Laryngomalacia is the most common cause of noisy breathing in infants. Most cases are mild and will resolve spontaneously without treatment by 12-18 months of age, but there are times when symptoms warrant further evaluation. Primary care providers are one of the first to see the infant in the newborn period and therefore may be the first to detect the noisy breathing (stridor) associated with laryngomalacia.

**LARYNGOMALACIA**

How to diagnose and treat laryngomalacia

*MEET THE TEAM*

Barbara Malone, MD, Medical Director

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**CHILDREN’S ENT AND FACIAL PLASTIC SURGERY**

The ENT and facial plastic surgery team includes eight pediatric otolaryngologists and four pediatric nurse practitioners. We provide services to children of all ages including those with complex medical conditions. Common conditions treated include chronic ear infections, tonsil and adenoid enlargement or infections, hearing loss, sinus disease, neck masses and voice or swallowing abnormalities. Complex conditions include airway abnormalities, congenital aural atresia, tumors of the head and neck, vascular abnormalities, thyroid and parathyroid tumors, facial weakness or paralysis, plagiocephaly, craniofacial abnormalities and craniosynostosis. Facial plastics include cleft lip and palate repair, animal bite repair, scar revision, trauma repair and ear molding. Speech and social services are provided to these patients within the department.

Our department also participates in multidisciplinary clinics throughout the Children’s Minnesota system. These include cleft palate clinic, craniosynostosis clinic, velocardiofacial clinic, vascular anomalies clinic, endocrine thyroid clinic, and prenatal and fetal clinic.

**OUR PROMISE TO YOU**

- Fast call backs to clinicians and families
- Coordinated appointments with other services (lab/radiology/other specialists)
- Physician calls connected right away with an ENT physician or APRN
- Letters dictated same day for primary care clinicians
- Same-day access for urgent appointments

**CHILDREN’S PHYSICIAN ACCESS**

24/7 assistance
- referrals
- consultations
- admissions

612-343-2121
866-755-2121

**THREE LOCATIONS**

Children’s St. Paul
345 North Smith Avenue, Suite 302
St. Paul, MN 55102

Children’s Minneapolis
2530 Chicago Avenue South, Suite 70
Minneapolis, MN 55404

Children’s Minnetonka
5950 Clearwater Drive, Suite 510
Minnetonka, MN 55343

**CHILDREN’S EDUCATION BRIEF**

- Reviews laryngomalacia common signs and symptoms
- Shares key evaluation and examination criteria
- Recommends treatment and management tips
- Identifies when to refer to an otolaryngologist
LARYNGOMALACIA
Also known as “floppy airway” occurs when the supraglottic structures collapse into the airway during inspiration causing temporary partial blockage of the airway. There is shortening in the distance between the arytenoids and epiglottis and an omega-shaped epiglottis. Inspiratory stridor is caused by airflow through an obstruction at the level of the vocal cords or above and is often heard in laryngomalacia. This is commonly confused with tracheomalacia in which you will hear expiratory stridor secondary to obstruction in the trachea. The exact etiology of laryngomalacia remains unknown. Stridor associated with laryngomalacia may worsen with feeding, crying/agitation, when placed in the supine position and when asleep as opposed to awake.

LARYNGOMALACIA PRESENTATION

RECOMMENDED EXAMINATION
Comprehensive Health History
- Birth history (premature, term) and any other pertinent positives
- Birth weight and current weight
- History of intubation
- Growth and development (following growth curve)
- Dietary intake (breast milk or formula)
- Frequency of feedings
- Ounces per feed and length of time to finish feeding
- Appropriate latch
- Parental report of “noisy” breathing.
- At what age was the noisy breathing noted; has it worsened; what improves it or exacerbates it
- Coughing, choking, regurgitation or breathing issues with feedings
- History of reflux, pneumonias or frequent upper respiratory illnesses
- Medications
- Immunization status

Physical Examination
Comprehensive physical exam with focus on:
- Co-morbidities/syndromes: CHARGE, Pierre Robin, Trisomy 21, neurologic disease, seizure disorder, hypotonia, cardiaco disease etc.
- Congenital anomalies: Examples include micrognathia, cleft lip and/or palate
- Growth and development plotted on appropriate growth curve
- Stridor: Inspiratory, expiratory, or both? Note positions or anything that may improve or exacerbate symptoms. Is it noisier when awake or asleep?
- Lung sounds: assess for upper airway congestion, especially after feeds; signs of aspiration
- Respiratory status: distress, retractions, increased work of breathing, cyanosis

Diagnostics
Fiberoptic/flexible laryngoscopy performed by a pediatric otolaryngologist is the gold standard for diagnosis of laryngomalacia.
- Can be performed without sedation in the clinic setting. A topical anesthetic and/or nasal decongestant may be applied prior to the procedure
- Allows direct visualization of the nose, throat and anatomy at the level of the voice box and above
- Procedure: A thin tube with a fiber-optic camera (scope) is passed through the naris for direct visualization of the structures and how they move.
- This generally takes only a few minutes.
- Safe with minimal risks and is well tolerated
- Direct visualization together with associated symptoms allows the otolaryngologist to determine the severity of laryngomalacia (mild, moderate, or severe)

TREATMENT/MANAGEMENT
Management depends on severity
- In the majority of infants, laryngomalacia is not dangerous and resolves spontaneously between the ages of 12 and 18 months with growth
- Surgical management is indicated for those with severe disease (feeding issues, poor weight gain/loss, breathing issues)
- Surgery: Supraglottoplasty
  > Done using micro instruments or laser to trim the folds between the epiglottis and the arytenoids
  > Usually requires a 1-night stay postoperatively

WHEN TO REFER TO THE CHILDREN’S ENT AND FACIAL PLASTIC SURGERY CLINIC
Common signs and symptoms
Because laryngomalacia may not be present at birth and becomes more prominent in the first few weeks to months of life, it is imperative that the primary care provider evaluate the noisy breathing and if continued symptoms are present, referral to a specialist is appropriate.
Referral to a specialist such as the Children’s ENT and Facial Plastic Clinic is appropriate if one or more of the following criteria are met in addition to noisy breathing/stridor:
- Respiratory distress - tachypnea, retractions, tracheal tugging, apnea, blue spells (less common)
- Sleep disordered breathing
- Difficulty coordinating suck with swallow
- Feeding problems including: aspiration, regurgitation, vomiting, cough, choking and slow feeds
- Poor weight gain or weight loss (due to increased metabolic demand while trying to coordinate eating with breathing)
- Failure-to-thrive
- Prolonged stridor without other symptoms after 12 months of age

At the time of LARYNGOMALACIA PRESENTATION
40% of infants have mild laryngomalacia,
40% of infants have moderate laryngomalacia and
20% of infants have severe laryngomalacia.

45-75% of infants presenting with noisy breathing

(Landry and Thompson, 2012)