

Occult Nasopharyngeal Foreign Bodies in Children: Lessons from Clinical Experience and Published Evidence

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الأجسام الغريبة الخفية في البلعوم الأنفي لدى الأطفال: رؤى مستمدة من الخبرة السريرية والأدبيات المنشورة

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Abstract

Background: Foreign body aspiration is a common pediatric emergency; however, nasopharyngeal impaction following choking episodes is rare and frequently overlooked. Normal chest imaging and misleading clinical histories may delay diagnosis, increasing the risk of complications. **Objective:** To highlight the diagnostic challenges associated with occult nasopharyngeal foreign bodies in children following choking episodes through presentation of a pediatric case and review of previously published literature. **Methods:** A retrospective review of a pediatric case of nasopharyngeal foreign body impaction managed at Ibn-Sina Teaching Hospital, Sirte, Libya, was conducted. Clinical presentation, diagnostic course, imaging findings, treatment, and outcomes were analyzed and compared with five previously published pediatric cases identified through literature review. **Results:** Six pediatric cases (one institutional case and five published cases) were reviewed. Common diagnostic features included misleading caregiver history, normal chest examination and radiographs, delayed onset of upper airway symptoms, and prolonged diagnostic delay. Persistent nasal obstruction, rhinorrhea, and snoring were the most frequently reported manifestations leading to eventual diagnosis. **Conclusion:** Nasopharyngeal foreign bodies represent an underrecognized cause of persistent upper airway symptoms following pediatric choking episodes. In children with ongoing nasal symptoms despite normal chest findings, evaluation of the nasopharynx should be considered to facilitate early diagnosis and prevent potentially serious complications.

Keywords: Pediatric choking, nasopharyngeal foreign body, diagnostic delay, case report, literature review.

المخلص

الخلفية: يُعد استنشاق الأجسام الغريبة من الحالات الإسعافية الشائعة لدى الأطفال، إلا أن انحشار الأجسام الغريبة في البلعوم الأنفي عقب نوبات الاختناق يُعد حالة نادرة وغالبًا ما يتم إغفالها. وقد يؤدي وجود صور أشعة صدر طبيعية وتاريخ سريري مضلل إلى تأخر التشخيص، مما يزيد من خطر حدوث المضاعفات.

الهدف: تهدف هذه الدراسة إلى تسليط الضوء على التحديات التشخيصية المرتبطة بالأجسام الغريبة الخفية في البلعوم الأنفي لدى الأطفال بعد نوبات الاختناق، من خلال عرض حالة سريرية لطفل ومراجعة الأدبيات المنشورة سابقًا.

المنهجية: أُجريت مراجعة استيعادية لحالة لطفل يعاني من انحشار جسم غريب في البلعوم الأنفي، وتمت معالجته في مستشفى ابن سينا التعليمي بمدينة سرت، ليبيا. وتم تحليل العرض السريري، والمسار التشخيصي، ونتائج التصوير الشعاعي، والتدخل

العلاجي، والنتائج السريرية، ثم مقارنتها بخمس حالات أطفال منشورة سابقاً جرى تحديدها من خلال مراجعة الأدبيات العلمية.

النتائج: شملت المراجعة ست حالات لدى الأطفال (حالة واحدة من المؤسسة الطبية وخمس حالات منشورة سابقاً). ومن أبرز السمات التشخيصية المشتركة: التاريخ المرضي المضلل الذي يقدمه مقدمو الرعاية، وجود فحص سريري وأشعة صدر طبيعيين، وتأخر ظهور أعراض المجرى التنفسي العلوي، إضافة إلى التأخر في التشخيص. وكانت أكثر الأعراض شيوعاً التي قادت إلى التشخيص النهائي هي انسداد الأنف المستمر، وسيلان الأنف، والشخير.

الاستنتاج: تمثل الأجسام الغريبة في البلعوم الأنفي سبباً غير معترف به على نحو كافٍ لاستمرار أعراض المجرى التنفسي العلوي لدى الأطفال عقب نوبات الاختناق. وعند الأطفال الذين يعانون من أعراض أنفية مستمرة رغم سلامة فحص الصدر وصور الأشعة، ينبغي أخذ احتمال وجود جسم غريب في البلعوم الأنفي بعين الاعتبار للمساعدة في التشخيص المبكر والوقاية من المضاعفات المحتملة الخطورة.

الكلمات المفتاحية: الاختناق لدى الأطفال، جسم غريب في البلعوم الأنفي، تأخر التشخيص، تقرير حالة، مراجعة الأدبيات.

