

VOCAL CORD POLYP MASQUERADING BEHIND HEMOPTYSIS: A CASE REPORT OF CONCURRENT PULMONARY THROMBOEMBOLISM AND A DIFFICULT SUBGLOTTIC AIRWAY

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ABSTRACT

Background: Vocal cord polyps are often benign lesions associated with laryngeal hoarseness and are typically caused by capillary injuries due to phonotrauma. Recorded hemoptysis cases caused by vocal cord polyps are rare, making the occurrence that they are together with acute pulmonary embolism extremely unlikely.

Case Presentation: A 71-year-old patient who is a heavy smoker (bidi-smoker, smoking index of 1000) with alcohol dependence and hypertension came to the clinic with complaints of having blood-stained sputum for last 10 days. According to the chest scan, the patient had visible wedge-shaped opacity in the area of the right lower lobe together with right side pleural effusion. Provided contrast-enhanced computed tomography revealed defect of filling in the right main pulmonary artery and its branches, in addition indicating the presence of the pulmonary infarction taking place in the right lower lobe and providing basis to make the diagnosis of pulmonary thromboembolism and anticoagulant was initiated. A Fibroptic bronchoscopy was performed as a part of evaluation. And, during this procedure, it was found a polyp-like structure located near the anterior area of the left vocal cord. The patient was subsequently scheduled for microlaryngeal surgery and polypectomy. Intraoperatively, visualization and removal of the lesion proved technically challenging. The use of the endotracheal tube made the surgical field obscure, prompting performing of tracheostomy. Following tracheostomy and combined rigid laryngoscopic and flexible bronchoscopic assessment, a polypoidal subglottic lesion with a stalk extending from the anterior commissural region of the left vocal cord was identified. Initial attempts using snare excision were unsuccessful and it was only possible to conduct piecemeal excision with using biopsy forceps with the help of flexible bronchoscope that has been inserted using rigid laryngoscope. The results of histopathology confirmed that the lesion was a polyp which consists of myxoid and edematous tissues, and presents fibrin deposition and widened blood vessels under layers of epithelium.

Conclusion: This case demonstrates that hemoptysis among patients that are elderly smokers has at least a few different causes, besides that, a polyp that is situated near the anterior commissure with its subglottic processes causes a threat for the doctor during microlaryngeal surgery as it is impossible to perform surgery btime without the patient's tracheostomy.

KEYWORDS: Vocal cord polyp; Hemoptysis; Pulmonary embolism; Pulmonary infarction; Microlaryngeal surgery; Tracheostomy; Bronchoscopy; Difficult airway

INTRODUCTION

Vocal cord polyps are among the most frequently encountered benign lesions of the larynx, second only to nodules in incidence, and are a well-recognized cause of hoarseness [1]. They are thought to arise from a single episode of phonotraumatic capillary rupture within the superficial lamina propria, followed by fibrin deposition, oedema, and neovascularization, distinguishing them histologically from nodules, which result from chronic, repetitive vocal abuse [2]. On microscopy, polyps typically show an intact or mildly hyperplastic stratified squamous epithelium overlying an oedematous, myxoid or hyalinized stroma with dilated, telangiectatic vessels and variable fibrin and haemosiderin deposition, findings that correlate well with clinical diagnosis [1,3,4]. Tobacco smoking, in particular bidi smoking, and chronic alcohol use are well-established risk factors for laryngeal mucosal injury and neoplasia in South Asian populations, and heavy smokers demonstrate a clear dose-response relationship with laryngeal pathology [5,6].

Vocal cord polyps usually present with dysphonia rather than haemoptysis, and haemoptysis in an elderly smoker more often prompts evaluation for malignancy, tuberculosis, or a vascular cause such as pulmonary embolism with infarction, the latter classically producing a peripheral wedge-shaped, pleural-based opacity on computed tomography [7,8]. When a laryngeal polyp lies close to the anterior commissure or extends into the subglottis, its surgical removal can be technically demanding and, rarely, can evolve into a difficult airway scenario requiring emergency surgical airway access [9,10]. We report an unusual case in which an incidentally detected vocal cord polyp and a concurrently diagnosed pulmonary

thromboembolic event with infarction together accounted for a patient's haemoptysis, and in which polypectomy was complicated by a difficult subglottic airway necessitating tracheostomy.

Case Presentation

A 71-year-old male, a known case of cerebrovascular accident and systemic hypertension, presented with a 10-day history of cough associated with scanty blood-stained sputum. He denied breathlessness, fever, loss of weight, or loss of appetite, and there was no history suggestive of tuberculosis or tuberculosis contact. He had been a current bidi smoker for 50 years, smoking one pack per day (smoking index 1000), and had consumed alcohol regularly for 50 years, with his last binge eight days prior to admission.

