

CASE REPORT

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Sciatic nerve palsy secondary to heterotopic bone formation occurred after surgery for posterior acetabulum fracture and hip dislocation

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Abstract

Sciatic nerve paralysis can be seen after hip joint traumatic dislocations and fractures of the posterior wall of acetabulum. In this article, we report sciatic nerve palsy due to heterotopic bone formation in early postoperative phase that was treated with heterotopic bone resection and sciatic nerve neurolysis in a patient who underwent open reduction and internal fixation for hip dislocation and fracture of posterior wall of right acetabulum.

Keywords: Hip dislocation, heterotopic ossification, sciatic nerve

Introduction

Sciatic nerve lesions may arise from pathologies such as tension, compression or laceration following acetabulum posterior wall fractures or hip dislocations (1,2,3). Iatrogenic nerve injuries may also occur in patients treated surgically due to acetabular posterior wall / column fractures (4,5). In addition, the sciatic nerve can be trapped under pressure due to heterotopic ossification (HO), which develops at high rate after acetabulum fractures (6,7). In the sciatic nerve palsy developed by HO, there may be signs of weakness in the thigh region, in the tibialis anterior, extensor hallucis longus and peroneal muscle groups accompanying pain and paresthesia in the foot dorsum following the surgical treatment. Two cases have been reported in which the sciatic nerve symptoms were cured by the excision of heterotopic bones (6,8). In this article, we will discuss about a patient with sciatic nerve palsy that occurred due to heterotopic ossification arised after open reduction and internal fixation of acetabulum posterior wall fracture and hip dislocation, and then successfully treated surgically by excision of heterotopic bones.

Case Report

A 26 years old male patient admitted to emergency unit after a car accident. He had right hip dislocation, posterior wall fracture of the acetabulum (Figure 1A), left distal radius fracture and right

ulna diaphysis fracture. The patient had no additional injuries to the cranium, thorax or abdomen. The sciatic nerve examination was normal in the lower right limb. The patient underwent closed reduction for right hip dislocation and distal radius fracture at first stage. Skeletal traction applied from the right distal femur. On the sixth day after admission to the hospital, open reduction and internal fixation (ORIF) performed with the Kocher-Langenbeck approach using a 3.5 mm pelvic reconstruction plate posterolaterally for right acetabulum fractures (Figure 2). The sciatic nerve was found during surgery and protected. Muscle fibers that are damaged or have lost their vitality were cleaned. Before the wound was closed, plenty of washes and irrigation were performed, and one aspirative drain was placed in incision. ORIF was applied with plate and screws for right distal radius and left ulna shaft fractures. Postoperative follow-up of the patient was ordinary, sciatic nerve examination was normal. We started anticoagulant therapy for deep vein thrombosis prophylaxis and patient could not be mobilized because of fractures in both forearms. Only in-bed exercises were taught and discharged on the fifth day after the operation. Sutures were removed at the polyclinic control on the 15th day. The hip movements were quite painful. On the 6th week after the operation, on the outpatient clinic, the right hip of the patient was in the external rotation posture, while the passive movements were quite limited and painful. Computerized tomography examination (Figure 3) revealed heterotopic ossification in the right gluteus minimus and in the external rotators. The sciatic nerve examination was natural. There was no paresthesia in the foot dorsal. No weakness was found in the foot extensor muscles. The patient was asked to check again by suggesting that he walk with a finger-tip.

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The patient, who came to the outpatient clinic at 4th postoperative month, presented with pinning, tingling and occasional severe pain in the right thigh and dorsal foot. The right hip was in external rotation position and quite painful when forced to passive motion. There was no foot dorsiflexion. There was widespread osteoblastic activity increase in the right hip region as expected with scintigraphy performed with Tc 99m. Electromyography examination revealed sciatic paralysis. Surgical decision was made considering sciatic palsy due to heterotopic ossification. The right acetabulum was again accessed by the Kocher approach. The nerve was surrounded by heterotopic bone from trochanter minor

distally to great sciatic notch proximally. External neurolysis was performed. Heterotopic bones were excised. The plate and screws on the back of the acetabulum were removed. The hip joint was passively mobilized. Active and passive physiotherapy was applied in the early postoperative period. Radiotherapy was not done. 75 mg / day indomethacin was given for three weeks. Sensory and motor symptoms completely resolved at 3rd and 7th months postoperatively. There was no recurrence of heterotopic ossification in the follow-up of the patient 24 months after the second surgery. There were osteoarthritic changes in the right hip (Figure 1B). The Harris hip score was 76.