1. Introduction

Foreign body aspiration and ingestion constitute a major cause of accidental morbidity and mortality in the pediatric population, particularly among children younger than three years of age. Developmental behaviors such as oral exploration, immature swallowing coordination, and the absence of adequate molar dentition significantly increase susceptibility to these events in early childhood [1,2]. Despite advances in diagnostic imaging and emergency management, foreign body-related airway incidents remain a persistent clinical challenge worldwide. In the majority of cases, aspirated foreign bodies traverse the larynx and become lodged within the tracheobronchial tree, most frequently the right main bronchus due to its anatomical configuration [3]. Ingested foreign bodies, by contrast, typically enter the esophagus and pass through the gastrointestinal tract without complication. As a result, diagnostic algorithms and clinical suspicion are primarily directed toward the lower airway and esophagus when a choking episode is reported [4].

The nasopharynx represents an exceptionally rare and often overlooked site for foreign body impaction. When foreign bodies are identified in this region, they are most commonly the result of direct anterior insertion through the nasal cavity, particularly in young children [5]. Retrograde migration of a foreign body into the nasopharynx following aspiration or ingestion is a far less common mechanism and remains poorly recognized in routine clinical practice [6].

Retrograde nasopharyngeal impaction is hypothesized to occur during forceful coughing, choking, or vomiting, when an object located in the hypopharynx or supraglottic region is expelled upward behind the soft palate rather than through the oral cavity [7]. Once displaced into the nasopharyngeal vault, the foreign body may become lodged above the soft palate, where it can remain undetected for prolonged periods. The anatomical protection afforded by the soft palate during swallowing further contributes to the rarity of this presentation and to clinician reluctance to consider this diagnosis [8].

The clinical presentation of nasopharyngeal foreign bodies differs markedly from that of classic tracheobronchial aspiration. Acute respiratory distress, wheezing, or stridor are often absent. Instead, patients may present with delayed, nonspecific upper airway symptoms such as persistent nasal obstruction, unilateral or bilateral rhinorrhea, snoring, mouth breathing, halitosis, or sleep-disordered breathing [9,10]. These symptoms frequently mimic common pediatric conditions including viral rhinitis, sinusitis, or adenoid hypertrophy, leading to misdiagnosis and inappropriate treatment [11].

Diagnostic delay poses a significant risk in such cases. A foreign body lodged in the nasopharynx remains unstable and may dislodge spontaneously, particularly during sleep or relaxation of pharyngeal musculature, resulting in sudden aspiration into the lower airway and potentially fatal obstruction [12]. Several reports in the literature describe near-miss or fatal outcomes associated with delayed recognition of nasopharyngeal foreign bodies [13]. Despite these risks, nasopharyngeal evaluation is not routinely included in the diagnostic workup of children presenting after choking episodes, particularly when chest examination and radiography are normal. This gap in clinical practice highlights the need for increased awareness and systematic evaluation of occult foreign bodies in atypical anatomical locations [14].

The present study aims to address this diagnostic blind spot by analyzing a pediatric case of occult nasopharyngeal foreign body following a choking episode and synthesizing existing literature to identify recurring clinical patterns. By reframing the case within a qualitative research framework, this study seeks to contribute to improved diagnostic strategies and enhanced patient safety in pediatric airway emergencies.

2. Material and methods

2.1 Study Design

This study was designed as a case report with literature review. A pediatric patient diagnosed with an occult nasopharyngeal foreign body following a choking episode was retrospectively analyzed. Clinical findings were compared with previously published pediatric cases to identify common diagnostic challenges and clinical patterns.

2.2 Data Sources

The primary data source consisted of a single pediatric case managed at Ibn-Sina Teaching Hospital, Sirte, Libya. Clinical information was retrospectively obtained from hospital medical records, including emergency department documentation, radiological investigations, operative reports, and follow-up records.

The secondary data source consisted of five previously published pediatric case reports describing nasopharyngeal foreign bodies in children. These reports were reviewed to provide clinical context and facilitate comparison with the present case.

2.3 Data Collection

The following variables were extracted from the institutional case and the published reports: clinical history, presenting symptoms, physical examination findings, imaging results, diagnostic pathway, treatment approach, and clinical outcomes.

2.4 Data Analysis

Clinical features, imaging findings, diagnostic pathways, treatment strategies, and outcomes from the institutional case were descriptively compared with those reported in the five published cases. Recurring diagnostic patterns and common clinical challenges were identified and summarized.

2.5 Ethical Considerations

Ethical approval for this study was obtained from the **Ethics Committee of Ibn-Sina Teaching Hospital**, Sirte, Libya. Written informed consent was obtained from the patient's legal guardian prior to inclusion in this study and for publication of anonymized clinical information. All data were handled in accordance with institutional ethical standards and the principles outlined in the Declaration of Helsinki. No identifying patient information is disclosed in this manuscript.

