

Migratory Penetrating Foreign Body in Neck and Tracheo-Bronchial Tree-An Unusual Interesting Case Report

Bharti Solanki¹, Manish Tyagi², Anusuya Gehlot*³, Yogesh Solanki⁴

¹Associate Professor, Department of Otorhinolaryngology & Head and Neck, Dr. S. N. Medical College, Jodhpur, Rajasthan, India

²Resident, Department of Otorhinolaryngology & Head and Neck, Dr. S. N. Medical College, Jodhpur, Rajasthan, India

³Professor of Pharmacology, Dr. S. N. Medical College, Jodhpur, Rajasthan, India

⁴Speech Therapist & Pathologist, Department of Otorhinolaryngology & Head and Neck, Dr. S. N. Medical College, Jodhpur, Rajasthan, India

*Corresponding Author:

Name: Anusuya Gehlot

Email: anusuya.gehlot@gmail.com

Abstract: After infection, foreign body incidences frequently encountered pathologies in otorhinolaryngology practice. Ingested foreign bodies that migrate extraluminally are rare, but if untreated, result in life threatening complications. Only few references in literature have been found regarding the penetration of foreign bodies through the soft tissues of neck and entering into the airway that manifest themselves in many different ways. Here we present a case of metallic steel piece penetrating through the small entry wound in neck and migrated into the subcutaneous tissue planes of submandibular area, subsequently lodging itself in the right intermediate bronchus and finally was found adherent to the anterior wall of trachea, in an adult male. It was removed atraumatically through bronchoscopy, after performing tracheostomy (to secure the airway first) and the patient recovered well postoperatively. In this case the foreign body travelled a considerable distance through the soft tissue and ended up in an unexpected distant site.

Keywords: Migratory, Penetrating, Foreign body, Tracheo-bronchial tree

INTRODUCTION

After infection, foreign body incidences are amongst the most frequently encountered pathologies in otorhinolaryngology practice [1]. Ingested foreign bodies that migrate extraluminally are rare, but if untreated, result in life threatening complications [3].

Foreign body accidents in most instances are the result of carelessness and their management is a challenge for the otorhinolaryngologist, especially the airway foreign bodies. The foreign body incidences are usually common in infants and young children due to their habit of mouthing and exploring everything with their mouth. In adults risk factors include alcohol influence, psychiatric illness and sheer carelessness etc. [6].

In literature various cases have been described, where foreign bodies have been ingested or inhaled and lodged in the upper aerodigestive tract, but only few of these foreign bodies have perforated through the esophagus and only an even smaller number of these migrated extraluminally. These extraluminally migrated foreign bodies are called as 'migratory foreign bodies' [4]. Only rare cases have been reported in which the foreign body actually enter through a puncture wound

in the skin of the neck [2] and had entered the aerodigestive tract. If untreated, they may lead to life threatening suppurative or vascular complications [3], hence proper diagnosis and prompt management is necessary to prevent complications.

CASE REPORT

A 36 year old adult male, labourer in steel factory, presented to the emergency OPD with history of injury neck about an hour ago, while working in the steel factory. Following this he developed slight bleeding through the wound and developed dry irritating cough. Gradually he developed progressive neck swelling, followed by difficulty in respiration later on.

On examination patient was found to be conscious, co-operative and oriented to- time place and person. Vitals were stable with pulse-86/min, BP-114/76 mm Hg, RR-20/min and SpO₂-96% at room air. A horizontal wound over midline of neck just below the Adam's apple was seen, measuring about 1.5 cm in length and 1 cm in depth. Air was leaking out through it. Surgical emphysema extended from submandibular region to upper chest bilaterally. Voice was normal. Oral cavity found to be normal. No stridor but dry

irritating cough was there. Air entry was bilaterally equal and no added sounds were auscultated.

Patient was subjected for radiological work up. X-ray soft tissue neck lateral view along with x-ray neck antero-posterior view was obtained. X-ray soft tissue neck lateral view was showing radio-opaque foreign body lying in the submandibular region, appearing to be subcutaneous (fig.1). X-ray neck antero-posterior view showed extensive emphysema in neck (fig.3). After this patient developed severe bout of cough lasting for about 5-10 minutes. Then the x-ray chest postero-anterior view was obtained also, showing a radio-opaque foreign body in the right main bronchus (fig.2). This aroused the suspicion of dual foreign body. To be sure of foreign body location, we subjected the patient for CT scan neck and upper chest (axial and coronal cuts). The CT scan revealed the metallic foreign body lying in the right intermediate bronchus (fig.4, 5) and there was no foreign body found in the submandibular area suggesting the migration of foreign body through the subcutaneous planes. Routine investigations were done meanwhile and were found to be normal.

