

**Case Report**

# Spontaneous Retropharyngeal Emphysema in a Paediatric Patient; Radiological Findings

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**Abstract:** Retropharyngeal emphysema is a severe condition which may be life-threatening requiring urgent diagnosis and intervention. This condition may occur with subcutaneous emphysema of the cervical region and may also be complicated by mediastinal emphysema and pneumomediastinum. A 9-year-old Nigerian boy was admitted into the emergency unit of a foremost teaching hospital in South Western Nigeria with a 5-hour history of progressively worsening dyspnoea. There was a history of foreign body ingestion - a round plastic ball bearing. Several attempts to remove the foreign body were made by thrusting the fingers down his throat while holding him in a head down position. Urgent x-rays of the neck and chest were performed. The lateral x-ray of the soft tissue neck revealed widening lucency within the prevertebral soft tissue from the basiocciput, extending below the 7th cervical vertebra; which was indicative of spontaneous retropharyngeal emphysema. Streaks of air were also seen in the subcutaneous tissue of the neck. Retropharyngeal emphysema is seldom thought of by clinicians as a differential in the management of patients presenting with acute upper aerodigestive tract conditions. Health education to increase public awareness of the potential ills of some 'socio-cultural' practices is of paramount importance in order to reduce the incidence of this potentially life-threatening condition in pediatrics.

**Keywords:** Retropharyngeal Emphysema, Paediatrics, Respiratory Medicine, Aerodigestive Tract, Radiology

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## 1. Introduction

Retropharyngeal emphysema is a severe condition which may be life threatening, requiring urgent diagnosis and intervention. This condition may occur with subcutaneous emphysema of the cervical region and may also be complicated by mediastinal emphysema and pneumomediastinum [1]. Foreign body ingestion is very common among the paediatric age group, especially in our environment [1]. When these foreign bodies are ingested, parents usually would have made several attempts at removal. The resultant effect is usually injury to the mucosa and soft tissues of the oral cavity and oropharynx. Whenever upper airway compromise is observed in some cases, it is often due

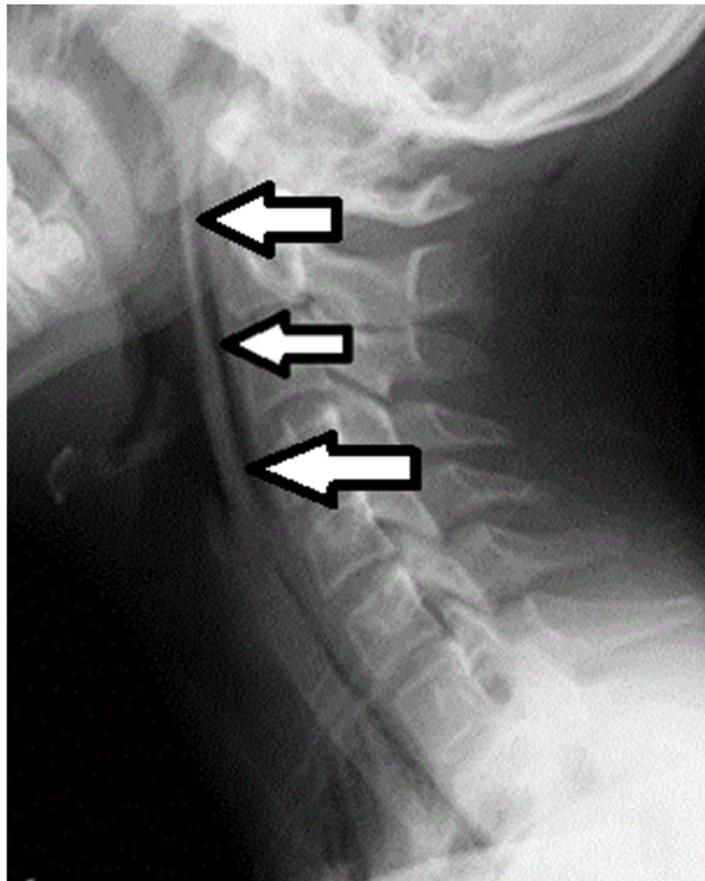
to laryngeal oedema following trauma. The air in the air passages can undergo pressure raise and dissect pharynx, causing cervical subcutaneous emphysema, pneumomediastinum and even pneumopericardium [2, 3]. The aim of of this case report is to alert clinicians about the grave implications of late diagnosis and consequently educate them on the radiological patterns of retropharyngeal emphysema.