Case Data

A 2-year-old female child was brought to the emergency department following an acute choking episode that occurred approximately 30 minutes prior to presentation. According to the caregiver, the episode was precipitated by ingestion of a presumed date seed. The event was immediately followed by forceful coughing, transient cyanosis, and apparent respiratory distress. Based on the clinical history, the patient was admitted with a provisional diagnosis of suspected bronchial foreign body aspiration.

On initial evaluation, the child was hemodynamically stable and did not exhibit ongoing signs of respiratory compromise. Physical examination of the chest revealed symmetrical air entry with no wheezing, stridor, or added breath sounds. A chest radiograph was obtained and interpreted as normal, with no radiological evidence of airway obstruction or foreign body retention.

Within 24 hours of admission, the caregiver reported passage of a date seed in the child's stool, leading to a reduced clinical suspicion of a retained foreign body. Despite this, the patient subsequently developed progressive upper airway symptoms, including persistent nasal obstruction, rhinorrhea, and pronounced snoring. These symptoms persisted over several days and were unresponsive to conservative medical management.

Given the atypical symptom progression and lack of clinical improvement, further evaluation was undertaken. A lateral soft-tissue radiograph of the nasopharynx demonstrated a large radiopaque foreign body impacted in the nasopharyngeal vault. The object was identified as a metallic nut, inconsistent with the initially reported ingested material.

The patient underwent removal of the foreign body under general anesthesia. The object was successfully dislodged and extracted without intraoperative or postoperative complications. Immediate clinical improvement was observed, with complete resolution of nasal obstruction and snoring. The patient had an uneventful recovery and was discharged in stable condition.

3.Results and discussion

The present study included one pediatric case managed at Ibn-Sina Teaching Hospital, Sirte, Libya, and five previously published pediatric cases identified through literature review, yielding a total of six cases for descriptive comparison.

Across the reviewed cases, several recurring diagnostic features were identified. In most cases, the initial clinical history provided by caregivers suggested aspiration or ingestion of organic materials such as food particles or seeds, which reduced suspicion of retained foreign bodies in atypical anatomical locations. In the institutional case, the caregiver reported ingestion of a date seed, and the subsequent passage of a similar object in the stool further decreased clinical suspicion of a retained foreign body.

Normal chest examination and chest radiographs were consistently reported across the reviewed cases despite a preceding choking episode. The absence of lower airway signs frequently contributed to delayed diagnosis and reduced consideration of alternative sites of foreign body impaction.

A common clinical pattern was the delayed development of upper airway symptoms following the choking event. Persistent nasal obstruction, rhinorrhea, mouth breathing, and snoring emerged several days after the initial episode and often prompted further investigation. Because these symptoms resembled common pediatric conditions such as rhinitis or adenoid hypertrophy, diagnosis was frequently delayed.

In all reviewed cases, definitive diagnosis was achieved only after targeted evaluation of the upper airway, including nasopharyngeal imaging or endoscopic examination. Foreign body removal resulted in rapid resolution of symptoms and favorable clinical outcomes without major complications.

These findings demonstrate that occult nasopharyngeal foreign bodies may present with misleading clinical histories, normal chest investigations, and delayed upper airway symptoms, creating significant diagnostic challenges. Awareness of this presentation may facilitate earlier recognition and appropriate management in children presenting with persistent upper airway symptoms after choking episodes.

4.Discussion

The present case, together with findings from previously published reports, highlights nasopharyngeal foreign body impaction as a rare and underrecognized consequence of pediatric choking episodes. Unlike classic tracheobronchial aspiration, nasopharyngeal impaction may initially present with minimal respiratory findings and later manifest as nonspecific upper airway symptoms, contributing to diagnostic delay [15,16].

An important contributing factor to missed diagnosis is the **protective physiological role of the soft palate during swallowing**, which limits clinician suspicion of nasopharyngeal localization following ingestion or aspiration events. Consequently, diagnostic algorithms tend to prioritize chest and esophageal evaluation while excluding the nasopharynx from routine assessment [17]. This anatomical bias is consistently reflected in the literature, where nasopharyngeal foreign bodies are reported primarily as incidental or delayed findings rather than suspected diagnoses [18].

The mechanism of **retrograde migration** provides a plausible explanation for nasopharyngeal impaction following choking. During episodes of forceful coughing or vomiting, a foreign body located in the hypopharynx or supraglottic region may be propelled superiorly behind the soft palate instead of being expelled orally [19]. Once lodged within the nasopharyngeal vault, the foreign body may remain stable for variable periods, initially producing minimal symptoms before progressing to partial upper airway obstruction [20].