Due to migratory nature of the object and gradually increasing respiratory difficulty, severe bout of coughing and emphysema, we planned him for tracheostomy first, to secure the airway followed by rigid bronchoscopy. Tracheostomy was done under local anaesthesia and 7.5 mm cuffed tracheostomy tube inserted (fig.6), followed by rigid telescopic bronchoscopy under general anaesthesia, using a 6.5 mm rigid bronchoscope, using the venturi assisted ventilation. To our surprise foreign body couldn't be visualised in right main bronchus. Bronchoscope was then negotiated in the left main bronchus which was also found to be normal. Telescopic examination of the tracheo-bronchial tree was found to be normal. Bronchoscope was then withdrawn up to the level of vocal cords and thorough examination of the larynx and trachea was carried out. Vocal cords, subglottic space and tracheal lumen were found to be congested and patent. Foreign body was seen adherent to the anterior wall of trachea and was removed atraumatically, using the alligator forceps. It was found to be a flat piece of steel measuring about 1.2cm x 0.6cm (fig.7). Patient gradually improved in the post-operative period and symptoms resolved.

About 3 weeks later, closure of tracheostome was attempted as shown in fig.9 (after the patient tolerated the expiratory valve tube well for at least 2-3 days, fig.8). Further one week later successful closure of the neck wound was achieved (fig.10). Patient was reviewed regularly for nearly 6 months to look for development of any complications and the outcome was uneventful.



Fig. 1: X-ray soft tissue neck lateral view



Fig. 2: X-ray chest postero-anterior view



Fig. 3: X-ray neck antero-posterior view



Fig. 4: CT scan neck and upper chest saggital cut



Fig.7: Foreign Body Mettalic Steel Piece removed



Fig. 5: CT scan neck and upper chest coronal cut



Fig. 8: Patient with closed expiratory valve tube (After 20 days)



Fig. 6: Tracheostomised patient ready for bronchoscopy



Fig. 9: Patient with closed tracheostome



Fig. 10: Patient after one month follow-up

DISCUSSION

Our patient came with history of penetrating neck injury, followed by bleeding through the wound along with neck swelling and dry irritating cough. Patient was a labourer in a steel factory and during cutting of steel sheets, a high velocity metallic steel piece struck the anterior neck causing puncture of anterior wall of trachea and then migrated into the submandibular subcutaneous tissue (as evident on x-ray soft tissue neck lateral view). As the patient developed gradually increasing cough, it migrated again towards the site of injury and probably through the puncture in anterior wall of trachea, entered through the trachea and then into the right main bronchus (as seen in x-ray chest PA view). The location was confirmed by CT scan of neck and chest, it was found to be the right intermediate bronchus (at about 2 hours of injury). During the whole time patient was having continuous dry irritating cough. Contrary to the CT scan, the foreign body was found adherent to the anterior wall of trachea and was removed from there, by bronchoscopy.

Thus the course of migration from injury site to site of removal was -Neck > Subcutaneous planes in submandibular region > Trachea > Right main bronchus > Right intermediate bronchus > Trachea again.

Penetrating neck injuries are exceedingly uncommon and when they occur, they are usually due to gunshot wound or knife injuries [7]. On rare occasions, high velocity foreign bodies actually enter through the neck wound and perforate into the aerodigestive tract. Migratory potential of such high velocity sharp foreign bodies is a well documented fact [8]. Attempts at removal may well increase the migrating distance even further [9]. In our case, what appears to be a trivial injury externally, represented a life threatening injury. In these cases there may be extensive tissue damage beyond a small entry wound and there is also a possibility of a sharp foreign body migrating within the soft tissues.

Many studies have suggested the use of CT scan to localize the migratory foreign body and to estimate the extent of damage done [4, 5]. Furthermore the foreign body at surgery, may not be located exactly where it was shown to be in the CT scan [5]. Therefore C-arm is recommended to localize the foreign body in the neck intra operatively [1, 7]. However in case of high velocity penetrating injuries, the importance of radiological investigations cannot be stressed enough. Plain radiographs are essential at the initial assessment. When there is delay between the injury and surgical exploration, repeat films immediately prior to surgery are mandatory, to assess any further migration in the interim period [7].

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