Iatrogenic median nerve compression with a silicone rod: A case report and review of the literature

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The use of silicone rods for two-stage tendon reconstruction was described in the 1970s. Since that time, it has become the procedure of choice for delayed tendon reconstruction. Migration of the rod from its distal attachment can occur at any time; however, the risk is increased when there is a delay in progressing to the second stage. The author presents a case in which a silicone rod migrated to the carpal tunnel five years after a first-stage tendon reconstruction. An acute onset of median nerve neuropathy was the presenting symptom of rod migration. A thorough history, examination and recognition of the relationship between the background history and symptoms led to a prompt progression to surgery and a good overall outcome.

Key Words: Median nerve compression; Silicone rod; Two-stage tendon reconstruction

Carpal tunnel neuropathy is the most common neuropathy of the upper limb. An acute onset of symptoms should alert the physician to consider a foreign body, particularly after a penetrating injury or migration when a prosthesis is present. A thorough history is recommended and imaging where appropriate. The author presents a case involving a young man who presented to his general practitioner with acute-onset median nerve compression, having undergone a first-stage tendon reconstruction with a silicone rod five years previously. Prompt progression to exploratory surgery and removal of the foreign body resulted in resolution of his symptoms.

CASE PRESENTATION

A 48-year-old right hand dominant butcher presented to the author's services with a three-month history of acute-onset of paraesthesia in the median nerve distribution of his right hand. The symptoms began after a series of repeated pumping exercises of the hand. The paræthesia was exacerbated by work and was particularly severe at night. His general practitioner had referred him for nerve conduction studies, which revealed moderately prolonged distal latency with markedly reduced amplitude in the median nerve. He was thus referred to the plastic surgery service for further management.

On examination, he had a positive Tinel's sign and Phalen's sign. It was noted that he had a scar at the proximal phalanx of his little finger and at the wrist on the ulnar aspect. On examination, there was no active flexion of this finger. The patient explained that he had sustained a knife laceration to the little finger five years previously and that both flexor tendons had been divided. He underwent a primary tendon repair of the flexor digitorum profundus (FDP) in his native Lithuania. The flexor digitorum superficialis tendon to the digit was not repaired. Unfortunately, the repair ruptured four weeks later and a silicone rod was inserted to facilitate a two-stage reconstruction of the FDP tendon. The patient failed to attend for the scheduled second stage surgery and, shortly afterward, relocated to Ireland. The loss of function in the little finger had not concerned him significantly and he was able to perform his duties as a butcher.

He was scheduled for carpal tunnel decompression under local anaesthetic. During exploration, a considerable degree of synovial thickening was evident and a silicone rod was found curled under the median nerve. The rod was removed and a localized flexor synovectomy was performed in addition to a carpal ligament release.

Following his carpal tunnel decompression, he was reviewed in the outpatient clinic at two weeks and six weeks postoperatively, and was showing signs of recovery of sensation to the index finger and relief of the paraesthesia.

DISCUSSION

Median nerve neuropathy at the carpal tunnel as a result of a foreign body has been well documented in the literature, particularly with reference to glass and wood as a result of trauma (1-4). To the authors' knowledge, the present report is the first to describe migration and neuropathy secondary to an iatrogenic body. The referring physician had not appreciated the significance of a history of a first-stage tendon reconstruction and, thus, had not indicated this in the referral letter. The patient did not fit the typical profile of patients with median nerve neuropathy and his referral was, thus, triaged as urgent. A thorough history and examination indicating the presence of a silicone rod and the significant time frame from his first-stage repair suggested entrapment of the rod within the tunnel. This was confirmed at surgery and the tunnel was decompressed.

Two-stage flexor tendon reconstruction involving primary placement of a silicone rod as a spacer was popularized by Hunter in 1971 (5). The rod facilitates the formation of a pseudosheath through which a subsequent tendon graft can be delivered. The second stage of the reconstruction is ideally performed two to six months later. Extrusion and migration are risks involved with placement of silicone rods and this should be emphasized to the patient (6-8). A longer interval than six months between the two stages can increase the risk for migration of the rod, which occurs in approximately 5% of cases (6).

Silicone rods are light and flexible, and available in a range of sizes. Typically, they are secured only at the distal end with the proximal segment lying free and untethered with passive flexion. In the present case, the rod had twisted into a spiral within the carpal tunnel (Figure 1). The acute onset of the symptoms suggests that an event possibly triggered the avulsion of the rod from its attachment to the FDP stump. Aside from the prolonged duration that the rod was in situ, the possibility of inadequate anchoring of the rod to its distal attachment may have been a contributing factor for its migration, although this cannot be proven.

This patient presented early to the general practitioner with his symptoms of nerve compression. An appreciation of the relationship between his symptoms and the presence of the silicone rod resulted in him having a good outcome from the surgery. At this time, the patient...
is considering whether to proceed with a FDP tendon reconstruction. The present case emphasizes the importance of avoiding delays in the second stage of tendon reconstruction, and taking a thorough history and examination.

![Silicone tendon rod. Inset depicts the distal end of suture. Notice the kink in the rod and spiral curvature](image)

**Figure 1**

**REFERENCES**