

HEMOPTYSIS CAUSED BY A MIGRATORY K-WIRE: A case report and review literature

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ABSTRACT

A case of the migratory Kirschner wire (K-wire) from right clavicle to trachea, causing hemoptysis was diagnosed in 47 year-old man. Plain film, CT scan and esophagography were illustrated. Surgical removal of K-wire was done and the false aneurysm of thyrocervical trunk was seen during surgery.

Key words : Kirschner wire, K-wire, K-wire complication

INTRODUCTION

Orthopaedic fixation wires has been widely used in the surgical management of fracture. Migration of the wire has been known as a complication, but migration into the chest and causing hemoptysis are rare. This is a case report of the migratory K-wire from right clavicle to trachea, causing a the false aneurysm of the thyrocervical trunk and hemoptysis. The treatment involved removal of the wire and aneurysmectomy via thoracotomy.

CASE REPORT

A 47year-old man presented with intermittent back pain for 3 years. He was diagnosed to be myalgia and received the medical treatment. In this admission, he presented with hemoptysis for 4 days. The past history of his illness was taken. He recalled that he had motorcycle accident, 10 years ago. He had undergone an orthopaedic procedure for right clavicular fracture that involved the placement of wire. The orthopaedist told him to come back for removing off the wire. But he never follow the advice and lost the follow up. Five years later, he came back again with pus at right shoulder, so the wire was removed, but there is no medical record that how many wires

which were removed.

Physical examination shows no abnormality.

Direct laryngoscope found 1.5-cm mass at posterior wall, between true vocal cord and the trachea.

Plain film shows a long piece of K-wire, overlying right upper chest and the trachea. (Figure 1)

CT scan shows tip of the K-wire, pointed to the right posterolateral portion of the trachea and there is an intraluminal non-enhancing mass in the trachea. (Figure 2)

Esophagography were performed to rule out esophageal injury. There is smooth pressure effect from mass and tip of the K-wire is point to the mass. No leakage of contrast media is demonstrated. (Figure 3)

Then he had undergone to remove wire by thoracotomy. At that operation, there's false aneurysm of thyrocervical trunk, just distal to vertebral artery origin. The patient had complete recovery and no complication after aneurysmectomy.

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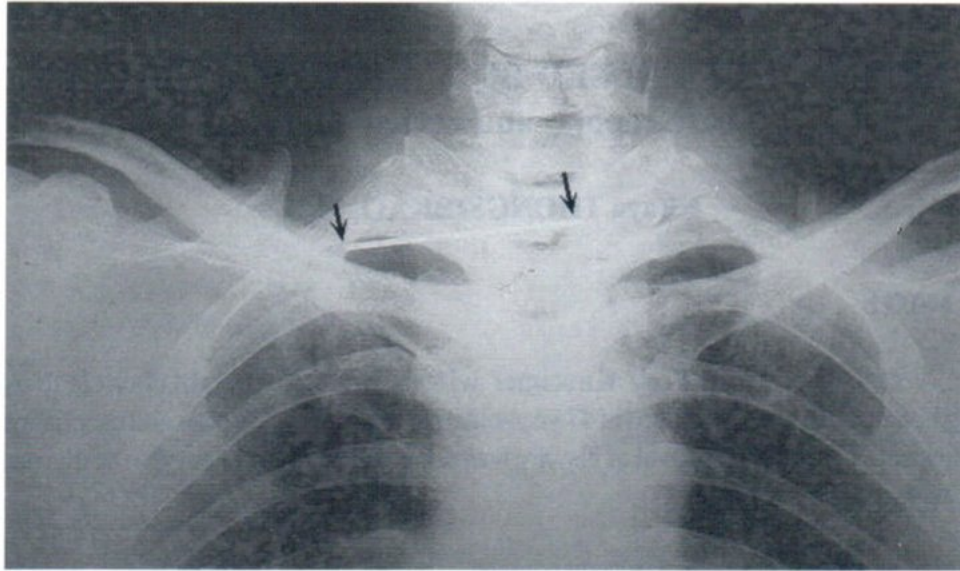


Fig.1 Metallic K-wire is seen, overlying upper chest and trachea (black arrows)

