Acquired Subglottic Cysts: A retrospective review of cases at Red Cross Children's Hospital

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INTRODUCTION

- Acquired subglottic cysts (SGC) are rare.
- Children present with stridor and upper airway obstruction in infancy or early childhood, typically from endotracheal intubation.
- Prematurity and prolonged intubation in the neonatal period are recognized risk factors.
- **OBJECTIVES:**

To retrospectively review the clinical presentation and management of SGCs at Red Cross Children's Hospital.

To raise awareness of the condition by reinforcing the sequelae of prolonged intubation in this vulnerable population - for pediatricians, neonatologists, intensivists and otolaryngologists.

PATHOGENESIS

- The subglottic region is the narrowest part of the upper airways in premature infants and it has a greater quantity of submucosal glands leading to increased production of more viscous mucous.[1]
- Subglottic ducts are greater number in infants compared to adults.
- Injury and scarring of the subglottic mucosa is thought to lead to blockage of the ducts and cyst formation.

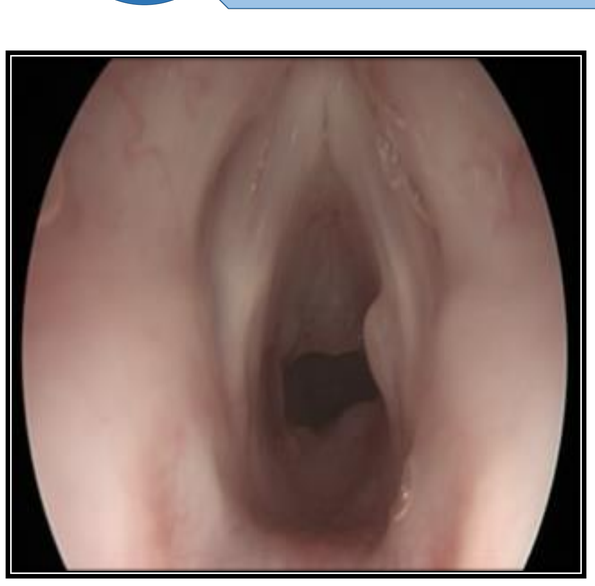
CLINICAL FEATURES

- Acute airway compromise
- Continuing biphasic stridor[2]
- Apneic episodes
- Recurrent croup attacks
- Post extubation voice changes
- Altered cough
- Feeding difficulties
- Failure to thrive

INVESTIGATIONS

When SGC is suspected, a flexible laryngoscopy is imperative in evaluation of the child's airway. However direct laryngotracheal bronchoscopy and release of tiny beads of mucus is the gold standard diagnosis.[3]

The location of the SGC to the left side of the trachea and subglottic area (78.6% for Lim and 92% for Toriumi) supports the iatrogenic hypothesis.[5]



