A piercing or penetrating injury of the pelvis by a steel bar is a rare condition compared with piercing or penetrating injuries of the extremities. We report the case of a 34-year-old woman who attempted a suicidal fall that resulted in the piercing of the pelvis with a long steel bar. The steel bar entered the pelvic cavity from the left buttock through the sciatic notch and was bent at the middle of the pelvic cavity between the bladder and rectum. At the right hip joint, the rod penetrated the posteromedial aspect of the femoral head, was bent again, and extended straight along the medial border of the femur without damaging the femoral neurovascular bundle. At the middle one-third level, the bar spanned in a posterolateral direction and then down toward the lateral aspect at the level of the mid-calf. The bar exited the lateral side of the left calf.

An explorative laparotomy was performed to ensure that no intraperitoneal injury had occurred. The smaller portion of the uterus bicornis was the only organ that had been pierced. The penetrated uterus was incised to expose the bent portion of the bar. The bar was cut in half using a diamond burr, and the cutting edge was trimmed so as not to injure the surrounding organs during removal. The second bent portion of the rod, located in the right hip joint, was straightened by positional reduction, and the hip joint was abducted under fluoroscopic monitoring from outside of the operative field by grasping the end of the bar remaining in the pelvic cavity. The steel bar was safely removed and treated after careful planning and multiteam approaches with a general surgeon and orthopedic trauma specialists.

**Figure:** Photographs of the patient’s injuries. The steel bar pierced the patient’s left buttock (entry) (A, B) and protruded from the skin on the lateral side of the right calf (exit) (C).
Piercing or penetrating injuries of the pelvis with a steel bar are rare compared with piercing or penetrating injuries of the extremities. Cases of visceral organ injury have significant morbidity and a higher mortality rate. We report a case of an attempted suicidal fall that resulted in a piercing injury to the pelvis with a steel bar and describe the treatment strategy used to manage this challenging case.

CASE REPORT

A 34-year-old woman was admitted to the emergency department of our hospital with a piercing injury to her pelvis. The patient attempted to commit suicide by jumping from the fourth floor of her apartment building and was impaled on a steel bar at ground level. The rod-like steel bar, approximately 150-cm long and 3-cm thick, penetrated her left buttock and entered the pelvic cavity through the sciatic notch, extended to the right femoral head, and projected out of her body at the posterior aspect of the right calf (Figure 1).

At presentation, the patient’s blood pressure was 110/60 mm Hg, her pulse rate was 96 beats per minute, and her body temperature was 36.4°C. No active bleeding from the entry or exit wound, pulsatile hematoma, or aneurysmal bruit at the popliteal lesion occurred. The volume and character of the popliteal pulse and dorsalis pedis on the affected side were similar to those on the contralateral side. Neurological examination of the right lower limb revealed no motor or sensory deficits. However, the patient was unable to move her right thigh and knee. Lower abdominal tenderness was not apparent, and abnormalities were not detected on vaginal examination. No bleeding or rectal penetration was evident on digital rectal examination, but the patient’s rectal tone was decreased.

Radiological studies of the pelvis and lower limbs revealed that the steel bar traversed the pelvic cavity from the left buttock to the right hip joint and calf. The steel bar was bent at the intrapelvic area and the hip joint. The steel bar entered the pelvic cavity from the left buttock through the sciatic notch and was bent at the middle of the pelvic cavity between the bladder and rectum. At the right hip joint, the rod penetrated the posteromedial aspect of the femur head, was bent again, and extended straight along the medial border of the femur without damaging the femoral neurovascular bundle. At the middle one-third level, the bar spanned in a posterolateral direction and then down toward the lateral aspect at the level of the mid-calf. The bar exited the lateral side of the left calf (Figure 2). The other injuries were a Pipkin type 1 right femoral head fracture and a medial wall fracture of the right acetabulum. Major vessel injuries were not observed on preoperative angiography.

A general surgeon and orthopedic trauma specialists comprised part of the operating team charged with managing the injured intrapelvic organs and removing the steel bar. First, an explorative laparotomy was performed to ensure that no intraperitoneal injury had occurred. Fortunately, the smaller portion of the uterus bicornis was the only organ that had been pierced. Minimal perforation of the anterior wall of the rectum was identified, and the bladder was not injured. The penetrated uterus was incised to expose the bent portion of the bar. The bar was cut in half using a diamond burr, and the cutting edge was trimmed so as not to injure the surrounding organs during removal. The proximal part of the rod was manually extracted from the entry site on the left buttock.

The second bent portion of the rod, located in the right hip joint, was straightened by positional reduction, and the hip joint was abducted under fluoroscopic monitoring from outside of the operative field by grasping the end of the bar remaining in the pelvic cavity (Figure 3). The distal part of the rod was then removed from the calf site without opening the hip joint. The uterus and peritoneal cavity were irrigated and repaired, and a broad-spectrum antibiotic was prescribed for 2 weeks postoperatively to prevent peritoneal sepsis. The patient had fully recovered with no complications 2 years after trauma.

DISCUSSION

Piercing or penetrating injuries of the pelvis and hip joint are rare but can lead to catastrophic neurovascular or internal organ injuries. The iliac vessel, sacral plexus, sciatic nerve, female genital organs,
and femoral and popliteal neurovascular bundles are likely to be affected at the time of injury or during removal of the foreign body. We were unable to find another case in the literature of a long steel bar penetrating the pelvis and bending toward the extremities. No reports of patients without neurovascular deficit after sustaining this type of injury have been published.

If confronted with this type of injury, a team comprising a general surgeon, a gynecologic surgeon, and an orthopedic surgeon should be assembled to remove the object and treat any potential complications. If the piercing object cannot be reduced by manual reduction, the hip joint should be opened.

REFERENCES