CLINICAL REPORT

Surgical trainees neuropraxia? An unusual case of compression of the lateral cutaneous nerve of the forearm

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Summary
Compression of the lateral cutaneous nerve of the forearm is an uncommon diagnosis but has been associated with strenuous upper limb activity. We report the unique case of a 32-year-old male orthopaedic trainee who suffered this nerve palsy as a result of prolonged elbow extension and forearm pronation while the single assistant during a hip resurfacing procedure. Conservative measures were sufficient for sensory recovery to be clinically detectable after 12 weeks.

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Introduction
Most surgeons will acknowledge the almost universal experience of adopting sometimes awkward positions while assisting colleagues during their training. For the most part, this is of no consequence but simply part of the learning pathway. However, as with many occupations, assisting in the operating theatre has elements that predispose to particular musculoskeletal ailments. We report the unusual case of sensory deficit developed in the region of the lateral cutaneous nerve of the forearm after prolonged adoption of a single position during a hip resurfacing procedure.

Case report
A 32-year-old male orthopaedic resident was involved as the single assistant during a left hip resurfacing. During reaming of the femoral head, he adopted a stance to retract the posterior soft tissues in which his right upper limb was flexed and internally rotated at the shoulder with the elbow in almost full extension, the forearm pronated and the hand radially deviated. This position was prolonged more than was usual on this occasion (approximately 10–15 min) due to abnormality of the femoral head and neck requiring repositioning of the reaming guide.

The following day the resident noticed a sharp, darting pain along the volar and radial aspect of his forearm with any extension at the elbow beyond 60°. Over the following week, reduced sensation spread in a cephalad direction along the distribution of the lateral cutaneous innervation.
nerve of the forearm. He subsequently noted the area to be hyperalgesic.

He had no notable medical history. Cervical spine movements were normal and Spurling's test negative. Upper limb motor and sensory exams were normal except for 1/2 sensation to light touch in the area described (Fig. 1). Full extension of the elbow reproduced the pain and this was further exacerbated by pronation of the forearm.

Regular diclofenac was of moderate benefit in controlling the pain. He did not alter his participation at work and was not required to assist again in the same operative procedure. After four weeks, the pain associated with elbow extension had dissipated and only the sensory deficit remained. Nerve conduction studies performed at eight weeks after symptom onset showed normal function of the radial, median, ulnar and antebrachial nerves. He continued to improve and proximal sensation had started to return to normal at 12 weeks after onset of symptoms. At 9 months after symptom onset, all but a small patch of altered sensation proximal to the thenar eminence had returned to normal.

Discussion

The musculocutaneous nerve is the continuation of the lateral cord of the brachial plexus. In the arm, it supplies coracobrachialis, brachialis and biceps brachii. It changes to the lateral cutaneous nerve of the forearm after it runs between the tendon, the biceps brachii medially and the brachioradialis laterally and enters the subcutaneous tissue.

While the nerve conduction study was inconclusive in this case, previous reports have suggested that these tests are not always accurate with positive results in as few as 50% in one small series [1]. Diagnosis can be made clinically, as in this case, or with the use of local anaesthetic injection [2,3].

Compression of the musculocutaneous nerve is unusual and, even more so, compression of the lateral cutaneous nerve of the forearm. This terminal sensory branch has been suggested to be vulnerable to compression as it pierces the fascia and passes into the subcutaneous compartment or at the point it passes the lateral border of biceps brachii [4–6]. This is similar to compression of the deep branch of the radial nerve at Frohse's arcade [7].

It is thought that nerve compression can be a result of direct compression or intense physical exertion [8–10]. We believe in this case, a neuropraxia developed due to compression by the biceps brachii during the prolonged position maintained whilst retracting (Fig. 2). While this represents an unusual setting for the development of a neuropraxia of the lateral cutaneous nerve, strenuous elbow extension coupled with forearm pronation has been previously noted as an inciting event [9,11].

Treatment varies and ranges from conservative measures including avoidance of the aggravating activity — as in this case, steroid injection and splinting to surgical decompression for cases that fail to resolve [9–12]. Surgical decompression with partial resection of the lateral margin of biceps tendon or aponeurosis release, when required, appears to have a good success rate [1,2,9]. Four of 11 patients responded to non-operative treatment in a series reported by Bassett and Nunley, as did the case reported here [13].

To our knowledge, this case represents a unique occupational hazard for the orthopaedic surgical assistant. While surgical trainees may often be reluctant to admit to fatigue or discomfort while assisting their trainers, this case illustrates that the surgical team need to be aware to the potential consequence of prolonged adoption of positions that may compress neurovascular components.

Conflict of interest statement

No conflict of interest.

References