## 2. Case Presentation

A 9-year-old Nigerian boy was brought into the emergency unit of a foremost private hospital in Lagos, Nigeria with a 5-hour history of progressively worsening dyspnoea. There was history of foreign body ingestion. Several attempts to remove the foreign body were made by thrusting the fingers

down his throat while holding him in a head down position. This procedure was discontinued when blood was observed in the child's mouth; followed later by progressive dyspnoea. Systemic review was essentially normal. Examination revealed a severely dyspnoeic child with suprasternal, intercostal and sub-costal recessions. Chest percussion notes were resonant and auscultation revealed mild inspiratory and expiratory ronchi in both right and left lung fields. His oropharynx revealed bleeding from multiple fairly deep lacerations in the tonsillar pillars, uvula and posterior pharyngeal wall. The posterior pharyngeal wall was bulging. Examination of the neck revealed minimal painless swelling in both supraclavicular fossae with crepitus. Urgent x-rays of the neck and chest were then obtained. The lateral X-ray of the soft tissue neck revealed widening lucency within the prevertebral soft tissue from the basiocciput, extending below the 7th cervical vertebra; which was indicative of retropharyngeal emphysema (Figure 1). This has narrowed supraglottic region with the posterior pharyngeal wall abutting on the tip of the epiglottis. Streaks of air were also seen in the

subcutaneous tissue of the neck. The chest X-ray did not reveal any evidence of mediastinal emphysema or pneumo-mediastinum. He was nursed in a semi recumbent position and supplemental humidified oxygen at 100% was administered via a facemask. There was immediate improvement in the oxygen saturation (ranged from 97% to 100%). High dose intravenous steroids and broad spectrum antibiotics were commenced and close monitoring of the patient with quarter hourly vital signs monitoring was instituted. There was also gradual improvement in the dyspnoea and no observed increase in the neck swelling within few hours of conservative management. A repeat cervical X-ray showed marked reduction in the retropharyngeal emphysema and improvement of the supraglottic region. He was discharged on the third day after admission. His parents were educated on the dangers of this practice of trying remove ingested foreign bodies forcefully from the throat. Subsequent follow-up review showed sustained clinical improvement with resolution of the emphysema.



*Figure 1.* Lateral neck radiograph. The arrow points to the linear radiolucent trace of air in the retropharyngeal space.

### 3. Discussion

The occurrence of retropharyngeal emphysema is not common. The symptoms of spontaneous retropharyngeal emphysema are sore throat, dysphagia and generalised neck pain. Physical findings are crepitance in the neck, chest and

fascial areas. Some dental procedures been shown to cause emphysema of the retropharyngeal space [4, 5]. This complication has also been reported in the early post-operative period following tonsillectomy [6]. These patients typically presented with throat pain, dysphagia and odynophagia. Retropharyngeal emphysema has also been diagnosed in

patients with severe maxillofacial injuries [7]. Traumatic injury to the pharynx or oesophagus in the newborn from intubation or tube suctioning has been documented to cause retropharyngeal emphysema [8]. This may present in various ways. A notable one is difficulty with passing a gastric tube which resulted in a misdiagnosis of oesophageal atresia. More commonly, these patients present with respiratory distress and diagnosis is usually established radiologically [8]. Substance abuse such as free-basing cocaine and ecstasy are rare causes of retropharyngeal emphysema [9]. Onwudike [9] reported dysphagia as the only complaint in a patient with retropharyngeal emphysema following ecstatic substance abuse. There is usually associated pneumomediastinum. The clinical approach to retropharyngeal emphysema treatment is mainly by observation, supplemental oxygen therapy and administration of systemic steroids, in the absence of pneumomediastinum [10]. Complications like upper airway obstruction are managed with urgent tracheostomy, broad-spectrum prophylactic antibiotic coverage and close observation [10].

In developing nations, attempts are often made at removal of foreign bodies from the ear, nose and throat with bare fingers. This tends to be quite common in the low socio-economic groups and among individuals with poor education. For removal of foreign bodies from the throat, the attempt described usually entails immediate bending of the child's head forward and in the same movement thrusting of the fingers into the oropharynx and down to the hypopharynx with sweeping motions. This is aimed at dislodging the foreign agent and retrieving it. However, this manoeuvre usually cause injury to the oral cavity and oropharynx with occasional laryngeal oedema. Majority of these cases are presumed unreported. Retropharyngeal emphysema without attendant pneumomediastinum can be managed conservatively mainly by observation, supplemental oxygen therapy as well as systemic steroids [9].

#### 4. Conclusion

The role of imaging in making this diagnosis cannot be over-emphasized. This rare clinical condition is seldom thought of by clinicians as a differential in the management of paediatrics presenting with acute upper aerodigestive tract conditions. Health education to increase public awareness of

the potential ills of some practices is of paramount importance in order to reduce the incidence of this potentially life threatening condition in paediatrics.

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