CASE REPORT

Sciatic nerve injury caused by pre-operative intraneural injection of local anaesthetic during total hip replacement

We report a case of iatrogenic sciatic nerve injury caused by pre-operative intraneural injection of local anaesthetic at total hip replacement. To our knowledge, this is unreported in the orthopaedic literature. We consider sacral nerve blockade in patients undergoing total hip replacement to be undesirable and present guidelines for the management of perioperative sciatic nerve injury.

Iatrogenic sciatic nerve injury during total hip replacement (THR) can occur by direct trauma or traction. Also, intraneural injection of local anaesthetic can cause long-term neurological effects in animal models. We report a case of sciatic nerve injury caused by intraneural injection of local anaesthetic which, to our knowledge, is unreported in the orthopaedic literature.

Case report
A 46-year-old man presented with osteoarthritis of the left hip. As a child he had suffered a left slipped upper femoral epiphysis which had initially been treated by screw fixation. He subsequently underwent femoral osteotomy for early degenerative symptoms and 20 years later he had further symptoms. He was advised to undergo THR. This was carried out under general anaesthetic with single-dose regional anaesthesia. A nerve stimulator was used to achieve a lumbar plexus block (25 ml of 1% bupivacaine) and a sacral plexus block via a posterior approach (15 ml of 1% bupivacaine).

The hip was exposed through a posterior approach and the sciatic nerve inspected. It was noted to be distended, and local anaesthetic was leaking from its sheath. The THR was technically difficult owing to disruption of the normal anatomy and scarring from previous surgery. At the end of the operation the sciatic nerve was relaxed in extension of the hip but under slight tension at 90° of flexion.

Post-operatively the patient developed urinary retention, weakness of the right lower limb and two or three episodes of visual disturbance. The right-sided weakness resolved within 24 hours and the urinary retention over the next five days. However, the left leg did not recover from the regional anaesthesia as expected. The block remained dense for 48 hours, after which there was persistent pain in the distribution of the sciatic nerve and a footdrop.

The hip was re-explored after two weeks. The sciatic nerve was exposed from the sciatic notch to the proximal thigh, but no evidence of neurotmesis was found. The nerve was again noted to be under slight tension at the limit of flexion, but not in extension.

Subsequent electromyography suggested severe axonal loss in the sciatic nerve with no response from the common peroneal nerve and only a slight response from the posterior tibial nerve. The patient was mobilised in a footdrop splint and referred to a specialist peripheral nerve injury unit.

He has been reviewed periodically over the subsequent five years and no further operation has been undertaken. He has recovered considerable motor function but suffers chronic pain in the leg despite pharmacological therapy.

Discussion
This case provides a model of how sciatic nerve injury after THR can be managed. It also highlights the risks of neural blockade.

Regional anaesthesia is useful for pain control in orthopaedic surgery. Lumbar plexus blockade in THR has been shown to reduce pain, the use of opioids, and to lead to improved outcome. The sacral plexus plays a small role in the innervation of the hip joint and sacral plexus blockade is sometimes used to augment a lumbar plexus block. It is performed by accessing the sacral plexus at the level of the short external rotators and relying on cephalad spread to the branches innervating the hip
proximal to the piriformis muscle. There is no convincing evidence to support the routine use of sacral plexus blockade and, given the potential risks, we question its role in THR.

In our case routine intra-operative exposure of the sciatic nerve allowed the diagnosis of intraneural injection to be made. Without direct exposure the only evidence for intraneural injection is clinical assessment. Further evidence of intraneural infiltration includes the development of contralateral limb weakness and urinary retention, due to proximal spread of the anaesthetic. Re-exploration of the sciatic nerve after iatrogenic injury allows the surgeon to rule out surgical injury. In 1986, Bonney stated: “If there is an incision over the line of a main nerve and if, after operation, there is complete paralysis (including vasomotor and sudomotor paralysis) in the distribution of that nerve, speculation is unnecessary: the nerve has been cut, and there will be no recovery until it is explored and repaired”. This statement is applicable to our case, even though the incision was by a needle and the injurious agent was intraneural local anaesthetic.

This report suggests that sacral plexus blockade in THR may be undesirable and highlights the importance of routine intra-operative exposure of the sciatic nerve and re-exploration if there is evidence of neurological injury.

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References