 1**, there are a multitude of causes for pediatric nasal obstruction. The authors discuss the most commonly encountered causes next.