

## Case Report

# Late Sciatic Nerve Entrapment Following Pelvic Plate Reconstruction in Total Hip Arthroplasty

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**Abstract:** Delayed sciatic neuropathy due to pelvic reconstruction plate loosening following complex acetabular reconstruction in total hip arthroplasty seems not to have been previously reported. We identified a 79-year-old woman who developed progressive neurologic signs of entrapment 6 months following reconstruction of a pelvic discontinuity due to fracture nonunion caused by radiation necrosis. Magnetic resonance imaging of the lumbar spine was unrevealing and electromyography demonstrated a peripheral neurogenic process involving the sciatic nerve. Sciatic nerve exploration was done at 12 months after surgery finding a loose screw in the pelvic plate impinging the nerve. Substantial improvement in clinical symptoms resulted from removal and nerve release. **Key words:** sciatic nerve entrapment, total hip, pelvic plate, neuropathy, complication.

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The delayed onset of sciatic nerve palsy after total hip arthroplasty is rare, but documented causes have included entrapment from methyl methacrylate fragments, migrating trochanteric wires, and spinal stenosis [1–5]. This case report describes a new mechanism for late sciatic nerve palsy in total hip arthroplasty.

### Case Report

A 79-year-old woman developed a transverse acetabular nonunion with pelvic discontinuity and avascular necrosis of the left hip with severe degenerative arthritis 8 years following radiation treatment for a poorly differentiated lymphocytic lymphoma. Radiological findings were consistent with radiation bone necrosis. She had become a household ambulator with severe pain requiring the use

of a cane. The preoperative Harris Hip Score was 34. The neurological examination of the left lower extremity was normal. There was a 3.5-cm leg length discrepancy compared to the ipsilateral normal extremity. A cemented total hip arthroplasty was done after reconstruction of the pelvic transverse acetabular nonunion was stabilized with a 12 hole AO/ASIF 3.5-mm pelvic reconstruction applied to the posterior column. No complications occurred, and she was advised to continue tough weight-bearing for 6 weeks after surgery, at which point she was advanced to 50% weight-bearing. By 3 months, she was advanced to full weight-bearing and was pain-free at that time.

At 6 month follow-up, she was noted to have recent onset of increasing chronic pain in the left leg. Radiographic findings were unremarkable, and the pelvic nonunion appeared to be healed (Figs. 1, 2). She experienced global numbness in the left foot, although simple sensation and pulses in the left lower extremity were normal. Evaluation included a bone scan that showed minor uptake about the prosthesis, noninvasive arterial and venous

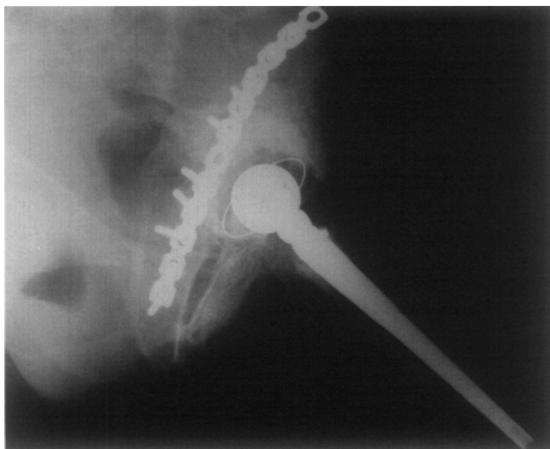
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**Fig. 1.** Anteroposterior radiograph of healed pelvic discontinuity with satisfactory cemented total hip arthroplasty. Note loosening and migration of the third most distal screw.

studies that were normal, and magnetic resonance imaging of the lumbar spine, which was found to be normal. There was no evidence for tumor recurrence after gynecologic and hematologic evaluation. An electromyography was performed on the left leg, which revealed fibrillation potentials in the gluteus medius, tibialis anterior, flexor digitorum longus, biceps femoris, lateral gastrocnemius, and medial gastrocnemius muscles. The gluteus maximus muscle was normal. Motor conduction studies were normal and comparable to the opposite extremity. A periph-



**Fig. 2.** Frog lateral demonstrates satisfactory position of plate with healing of nonunion.

eral neurogenic process involving the sciatic nerve was suspected. This study was repeated 3 months later finding similar changes, but the gluteus medius and gastrocnemius changes had reverted to normal. Clinical symptoms had worsened with increased pain, numbness, and weakness in the lower extremity.