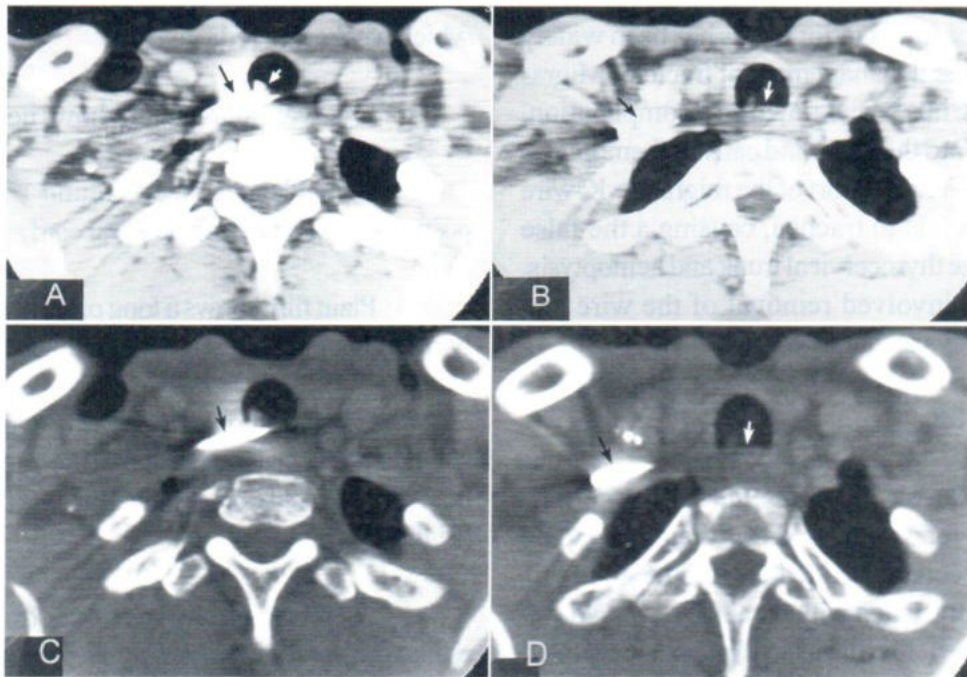


Fig. 2 Axial CT scan

A-B Soft tissue shadow shows a non-enhancing mass in the posterior aspect of trachea (white arrow) and a metallic K-wire (black arrow) causing artifacts to obscure the adjacent structures.

C-D Bone window show metallic K-wire (black arrow), pointed to the mass in the posterior aspect of the trachea (white arrow).