A chest radiograph obtained during initial evaluation showed right lower zone consolidatory changes (Figure 1). A subsequent computed tomography of the thorax demonstrated a right-sided pleural effusion together with a wedge-shaped opacity, raising suspicion of a vascular aetiology (Figure 2). The patient was therefore advised contrast-enhanced computed tomography (CECT) of the thorax and referred for fiberoptic bronchoscopy to further evaluate the haemoptysis. CECT thorax revealed non-enhancing, non-calcific filling defects in the right main pulmonary artery and its branches, with associated right lower lobe pulmonary infarction — findings suggestive of pulmonary thromboembolism with infarction. A cardiology opinion was obtained, and the patient was started on unfractionated heparin.

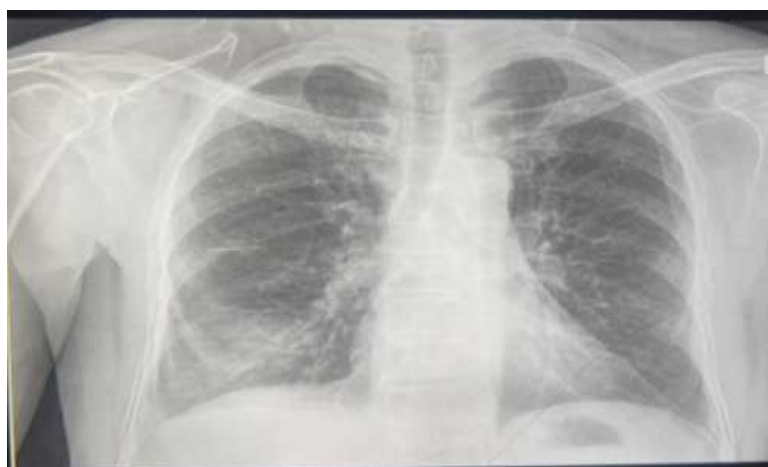


Figure 1. Chest radiograph showing right lower zone consolidatory changes.

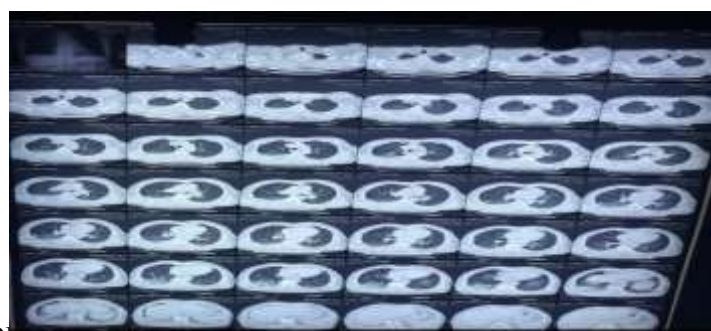


Figure 2. CT THORAX showing right sided pleural effusion with right lower wedge-shaped opacity

Considering the patient's persistent blood-stained sputum, substantial smoking exposure and radiological abnormalities, fiberoptic bronchoscopy was undertaken for further airway evaluation. Diagnostic fiberoptic bronchoscopy was performed under adequate local anaesthesia via the nasal route after written informed consent. A polypoidal growth was noted in the left upper one-third of the vocal cord (Figure 3). In view of the risk of bleeding on manipulation, the bronchoscope was not advanced further at this sitting.



Figure 3. Diagnostic fibrooptic bronchoscopy showing a polypoidal growth arising from the left vocal cord (bronchoscopic views).

The patient was subsequently posted for micro-laryngeal surgery (MLS) with polypectomy under general anaesthesia. With the patient supine and under aseptic precautions, a direct laryngoscope was secured using an MLS stand, and both vocal cords were visualized under the operating microscope. A polypoidal growth was identified just beneath the left anterior commissure, extending into the subglottic region (Figure 4); however, it could not be safely removed via this approach.



Figure 4. Intraoperative microlaryngoscopic view showing the polypoidal lesion beneath the left anterior commissure.

An on-table cross-consultation was sought from the Department of Pulmonology. Check bronchoscopy revealed that the endotracheal tube occupied the entire circumference of the vocal cord, precluding visualization of the lesion, and the patient therefore underwent tracheostomy. Following tracheostomy, rigid laryngoscopy was performed. However, extensive laryngeal edema and soft-tissue swelling resulted in poor visualization of the vocal cords and the polypoidal lesion. Consequently, direct identification and removal of the lesion using rigid laryngoscopy alone was not feasible. Flexible bronchoscopy showed similar limitations, with the scope unable to be negotiated beyond the posterior pharyngeal wall.

