CASE REPORT

Simultaneous bilateral total hip arthroplasty dislocation with unilateral foot drop following closed reduction

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SUMMARY

Dislocation following primary and revision arthroplasty is a well-recognised complication with an estimated incidence rate of 0.2–10%. We present a rare case of simultaneous bilateral total hip replacement dislocation, complicated by unilateral foot drop following closed reduction, with no improvement in neurological function at 6-month follow-up.

BACKGROUND

Dislocation is a well-known complication following total hip arthroplasty, but there is no precedence in the literature for simultaneous bilateral events.

Sciatic nerve palsy is well recognised following primary and revision arthroplasty, but after dislocation the incidence of dysfunction is <0.1%. There are only six other documented cases of sciatic nerve palsy following closed reduction of a dislocated total hip replacement (THR).

CASE PRESENTATION

An 82-year-old woman presented following a fall, reporting of pain in both hips. She was bending over to tie her shoelaces when she slipped and fell, landing on her right hip. She had a medical history of bilateral THR for primary osteoarthritis. The left THR was inserted 12 years ago and right 3 years. There was no history of connective tissue disease or ligamentous laxity. She had good function in both hips postoperatively and no previous dislocations. Otherwise, she was well and independent of her activities of daily living.

Clinical examination revealed limb length discrepancy and internal rotation of the left leg. There was discomfort on palpation of left and right hip joints. Sciatic nerve function was intact. Pelvic antero-posterior (AP) radiograph confirmed bilateral dislocation of THRs (figure 1).

TREATMENT

The patient was managed with prompt manipulation under anaesthesia and successful closed reduction of both joints on first attempt. Postoperative AP pelvic radiograph revealed successful right THR reduction and eccentric (but reduced) left THR with polyethylene wear (figure 2).

Six hours following reduction, the patient was noted to have a painless left-sided foot drop with MRC power grade 0/5 in dorsiflexion and extensor hallucis longus extension. Plantar flexion was unaffected. There was complete sensory loss on the

dorsal surface of the foot. This was initially managed conservatively as it was a painless neuropraxia, but at 48 hours with no neurological improvement open exploration was undertaken. This revealed a large haematoma in the region of the sciatic nerve that was evacuated. The sciatic nerve was otherwise intact and not impinged by the femoral neck. The patient was then mobilised with a Zimmer frame and foot drop splint. There was no improvement in neurological status, and she was discharged home 5 days postoperatively.

The foot drop was likely a result of direct pressure from the haematoma compressing on the sciatic nerve. Traction injury following reduction is another possibility, but given the ease of reduction and intraoperative findings during exploration, this was felt to be unlikely in this case.

OUTCOME AND FOLLOW-UP

At follow-up in outpatient clinic at 6 weeks and 3 months, there had been no further episodes of arthroplasty dislocation. The left-sided foot drop had not improved with MRC graded power 0 and no return in sensation. The patient was therefore referred for nerve conduction studies which revealed that any neurological recovery would be unlikely.

DISCUSSION

The incidence of dislocation following total hip arthroplasty varies between 0.2% and 10%.^{1 2} More recent analysis of 14 314 total hip arthroplasty on the Scottish National Arthroplasty register revealed a dislocation rate of 1.9%.³ 59% of

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Figure 1 Bilateral total hip replacement dislocations.

Figure 2 Postoperative radiograph with bilateral concentric total hip replacement reduction.

dislocations occur within 3 months of surgery and 77% of dislocations occur within 1 year.⁴

On review of the English literature, we have been unable to find any other occurrence of simultaneous bilateral total hip arthroplasty dislocation, although cases of bilateral traumatic native hip dislocation have been documented.⁵

Dislocation following THR has been shown to be associated with patient-related risk factors such as neuromuscular and cognitive disorders, anatomical variations of the hip, metabolic bone disorders, inflammatory arthropathies, septic and aseptic loosening, revision hip replacements and prior fracture.⁶ It has also been shown to be associated with procedure-related risk factors such as posterior surgical approach, soft tissue tension, component positioning and size, liner profile and the surgeon's experience.⁶

Following closed reduction of a dislocated THR, to the best of our knowledge, there are only six cases published in the literature of injury to the sciatic nerve.^{7–12} In four cases, there was complete palsy of the sciatic nerve with intraoperative findings revealing sciatic nerve impingement by the femoral neck.^{7–10} The long-term neurological sequelae varied, with only one patient regaining full function.¹⁰ In one case, there was partial sciatic nerve palsy following closed reduction but no mention of conservative or operative management, or of neurological recovery.¹¹ In the final case at exploration, an intact sciatic nerve was found without femoral neck impingement, swelling or haematoma, and the insult thought to be secondary to prolonged traction after multiple reduction attempts.¹² This patient regained some sensation but no motor function.