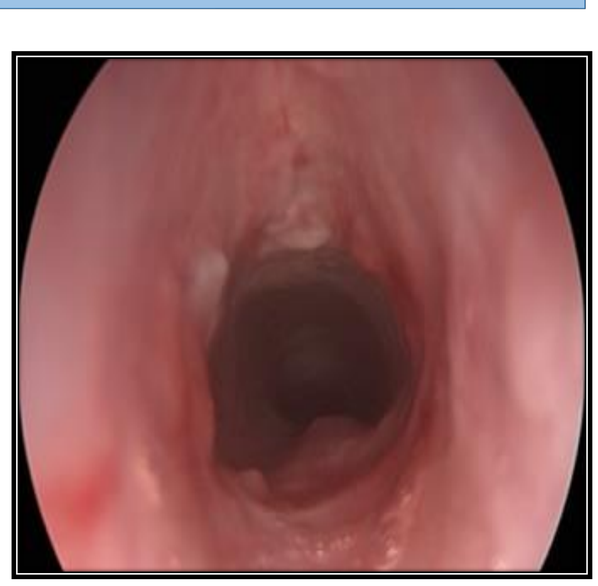


Fig 1a: Subglottic cysts prior to balloon dilatation

Fig 1b: View of glottis after balloon dilatation

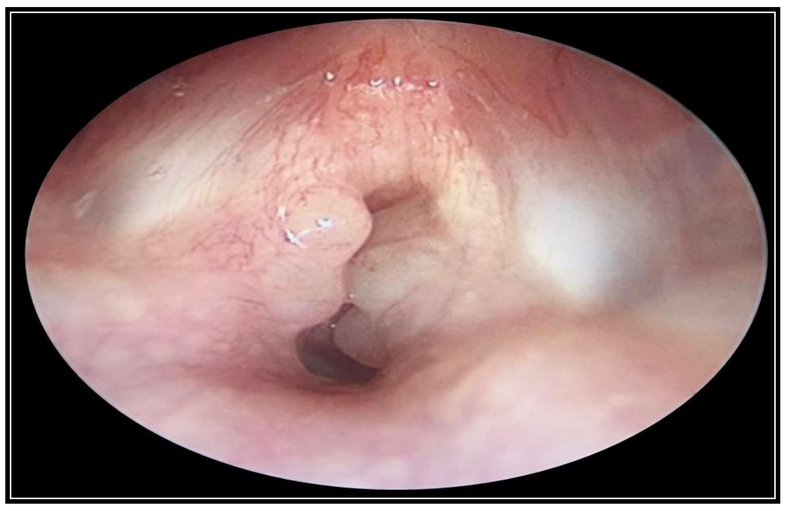
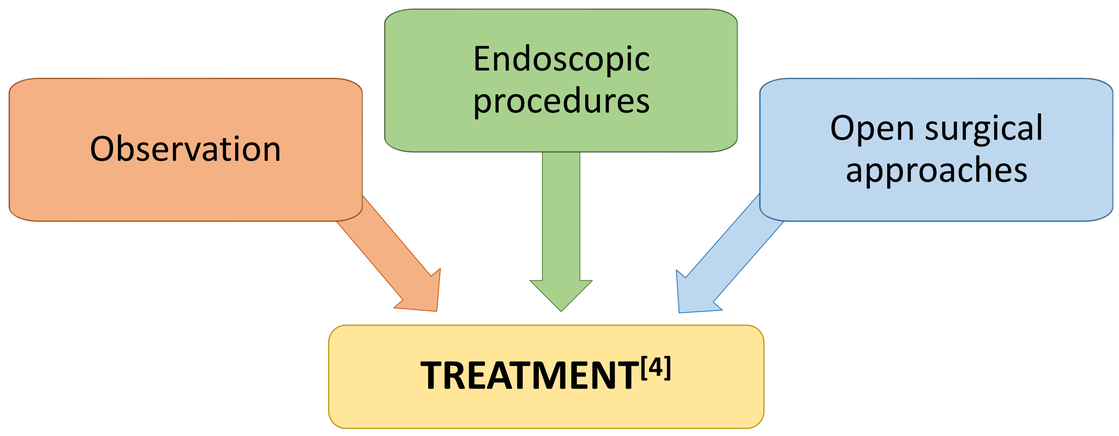


Fig 2: View of subglottic cysts in a 28-week premature child with persistent stridor

TREATMENT



METHODS

- A review of medical folders for all children diagnosed with SGCs at our institution between Jan 2006 - June 2021, was performed.
- **Data collection included:**
  - Age and weight at diagnosis
  - Prematurity |Birth weight
  - Associated co-morbidities(cardiac, respiratory, neurological)
  - Presence and duration of tracheostomy
- **Number and duration of the following was also included:**
  - Intubations | ICU admissions |Intervention

RESULTS

- 15 children with SGC
- 11 were males
- Average age at time of diagnosis was 18 months—(range 0 to 72 months)

- 11/15 (73%) were premature
- 2/15 (13%) had meconium aspiration
- 86.7% had significant comorbidities
- 86.7% had multiple intubations ranging from 1 to 18 days (average 7 days)

- Endolaryngeal interventions ranged from 1 to 7 procedures, 2 on average that involved deroofing or marsupialisation of cysts and/or balloon dilatation
- Tracheostomy was avoided in 13 /15 (86.7%) cases

CONCLUSION

SGCs are a rare entity, with diagnostic delays being a key factor in obtaining definitive treatment.

Intubation in the neonatal period, while necessary and lifesaving, can risk acute and long-term airway injury, by way of subglottic cyst formation with or without stenosis, a condition that if detected early, can be promptly addressed.

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