To overcome the limited visualization, a combined approach was therefore adopted. The rigid laryngoscope was used as a conduit for the flexible fiberoptic bronchoscope. The flexible bronchoscope was then introduced through the rigid laryngoscope, which facilitated passage through the edematous upper airway and provided improved visualization of the laryngeal and subglottic regions. Bronchoscopic examination subsequently revealed a polypoidal lesion in the subglottic area with its stalk arising from the left vocal cord anterior commissure. Initial attempts to remove the polyp using a snare were unsuccessful, and it was ultimately excised in a piecemeal fashion using biopsy forceps (Figure 5). Haemostasis was achieved, and the specimen was sent for histopathological examination.

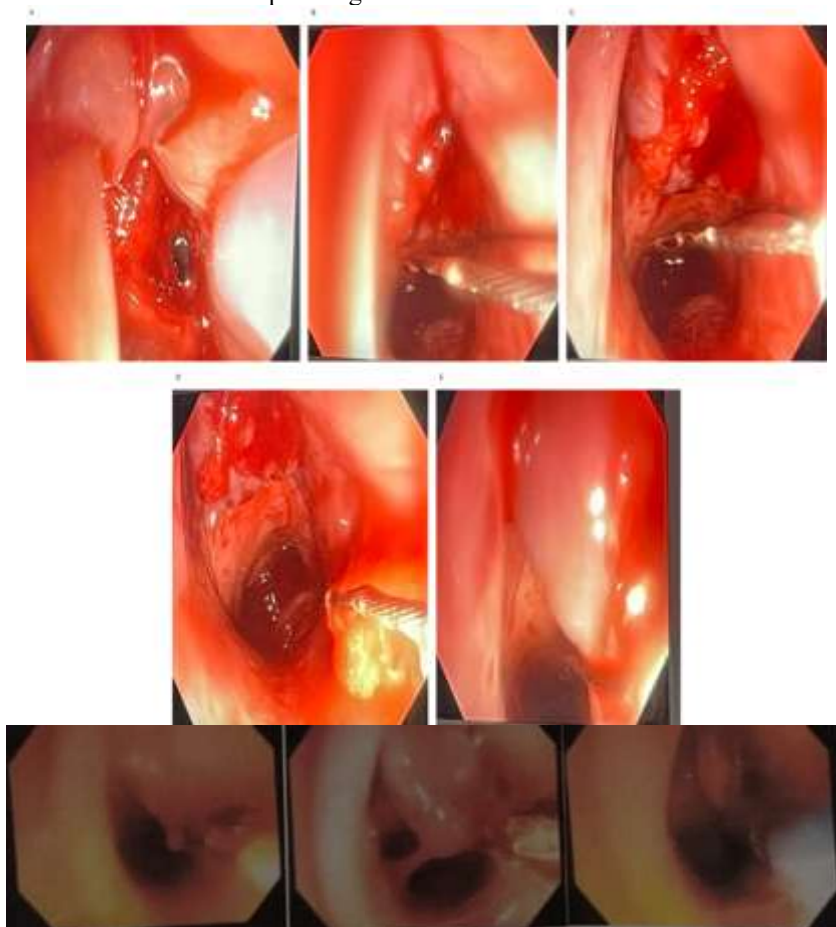


Figure 5. Sequential bronchoscopic images during combined rigid laryngoscope-flexible bronchoscopic excision of the subglottic polyp using biopsy forceps.

Macroscopically, the specimen consisted of two grey-brown soft tissue fragments, the largest measuring 1.5×0.8 cm and the smallest measuring 0.4×0.3 cm; both fragments were embedded in their entirety. Microscopy showed stratified

Genetics and Molecular Research 25 (15s): 2026

squamous epithelium overlying an oedematous and myxoid stroma with fibrin deposition and dilated blood vessels, without evidence of dysplasia or malignancy. The overall impression was that of a benign vocal cord polyp. On check bronchoscopy performed on the second postoperative day, the vocal cords were visualized and appeared oedematous, in keeping with the expected early postoperative appearance following tracheostomy and polypectomy. The patient's tracheostomy tube was retained for airway protection, and he continued to receive anticoagulation for the underlying pulmonary thromboembolism under joint pulmonology and cardiology follow-up.

DISCUSSION

This case is notable for two reasons: the unusual mode of presentation of a benign vocal cord polyp, and the difficult airway encountered during its surgical removal in the setting of concurrent, actively anticoagulated pulmonary thromboembolism.