Our case is the first description of a sciatic nerve palsy following closed hip reduction caused by compressive injury secondary to a haematoma, although this is a recognised cause of injury following primary and revision hip replacement.¹³ Given the causes of post reduction sciatic nerve palsy documented being entwinement of the sciatic nerve around the femoral neck, and our case of a direct pressure from a haematoma, we would

recommend early surgical exploration, even in cases of painless neuropraxia.

In conclusion, poly-arthroplasty patients presenting following traumatic injury require careful assessment to rule out multijoint injury. It is vitally important to assess and record neurovascular function after joint dislocation as neuropathy may occur following closed reduction. In cases of sciatic nerve palsy after closed THR reduction, we would recommend early exploration to rule out haematoma or sciatic nerve impingement.

Learning points

- ▶ In patients with bilateral hip arthroplasty, it is possible to dislocate both joints following traumatic injury.
- ▶ It is imperative to examine and document neurovascular function following total hip replacement dislocation before and after any attempts at manipulation.
- ▶ Early operative exploration with direct visualisation of the sciatic nerve should be undertaken in cases of sciatic nerve palsy following closed hip reduction.
- ▶ The literature suggests that recovery of sciatic nerve palsy following total hip dislocation will be incomplete.

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REFERENCES

- 1 Lee BP, Berry DJ, Harmsen WS, *et al*. Total hip arthroplasty for the treatment of an acute fracture of the femoral neck: long-term results. *J Bone Joint Surg Br* 1998;80:70–5.
- 2 Newington DP, Bannister GC, Fordyce M. Primary total hip replacement in patients over 80 years of age. *J Bone Joint Surg Br* 1990;72:450–2.
- 3 Meek RM, Allan DB, McPhillips G, *et al*. Epidemiology of dislocation after total hip arthroplasty. *Clin Orthop Relat Res* 2006;447:9–18.
- 4 Woo RY, Morrey BF. Dislocations after total hip arthroplasty. *J Bone Joint Surg Am* 1982;64-A:273–84.
- 5 Upadhyay S, Moulton A. The long term results of traumatic posterior dislocation of the hip. *J Bone Joint Surg* 1981;63B:548–51.
- 6 Dargek J, Oppermann J, Bruggemann GP, *et al*. Dislocation following total hip replacement. *Dtsch Arztebl Int* 2014;111:884–90.
- 7 Chan JH, Ballal MS, Dheerendra J, *et al*. Entrapment of the sciatic nerve following closed reduction of a dislocated revision total hip replacement. *J Bone Joint Surg Br* 2011;93:274–6.
- 8 Haque S, Sundarajan S. Entwinement of sciatic nerve around a total hip prosthesis following closed reduction of dislocated total hip replacement. *Pol Orthop Traumatol* 2013;78:273–5.
- 9 Leversedge FJ, Gelberman RH, Clohisy JC. Entrapment of the sciatic nerve by the femoral neck following closed reduction of a hip prosthesis. *J Bone Joint Surg Am* 2002;84:1210–13.
- 10 Stockley I, Bickerstaff D. Sciatic nerve palsy following reduction of a dislocated prosthesis: brief report. *J Bone Joint Surg Br* 1988;70-B:329–30.
- 11 Lazansky MG. Complications revisited: the debit side of total hip replacement. *Clin Orthop* 1973;95:96–100.
- 12 Ng J, Marson BA, Broodryk A. Foot drop following closed reduction of a total hip replacement. *BMJ Case Rep* 2016;2016:pil:2016215010.
- 13 Wolf M, Baumer P, Pedro M, *et al*. Sciatic nerve injury related to hip replacement surgery: imaging detection by MR neurography despite susceptibility artifacts. *PLoS ONE* 2014;9:e89154.

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