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Migration of intra-articular K-wire into the contralateral pelvis after surgery for developmental dysplasia of the hip: a case report

Müslim YURTÇU,[*] Hakan ŞENARAN,[#] Hakan H. TÜRK,[†] Adnan ABASIYANIK,[*] İbrahim TUNCAY[#]

[*]Selçuk University Meram Faculty of Medicine, Department of Pediatric Surgery, Konya;
[#]Selçuk University Selçuklu Faculty of Medicine, Department of Orthopedics and Traumatology, Konya;
[†]Selçuk University Meram Faculty of Medicine, Department of Orthopedics and Traumatology, Konya

Transarticular fixation of femoral head into acetabulum with K-wire is a seldomly used surgical method in difficult cases of developmental dysplasia of the hip (DDH). This paper presents a child with intrapelvic transvesicular migration of a K-wire without any symptoms after treatment of DDH. Eight years old girl who had multiple surgeries 4 years ago due to bilateral DDH applied to the orthopedics clinic with limping. She had good range of motion of both hips. At the pelvis radiograph, there was an intrapelvic K-wire standing between two hemipelvises like a bridge. She did not have any enteral and urological symptoms after the previous operations. We planned to remove the K-wire in cooperation with the pediatric surgery department. On the cystoscopy, K-wire was seen passing through the urinary bladder. Wire was cut at the middle point and taken out of the body by laparotomy. The patient was discharged without any postoperative complications. K-wire retention in the body has high chance of migration. Early postoperative removal of the K-wire is necessary to prevent possible complications.

Key words: Congenital hip dysplasia; Kirschner wires; postoperative complications; surgery.

Preoperative planning is important in surgical treatment of developmental dysplasia of the hip (DDH). Hip stability is difficult to obtain during surgery in the older children who requires femoral osteotomy and in the patients who had previous revisional hip surgery. Transarticular fixation of femoral head into the acetabulum with a Kirschner wire (K-wire) for transient stability of the hip is a seldomly used surgical method in difficult cases when hip stability could not be obtained. K-wire causes injury to cartilaginous structures of the joint, but it prevents femoral head dislocation during pelvipedal plaster application. Plaster and K-wire are removed usually after 6 weeks.

In this case report, a child who had multiple operations due to DDH and a K-wire that remained in the joint and migrated into the contralateral pelvis passing through the bladder was presented.

Case report

An 8-year-old girl was admitted to the Department of Orthopedics and Traumatology. She had undergone bilateral hip surgery due to the diagnosis of bilateral DDH three times for right hip and twice for left hip in another centre. Her walking was in Trendelenburg position. Her hip movements were in the functional borders. Nervous system examination was normal.

Correspondence: Hakan Şenaran, MD. Selçuk Üniversitesi Selçuklu Tıp Fakültesi, Ortopedi ve Travmatoloji Anabilim Dalı, Alaaddin Kampüsü, 42075, Konya, Turkey. Tel: +90 332 - 241 50 00 / 41212 e-mail: senaran@selcuk.edu.tr

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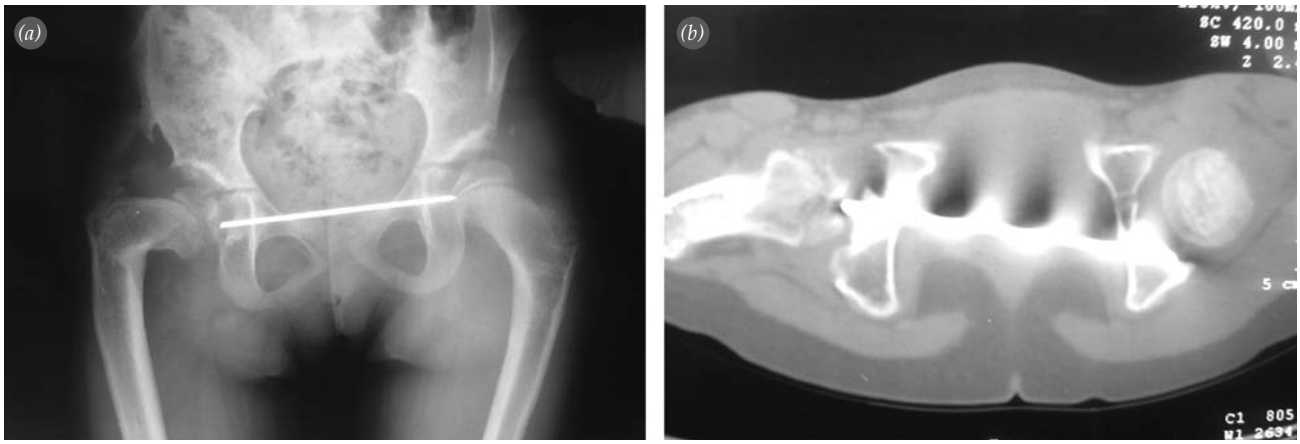

Fig. 1. The appearance of K-wire which stands between bilateral hemipelvis like a bridge, cartilaginous lesion in medial side of right caput femoris, and varus deformity in proximal side of right femur in the **(a)** radiograph and **(b)** computed tomography image of the pelvis.