Vocal cord polyps typically arise on the free edge or superior surface of the anterior two-thirds of the vocal fold following an episode of phonotrauma, which causes microvascular rupture and subsequent oedema, fibrin deposition, and vascular proliferation within the superficial lamina propria [2,11]. This histological sequence — an essentially normal or mildly hyperplastic epithelium overlying a vascularized, myxoid stroma with dilated vessels — was reflected in our patient's histopathology and is consistent with previously reported clinicopathological correlations between the endoscopic and histological diagnosis of vocal fold polyps [1,3,4,12]. Although the classical presentation of a vocal cord polyp is hoarseness of voice, our patient had no vocal complaints; the lesion was an incidental finding during bronchoscopic evaluation of haemoptysis, and its size and location made it an unlikely major contributor to the bleeding. Heavy smoker, quantified here by a smoking index of 1000, together with decades of alcohol use, are established risk factors for laryngeal mucosal pathology in Indian cohort and case-control studies, which show a clear dose-response relationship between the number and duration of bidis smoked and laryngeal injury [5,6], and likely contributed to the mucosal vulnerability in this patient.

The more clinically significant explanation for this patient's haemoptysis was the concurrently diagnosed pulmonary thromboembolism with infarction. A peripheral, wedge-shaped, pleural-based opacity, as seen on this patient's computed tomography, is a recognized radiological correlate of pulmonary infarction, occurring in up to a third of patients with acute pulmonary embolism as a consequence of bronchial arterial hyperperfusion, alveolar haemorrhage, and eventual parenchymal necrosis [8]. Mild haemoptysis in this setting arises from capillary oozing rather than arterial haemorrhage and, per current guidance, is not by itself a contraindication to anticoagulation [7]. This patient was accordingly started on unfractionated heparin, which required careful perioperative coordination given the subsequent need for laryngeal surgery.

The airway complications encountered during microlaryngeal surgery point out an important but rare danger of polyps located near the anterior commissure with subglottic extension. It is challenging to access polyps in this position even with the use of a laryngoscope that is arranged optimally and vocal folds that are pulled back [13]. In this case, the intubation further complicated the surgery and made it impossible to remove the polyp directly. The approach of solving the problem by performing a multidisciplinary consultation involving the pulmonologist and using a combination of rigid endoscope and flexible bronchoscope are in accordance with extremely helpful difficulty-airway and tracheostomy-emergency protocols that stress the necessity of timely recognizing airway obstruction or insufficiency of airway view and having a low barrier for access via surgery when the exposure fails [9,10]. The fact that snare excision failed initially but piecemeal excision was effective later proves the need for the combination of surgical techniques used in laryngeal surgery [11,13]. Another important feature of this case was the diagnostic value of bronchoscopy. Although bronchoscopy was undertaken in the context of evaluation of blood-stained sputum and thoracic abnormalities, examination during passage of the instrument resulted in detection of an unexpected vocal cord lesion. The observation emphasizes the importance of systematic assessment of the upper airway during bronchoscopy rather than concentrating exclusively on the tracheobronchial tree.

Finally, pathology results were needed in this case even though the appearance of polyp was benign since the patient was old, smoked a lot, and had a high probability of malignant tumor development [5,6]. There were no signs of dysplastic epithelium, and the clinical team was able to continue the therapy of the major problem which was pulmonary embolism of the patient.

This case has several clinically relevant features.

First, it demonstrates that identifying an upper-airway lesion during evaluation of hemoptysis does not necessarily establish causality. A concurrent and clinically significant pulmonary cause—in this case pulmonary thromboembolism with pulmonary infarction—must remain part of the etiological assessment.

Second, the case emphasizes the importance of inspecting the vocal cords and upper airway during flexible bronchoscopy.

Third, it demonstrates the usefulness of multidisciplinary collaboration between pulmonology, otorhinolaryngology and anesthesia teams when airway lesions are technically difficult to access.

Finally, the successful use of flexible bronchoscopy through a rigid laryngoscopic approach, followed by forceps-assisted piecemeal excision after unsuccessful snaring, illustrates how the procedural strategy may need to be adapted to the anatomy and intraoperative circumstances.

CONCLUSION

This case confirms the fact that coughing up blood in an old man who smokes a lot might have many reasons, and that even a benign laryngeal polyp can cause the emergency surgical situation when it is localized around the anterior commissure with subglottic extension. In this patient, pulmonary thromboembolism associated with pulmonary infarction

constituted an important alternative and plausible source of hemoptysis. Bronchoscopy nevertheless played an important role by identifying the concomitant vocal cord lesion.

The technically challenging removal of the polyp further demonstrates the value of a multidisciplinary approach and the versatility of flexible bronchoscopy when conventional laryngeal access is inadequate. Histopathological confirmation of a benign vocal cord polyp ultimately established the nature of the lesion.

Declarations

Consent: Written informed consent was obtained from the patient for the procedures described and for publication of this case report and any accompanying images.

Conflict of Interest: The authors declare no conflict of interest.

Funding: None.

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