A critical finding highlighted by this study is Review of the published cases, together with the present case, revealed a recurring pattern in which upper airway symptoms developed several days after the initial choking episode. This temporal delay frequently obscured the relationship between the choking event and subsequent symptoms, leading to delayed diagnosis. [21]. Similar diagnostic trajectories have been documented in previously published pediatric cases, reinforcing the reproducibility of this pattern [22].

The most serious clinical risk associated with nasopharyngeal foreign bodies is **secondary dislodgment**, particularly during sleep or relaxation of pharyngeal musculature. Sudden migration of the object into the lower airway may result in acute airway obstruction with potentially fatal consequences [23,27,28]. Several reports describe near-fatal outcomes attributable to delayed recognition, emphasizing the importance of early diagnosis [24].

The findings of this case-based analysis support the integration of **targeted nasopharyngeal evaluation** into the diagnostic workup of children presenting with choking episodes followed by persistent or unexplained upper airway symptoms, even when chest examination and radiography are normal [25]. Lateral soft-tissue radiography of the nasopharynx represents a simple, accessible, and effective diagnostic tool in equivocal cases [26].

The present case and reviewed reports emphasize the importance of considering the nasopharynx during evaluation of children with persistent upper airway symptoms following choking episodes, particularly when chest examination and radiographic findings are normal. Increased awareness of this uncommon presentation may

facilitate earlier diagnosis and reduce the risk of potentially serious complications.

5. Limitations and Implications

5.1 Study Limitations

This study has several limitations that should be acknowledged. First, the findings are derived from a **single primary clinical case** supplemented by qualitative synthesis of published reports. As such, the results are not intended to provide epidemiological estimates or establish causal relationships, but rather to highlight diagnostic patterns and clinical challenges associated with a rare condition.

Second, the **retrospective nature** of data collection may introduce information bias, particularly with regard to caregiver-reported history, which is known to be variable and occasionally inaccurate in pediatric choking events. Additionally, the literature reviewed consisted predominantly of case reports and small case series, which may limit the generalizability of the identified themes.

Finally, variability in reporting standards across published cases may have influenced the consistency of extracted data, particularly regarding timing of symptom onset and diagnostic pathways.

Despite these limitations, the qualitative case-study approach is appropriate for the investigation of rare and underreported clinical phenomena and provides valuable insights that may not be captured through large-scale quantitative studies.

5.2 Clinical and Research Implications

The findings of this study carry important **clinical and research implications**. Clinically, the identification of reproducible diagnostic patterns emphasizes the need for **expanded airway evaluation** in pediatric patients presenting with choking episodes followed by persistent or unexplained upper airway symptoms. Incorporating nasopharyngeal assessment into diagnostic protocols when chest investigations are inconclusive may reduce missed diagnoses and prevent potentially life-threatening complications.

From a research perspective, this study highlights a **significant knowledge gap** regarding atypical foreign body localization in children. Future research should focus on multicenter case series or prospective observational studies to better characterize the prevalence, risk factors, and optimal diagnostic strategies for nasopharyngeal foreign bodies. Development of standardized diagnostic algorithms may further improve early recognition and patient outcomes.

Additionally, the findings underscore the importance of **clinician education and awareness**, particularly among emergency physicians, pediatricians, and otolaryngologists, to ensure timely diagnosis and appropriate management of this rare but serious condition.

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Conflict of Interest

The authors declare no conflict of interest.

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6. Conclusion

This qualitative case-based study underscores nasopharyngeal foreign bodies as an **underrecognized yet clinically significant cause of persistent upper airway symptoms in pediatric patients following choking episodes**. The diagnostic patterns identified through comparative analysis demonstrate that reliance on caregiver history and normal chest investigations alone may result in premature diagnostic closure and delayed recognition of foreign bodies located outside the lower airway.

The findings support the **systematic inclusion of nasopharyngeal evaluation**, particularly lateral soft-tissue imaging, in children who present with ongoing nasal obstruction, rhinorrhea, or snoring after a choking event despite inconclusive chest findings. Early consideration of this anatomical site may reduce diagnostic delay, prevent secondary foreign body migration, and mitigate the risk of sudden airway compromise.

Enhanced clinical awareness of atypical foreign body localization and adoption of broader diagnostic protocols are essential to improving patient safety and outcomes in pediatric airway emergencies. Future research involving larger case series or multicenter analyses is warranted to further refine diagnostic algorithms and establish evidence-based guidelines for comprehensive airway assessment in children.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

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