Sciatic nerve exploration found an area of dense scar tissue directly over the pelvic plate as the nerve crossed the ischium. One pelvic screw had worked out about 3 mm and was pressing directly on the sciatic nerve and was removed. The plate was solidly fixed and was left in place (Fig. 3). The nerve was carefully dissected free and surrounded by a patch of oxidized regenerated cellulose (Intercede, Johnson and Johnson, Arlington, TX) to prevent further scar formation. Postoperative function improved, and the patient's pain and numbness were much improved by 6 weeks. At 6-month evaluation, numbness had persisted in the left foot, but the pain had improved at least 60%, and the chronic night had resolved.

## Discussion

Sciatic nerve injury has been described as a significant complication in the perioperative period in total hip arthroplasty with a rate of 0.5% to 2.0% [6]. The delayed onset of sciatic palsy following the typical postoperative recovery period is rare with few case reports. With the use of methyl methacrylate bone cement, cases have been described where



**Fig. 3.** Radiograph after nerve exploration shows removal of the third most distal screw.

fragments of cement may actually entrap or erode the sciatic nerve over a period of time [1,2]. Similarly, the use of trochanteric wires to reattach the greater trochanter, have led to broken pieces that have migrated into the nerve [3-5].

Delayed sciatic nerve palsy has been related to severe spinal stenosis after total hip arthroplasty. Pritchett [7] described 21 patients who had developed a foot drop after total hip replacement, after which other risk factors, such as dislocation, hematoma, intraoperative limb lengthening, revision surgery, and direct operative trauma, were excluded. All patients had some degree of back and leg pain without weakness before surgery. Evaluation with magnetic resonance or computed tomography and myelography revealed a high-grade spinal stenosis. Of 16 patients who underwent spinal decompression surgery, 12 had significant improvement of function [7].

The use of pelvic plate reconstruction for acetabular fracture has acceptance, and to date there is no described case of delayed sciatic nerve injury related to this technique. More recently, pelvic reconstruction for severe acetabular defects and pelvic discontinuity has been described [8-10]. In these cases, the plate is applied to the posterior column of the pelvis, either to stabilize a discontinuity of the acetabulum following severe bone loss, or to stabilize a bulk acetabular allograft applied to the pelvis to reconstruct a severe defect. None of the researchers who have used this technique have identified late sciatic nerve palsy as a complication. The sciatic nerve, however, is in close proximity to the segment of the plate applied to the ischium and may actually be on the plate.

This case report raises several important issues, including the differential diagnosis of late onset sciatic nerve palsy after total hip arthroplasty and the possibility of improvement with surgical decom-

pression of the nerve. We believe that surgical intervention is warranted in cases with significant sciatic radiculopathy with advanced electrical changes, and the exclusion of other possible causes such as spinal stenosis. With the emergence of posterior column acetabular plating for pelvic discontinuity, this problem may be seen more frequently.

## References

1. Olesak M, Edge AJ: Compression of the sciatic nerve by methylmethacrylate cement after total hip replacement. *J Bone and Joint Surg [Br]* 74:729, 1992
2. Casagrande PA, Danahy PR: Delayed sciatic nerve entrapment following the use of selfcuring acrylic: a case report. *J Bone and Joint Surg [Am]* 53:167, 1971
3. Edwards MS, Barbaro WM, Asher SW, Murray WR: Delayed sciatic palsy after total hip replacement: case report. *Neurosurgery* 9:61, 1981
4. Asnis SE, Hanley S, Shelton PD: Sciatic neuropathy secondary to migration of trochanteric wire following total hip arthroplasty. *Clin Orthop* 196:226, 1985
5. Mallory TH: Sciatic nerve entrapment secondary to trochanteric wiring following total hip arthroplasty: a case report. *Clin Orthop* 180:198, 1983
6. Abitbol JJ, Gendron D, Laurin CA, Beaulieu MA: Gluteal nerve damage following total hip arthroplasty: a prospective analysis. *J Arthroplasty* 5:319, 1990
7. Pritchett JW: Lumbar decompression to treat foot drop after hip arthroplasty. *Clin Orthop* 303:173, 1994
8. Stiehl JB, Harlow M, Hackbarth D: Extensile triradiate approach for complex acetabular reconstruction in total hip arthroplasty. *Clin Orthop* 294:162, 1993
9. Stiehl JB: Pigmented villonodular synovitis of the hip joint: an unusual case. *J Arthroplasty* 6(suppl):85, 1991
10. Stiehl JB: Anterior column acetabular reconstruction in revision total joint arthroplasty. *Semin Arthroplasty* 6:60, 1995