

Unusual Migration of Kirschner's Wire into Intervertebral Foramen after Lateral Clavicle Fracture Fixation - A Case Report

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The migration of metallic devices such as Kirschner's wire (K-wire) from the shoulder is a well-recognized and significant complication of operation, the wire ending up in the lungs, the heart, the esophagus, the aorta or the subclavian artery. However, spinal migration is very rare. We report the case of a 72-year-old female patient with K-wire migration into the C7-T1 intervertebral foramen, 2 months after surgery for a lateral end fracture of left clavicle.

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Key Words: Clavicle; Lateral end fracture; Kirschner's wire; Spinal migration

Kirschner's wires (K-wires) are used commonly in various orthopaedic surgical fixations. Especially, that is often used around the shoulder girdle for fixation of displaced fractures and dislocated joints to ensure adequate stabilization. The use of K-wire fixation is often complicated by component migration, especially when employed about the shoulder girdle. There are many reports of migrations of the chest, vessels and muscles by K-wires in the literature, but cases of interspinal migration are extremely rare. We report the case of a woman who was interspinal migration of K-wire after fixation for the lateral clavicle end fracture.

Case Report

A 72-year-old woman was fall down in April 2008, and sustained a fracture of the left clavicle end (Neer type II). For which she underwent stabilization of the fracture by two K-wires and tension band wiring at other hospital (Fig. 1). The regular follow-up was done every 2 week. About 7 weeks post-operatively, the patient was developed a radiating pain on left arm while walking or shoulder motion. At routine follow-up 8 weeks post-operatively, radiologic examination revealed that the wire migra-

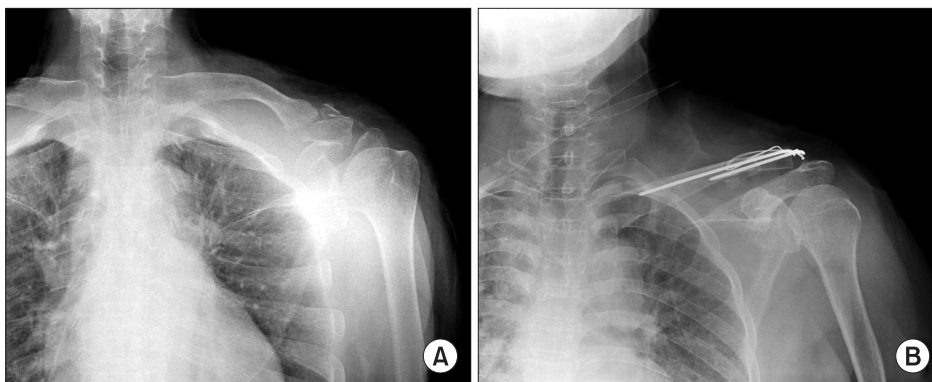


Fig. 1. Anteroposterior radiograph of left shoulder. Preoperative (A) and postoperative (B) radiograph shows left distal clavicle fracture and internal fixation state with K-wire.

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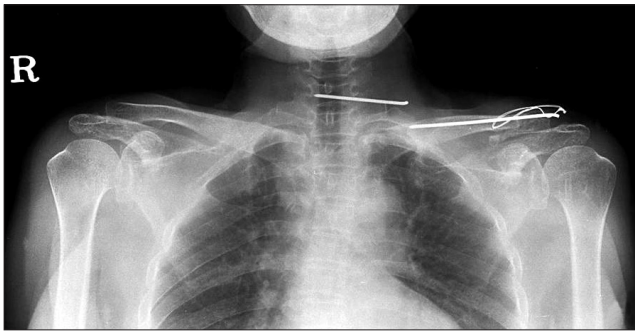


Fig. 2. Plain radiograph shows the migration of one wire.

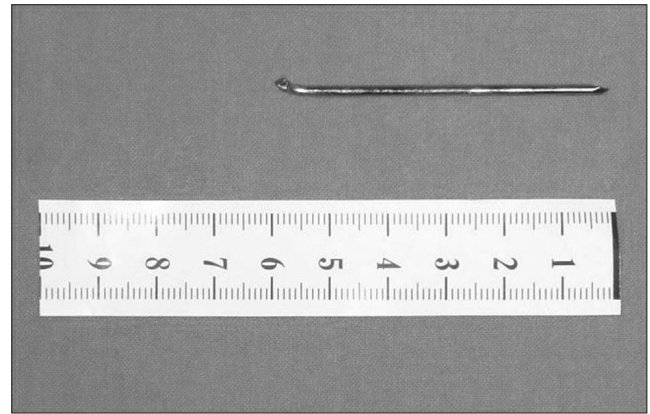


Fig. 4. Photograph shows about 6 cm sized metallic device.



Fig. 3. On computed tomography scans, the K-wire located in C7-T1 intervertebral foramen.



Fig. 5. Last follow-up radiograph shows the bone union of left clavicle.

tion. Roentgenogram of the cervical spine showed a movement of one of the two pins, which one wire migrated into C7-T1 intervertebral foramen (Fig. 2). A computed tomography scan of the cervical spine revealed that the dislocated K-wire had penetrated through the left intervertebral foramen of C7-T1 (Fig. 3). At that time we done emergency operation. The transverse incision over the left clavicle and through the sternocleidomastoid muscle was opened. The K-wire was pulled out successfully under image intensifier (Fig. 4). After a few days, she did not have neurologic symptoms anymore.

On the last checked X-ray, at the former fracture site, a bony union was found (Fig. 5). Two months post-operatively, the patient continues to do well.

Discussion

K-wire, either alone or in conjunction with a tension band wire, are very frequently used by trauma surgeon for trauma surgery to hold the unstable fractures. Benign thin, tubular and

unthreaded wires have strong tendency to migrate back along the path of their insertion. Antegrade migration of K-wire is rather uncommon. Furthermore, most of antegrade pin migration remains poorly reported because of the sensitive and litigious nature of the problem.¹⁾

Case of K-wire migration were first reported by Mazet²⁾ in 1943, and then, K-wire have been reported to migrate to heart, thorax, mediastinum, abdominal wall, spleen, and spinal canal etc.³⁻⁸⁾

Interestingly, all types of migrations have been reported, especially with use in the shoulder region. The mechanism is still obscure, but in theory, factors as the great freedom of shoulder movements containing muscle action, the breathing movements, the gravitational force and the regional bony re-absorption are probably involved.^{1,7,9)} In our case, maybe the great freedom of shoulder movement due to patient's incooperation and the regional bony re-absorption contributed to the migration of the

K-wire. Also, as the far cortex was already drilled, the wire faced minimal resistance to migration.

Like this case, in 1986, Conzen and Sollmann¹⁰⁾ described a case that complained radiating pain in the C6 and C7 dermatome after interspinal migration of a K-wire after clavicle fracture. They mentioned that follow-up X-rays should be taken every 2 or 4 weeks until the pins are removed in order to avoid legal problem.

We think that the orthopaedic surgeons should take care when they fix the fracture with metallic wires especially in the shoulder region. For example, the complication can be avoided through using a threaded pin for the shoulder surgery, bending the external end of the pin and choosing a correct diameter of the K-wire. Also, patients with a K-wire osteosynthesis should be followed regularly with radiographs every 2 or 4 weeks. And if necessary, until K-wires are removed, arm movement should be restricted to elevation.

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