Figure 1. X-Ray image of right posterior wall fractures of the right acetabulum and right hip dislocation after emergency department admission(A), pelvis anteroposterior radiograph at 2 years postoperatively (B)



Figure 2. Right acetabulum anteroposterior radiograph after ORIF

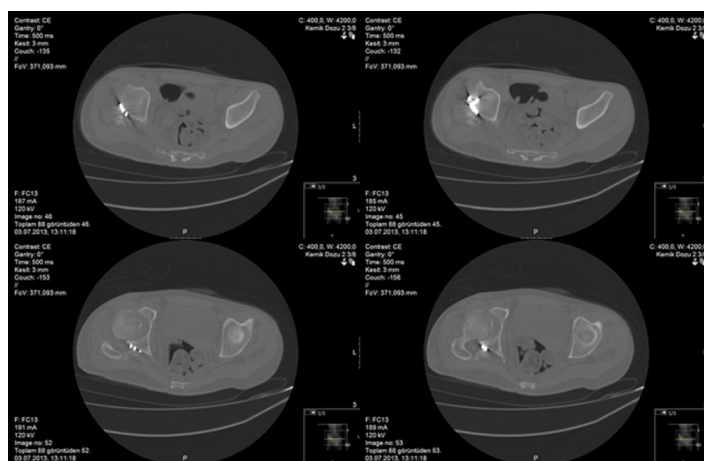


Figure 3. Computed tomography of the right hip at the 6th postoperative week shows heterotopic ossification in the posterior acetabulum

Discussion

Because the course is too close to the hip joint posteriorly, sciatic nerve may be damaged depending on posttraumatic acetabular fractures or hip dislocations, as a result of misplacement of the retractors during surgical intervention, or as a result of nerve stretching or resection. In the late posttraumatic period, sciatic nerve lesions may occur due to hematomas, scar tissue or heterotopic ossification (5).

Although HO is a common complication after treatment of

acetabular fractures, variable rates have been reported in the literature (1-3,9). Although the exact pathogenesis is unknown, the incompatibility between parathyroid hormone and calcitonin balance, with elevated prostaglandin, particularly PGE₂, is accompanied by inflammation, tissue hypoxia, altered sympathetic nervous system activity accused with formation of HO (1). Known risk factors for HO formation include prolonged mechanical ventilation, head trauma or thoracoabdominal trauma, an extended iliofemoral approach, male sex, femur head fractures and bone particles in the operative field.

Sciatic nerve injuries secondary to heterotopic ossification have been reported in the literature as case reports (6,8). The main characteristic of our case is heterotopic ossification was seen in the computed tomography taken at 6 weeks postoperatively, but symptoms occurred in the fourth month. This finding has been reported to be a natural result in the heterotopic ossification development process, but it is reported that in other cases in the literature, patients have sciatic nerve compression symptoms at the time of HO diagnosis. In our case, since HO was in the external rotator muscles of the hip and there was external rotation contracture in the extremity of the patient, so the femur prevented diagnosis with X-ray by superposing with pathological bone tissue. Computerized tomography is a useful examination for the diagnosis and classification of patients who could not be diagnosed with X-rays. Magnetic resonance imaging and bone scintigraphy can also be used for staging and diagnosis. Electrophysiological studies in patients with sciatic nerve involvement may be helpful in diagnosis.

Although various methods have been investigated for HO prophylaxis after acetabular fractures, there is not enough study about their use after HO resection. Indomethacin, radiotherapy, bisphosphonates were used to prevent recurrences after hip surgery. In our case, 75 mg / day indomethacin was used for 3 weeks for recurrence prophylaxis after HO resection. No recurrence was seen at 2 years after resection.

Conclusion

In cases of compressive neuropathy, one should not wait until maturation of heterotopic bone fragments. Since HO maturation can be as long as 18 months, follow up of the patient during this period may be too late for neurological symptoms to decline and

for nerve healing.

Competing interests

The authors declare that they have no competing interest.

Financial Disclosure

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