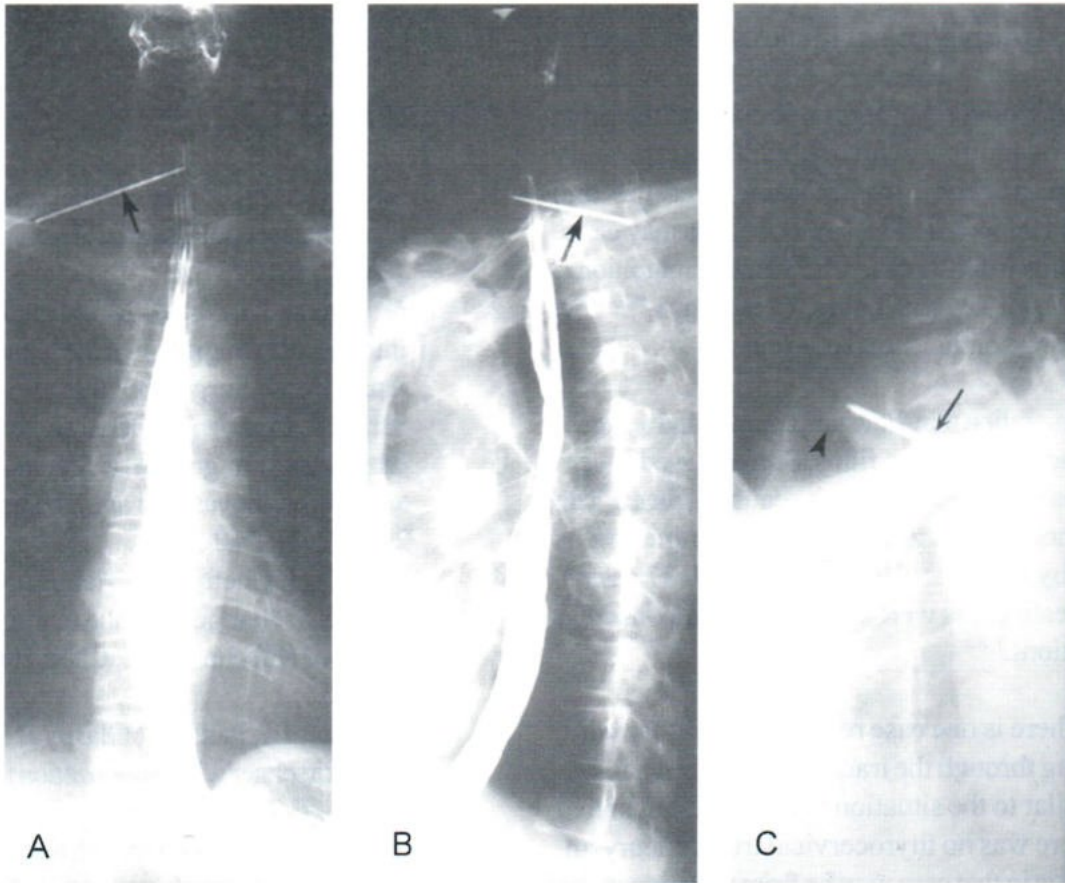


Fig. 3(A-C) Esophagogram shows no esophageal injury. Metallic K-wire is clearly seen (black arrow). Tip of K-wire is point to the posterior tracheal mass (arrow-head).

DISCUSSION

Nowadays there have been regularly using metallic fixation pin and wires in the management of fracture and dislocation. The migration of the wires and other metallic implants is a known complication to orthopaedist and surgeon, but migration of the wire to the chest is unusual.⁴⁻⁷

The first case report of migratory pin was in 1943.^{3,10} Review of the literatures, there are various unusual location of the migratory wires and pins. There have been some case reports of migratory wires from the shoulder region to the spinal canal, to the trachea, to the spleen, into pulmonary artery, into ascending aorta, into the heart, into the mediastinum, into the

lung, to the subclavian artery and travel through the pharyngeal tissue to the orbit. The various severe complications such as pericardial tamponade, arrhythmias, pericarditis, false aneurysm, aorto-innominate and aorto-pulmonary fistula, pneumothorax, hemoptysis, subclavian steal syndrome, lacerations of the subclavian artery, hemianopia, hemiplegia, paraplegia, radicular pain, dysphagia and splenic hematoma,¹⁻¹² had been reported.

The highest incidence of migration occurred when the pins and wires were used to fix anterior sterno-clavicular joint dislocations, acromioclavicular joint dislocation and fractures of clavicle.^{2-3,7} The

reason for wire migrations is unclear, but there are many proposals such as the result from muscular activity, regional resorption of bone and the great freedom of motion of the shoulder. Respiratory excursion, negative intrathoracic pressure and gravitational force, as well as electrolysis may cause the migration to the thorax.^{1,3-4,7-8} Time of migration is variable from several hours,¹² few days,⁹⁻¹⁰ few weeks,⁸ few months³⁻⁴ to many years.⁴⁻⁵

Migration may be asymptomatic and accidentally found by follow up films. Some caused severe symptoms and some may be the cause of death. The overall mortality resulting from pin migration as reported by Lyons et al has been 21% (8/37 cases). Mostly death cases were caused by cardiovascular complications.^{1,6-7}

There is one case report of migratory wire, penetrating through the trachea and caused hemoptysis, similar to the situation in this case, but in that report there was no thyrocervical trunk aneurysm. Hemoptysis in that case may be from irritation of the tracheal lining by the wire.^{2,4}

To avoid this complication by bending the distal end of wire and leaving a portion of wire out of the skin, remove the wires as soon as possible and regular follow up until the wires are removed.⁹⁻¹⁰ A record of the number of pins or wires inserted should be done to avoid leaving the one that has already migrated at the time of extraction.⁷

Radiologist should pay more attention to the case of wire fixation and the consecutive films should be follow up to detect for the wire migration.

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