At the pelvis radiograph, there was deformity in cartilaginous structure of right femoral head and varus deformity at proximal side of femur due to previous surgery. K-wire, which extends like a bridge between the bilateral semipelvis was identified (Fig. 1). Meanwhile, there were no complaints related with colon and bladder in advanced investigations. K-wire had been used with the aim of temporary fixation of femoral head into acetabulum, but the radiographs during the first operation in another center showed that K-wire was migrated into pelvis during plaster application (Fig. 2). Department of Pediatric Surgery was consulted. Although the patient had no clinical complaints, removing of K-wire from pelvis was planned considering the pregnancy possibility of the patient in adulthood and foreign body in ureter, which may causes infection and bladder stone.[1] Her laboratory evaluations including complete blood count and prothrombin time were normal. In cystoscopy, K-wire perforated both lateral walls of bladder and passed into contralateral pelvis. Fibrose tissue had covered K-wire at the perforation sides in the bladder wall. Ureterovesical junctions were normal. Bilateral double-J ureteral stents were settled into both ureters to preserve ureters. K-wire was found by exploring intrapelvic cavity via suprapubic incision. K-wire was cut in the middle region. Two ends of the wire were taken out of the body. Bladder wall defects were repaired while taking out the K-wire, and the incision was closed. The patient had no complaint in early postoperative period. The double-j stents were removed on postoperative day 15. No symptom regarding hip movements and urinary system was encountered during 3 months of follow-up.

Discussion

Several surgical procedures are applied for stabilization of hip in patients with DDP. The most commonly used procedures are capsule plication and iliac osteotomies. Femoral osteotomies should be added in big children or when iliac osteotomies are insufficient. Transarticular fixation procedures may be necessary when stabilization is not sufficient. These procedures include intra-articular suture application and sewing ligamentum teres into acetabulum, which are currently popular.[2-4] Several complications associat-

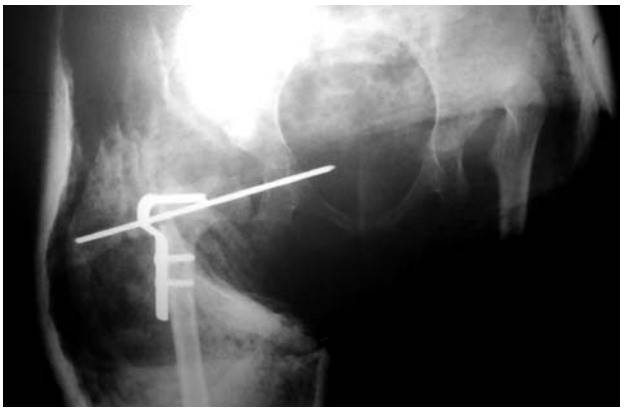

Fig. 2. The pelvis radiograph following the surgery of right hip open reduction, and iliac and femoral osteotomy performed at 4 years of age show K-wire before migration.

ed with the K-wire which is used for fixation were reported.[5,6] It was reported that K-wires, which threatens vital organs, may cause death.[7] After transarticular K-wire fixation in the hip, probable complications include mechanical cartilage injury in hip joint cartilage, chondrolysis, septic arthritis, and K-wire migration. K-wire complications were reported during the fixation of femur neck fractures and epiphysis dislocation of caput femoris.[8-10] There are no reports describing K-wire which migrates through pelvis, perforates bladder, and passes to contralateral pelvis in the treatment of DDH. Perforation of bladder wall and absence of any urologic and enterologic problems during K-wire migration in our case are interesting. Prophylactic measures taken by pediatric surgery prevented probable urologic complications after removing K-wire and protected the bladder and ureters.

As a conclusion, the use of K-wire should not be used for temporary fixation in the surgery of developmental dysplasia of the hip. In the presence of intrapelvic K-wire migration, even if the patient is asymptomatic, the possibility of bladder perforation should be considered and pediatric surgeons should be consulted for necessary surgical approach.

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