Median Nerve Compression Caused by Brachial Pseudoaneurysm: Report of Two Cases and Review of the Literature

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Median nerve neurapraxia associated with direct traumatic vascular injury to the brachial artery is extremely low. Brachial pseudoaneurysm could result in compression and elongation of the nerve leading to an ischemic injury. An early diagnosis of these injuries is essential to avoid complications and an improved prognosis could be expected under the correct management.

A 46-year-old man, who was initially admitted to a tertiary hospital with a metal splinter penetrating injury at the elbow, was referred to our clinic 2 weeks later with swelling in the elbow and hypoesthesia in the second and third fingers. Electromyography confirmed an incomplete neuropathy of the median nerve and Doppler study revealed a 6 × 4 cm brachial artery pseudoaneurysm. Operative finding showed a 10 × 8 mm defect on the posterior medial wall of the brachial artery, which communicated with a large

cavity containing a hematoma where the median nerve was clearly compressed (►Fig. 1). The thrombus was evacuated with extraction of the metal fragment and the injured arterial segment resected. Arterial flow was restored through end-to-end anastomosis. Three months after surgery full recovery was noted.

The second patient, a 36-year-old man developed tingling sensation and paraesthesias over the thumb and index finger 1 week after suffering a stab wound over the left mid-arm. Electromyography showed a partial axonal injury of the median nerve with denervation of the flexor digitorum profundus of the index finger and the flexor pollicis longus. A 7 × 5 cm pseudoaneurysm communicating with the distal portion of the brachial artery with displacement of the median nerve was observed by color Doppler. The injured arterial wall was resected and end-to-end anastomosis was

Fig. 1 (A) The area of focal nerve compression is shown by the black arrow. (B) Intraoperative image showing the defect on the wall of the brachial artery.

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performed to restore the arterial flow. Complete neurological recovery was documented 6 months later.

Penetrating trauma is the first cause of peripheral vascular injuries. Brachial artery stab wounds represent a significant proportion of vascular injuries; nevertheless, secondary nerve compression from a false aneurysm is extremely rare.¹

Acute peripheral entrapment neuropathies need to be recognized early enough to initiate correct therapy and avoid possible neurological sequelae. The common symptom of an aneurysm occurring in the upper limb is painful pulsatile mass. When close to a nerve trunk, neurological symptoms related to nerve compression may appear including numbness and paraesthesia distal to the original injury site.

If no neurologic or thromboembolic complications develop, aneurysm of 2 cm or less in diameter can be silent during a long enlarging period.² Ultrasound offers the advantage to be a quicker and less expensive way to explore the median nerve and the artery when compared with magnetic resonance imaging or angio computed tomography scan. Nerve studies are usually not useful in the acute period, as the nerve would need at least 2 weeks to show the presence of an injury.

Different treatment options are currently available for an upper limb pseudoaneurysm: compression, ligation, endovascular graft implantation, embolization, or surgical reconstruction.³ When associated with peripheral nerve compression,

open surgery offers the advantage of treating both, the artery and the secondary nerve compression on the same procedure.

Arterial pseudoaneurysm had to be ruled out as a cause of peripheral nerve compression in patients who sustained a penetrating injury and present at the emergency room with a nerve disorder. If close to a nerve, a growing pseudoaneurysm will lead to compression and elongation of the nerve in a short period of time leading the nerve to an ischemic injury. We know that an elongation of 8% of the nerve length will cause a neuroapraxia while an elongation of 15% will cause an irreversible ischemic lesion to the nerve,⁴ so proper treatment including surgical revision should not be delayed.

References

- 1 Pini R, Lucchina S, Garavaglia G, Fusetti C. False aneurysm of the interosseous artery and anterior interosseous syndrome –an unusual complication of penetrating injury of the forearm: a case report. *J Orthop Surg* 2009;24(4):44
- 2 Yetkin U, Gurbuz A. Post-traumatic pseudoaneurysm of the brachial artery and its surgical treatment. *Tex Heart Inst J* 2003; 30(4):293–297
- 3 Rudolphi D. An update on the peripheral pseudoaneurysm. *J Vasc Nurs* 1993;11(3):67–70
- 4 Slutsky DJ. *The Art of Microsurgical Hand Reconstruction*. 1st ed. New York, NY: Thieme; 2013