

Enucleation of the median nerve tumour under WALANT: a case report

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ABSTRACT

A case of a median nerve tumour (schwannoma) located in the distal part of the forearm, which was enucleated from the nerve under local anaesthesia (WALANT), without the use of a tourniquet on the arm to obtain a bloodless surgical field, is presented. To the best of the authors' knowledge, this is the first described case of nerve tumour surgery under this anaesthesia.

It shows that operation of nerve tumours can be performed under WALANT, without deteriorating of patients' safety and surgeons comfort. The authors believe that presentation of this case can be interesting for hand surgeons and will encourage them to extend the scope of operations performed under WALANT.

Keywords: nerve tumour; schwannoma; WALANT; surgical technique.

INTRODUCTION

Nerve tumours are rarely seen in hand surgeon practice, accounting for 4–6% of all benign tumours of the upper extremity. The most common are schwannomas and neurofibromas [1, 2]. Schwannomas arise from Schwann sheath cells, most often located in the head and neck, and in the hand in 0.8–2% of cases [3]. These lesions are well separated from nerve fascicles, which usually do not penetrate the tumour itself, so they are easy to enucleate without damaging the nerve structure. A growing tumour gives non-specific symptoms such as paresthesiae felt in the fingers innervated by a given nerve and a feeling of "current" at percussion (positive Tinel–Hoffman sign). Tumours are usually single, grow slowly and very rarely undergo malignant transformation. Diagnostics include USG and MRI, and treatment consists in surgical enucleation of the tumour from the nerve [3, 4].

The surgery is usually performed under brachial plexus block anesthesia and a bloodless surgical field, with a tourniquet inflated on the arm. This article presents an operation to enucleate schwannoma from the median nerve on the forearm performed under local anaesthesia delivered by the surgeon himself, without the participation of an anaesthesiologist and without the use of a tourniquet. This type of anaesthesia is called Wide Awake Local Anaesthesia With No Tourniquet (WALANT) [5, 6]. To the best of the authors' knowledge, this is the first described case of nerve tumour surgery under WALANT.

CASE REPORT

A 52-year-old female patient, 3 months before presentation to the clinic, noticed a small swelling on the palmar side of her left forearm, just above the wrist. The lump was elastic, painless and moved under the skin. The patient remembered

that for about a year before the appearance of the lesion, she experienced non-bothersome paresthesiae (numbness and tingling) in the index and middle fingers. She performed a USG on her own, which showed a solid nodule located under the subcutaneous tissue and probably related to the median nerve. Then patient performed an MRI scan, which confirmed the diagnosis of a median nerve tumour, probably schwannoma (Fig. 1). The patient came to the clinic where authors of this article work and was scheduled for surgery. During the clinical examination, a swelling was found under the skin in the distal part of the left forearm, more on the ulnar side (Fig. 2). The swelling was painless when pressed, movable in the subcutaneous tissue, and percussion it caused paresthesiae felt in fingers I–IV (positive Tinel–Hoffman sign). The patient was given surgery under WALANT.

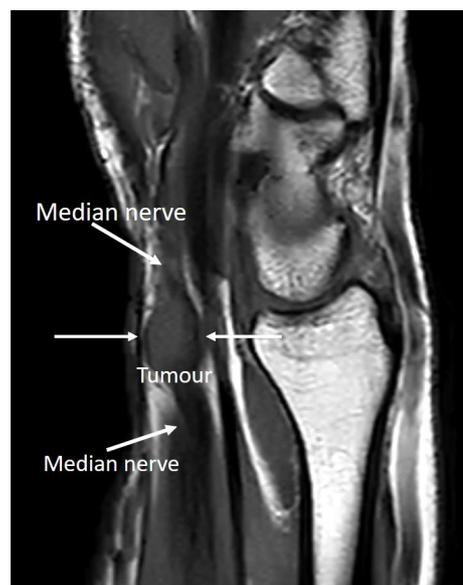


FIGURE 1. Magnetic resonance imaging of the tumour of the median nerve (sagittal view)



FIGURE 2. Appearance of the forearm with the subcutaneous swelling (marked with arrows)

ANAESTHESIA

A 13 mL of 1% lidocaine solution with the addition of 1 mL of adrenaline diluted 1:10 000 and buffered 1 mL of 8.4% sodium bicarbonate solution (standard solution for WALANT) were used for anaesthesia. The area above, on, and below the tumour was injected (Fig. 3). After 15 min, the patient was transported to the operating room. The operation was performed out with the use of magnifying glasses and micro-instruments.



FIGURE 3. Sites of injection of the solution marked with asterisks

OPERATION

An approx. 4 cm incision was made over the palpable lesion (Fig. 4). After preparation the subcutaneous tissue and fascia, the median nerve with the tumour was exposed (Fig. 5a, 5b). After the incision of the epineurium, the tumour was enucleated from the nerve with forceps. As shown in Figure 5c, it was connected to the nerve by a single bundle passing centrally through the lesion. The bundle was cut, releasing the tumour completely. It was spherical in shape and its diameter was

8 mm. Two sutures with Monoplus 6/0 were applied to the epineurium and the wound was closed with single sutures. The tumour was sent to histological examination.



FIGURE 4. Surgical incision in the distal forearm. The tumour localised under forearm fascia



FIGURE 5. The tumour: a) exposed. Incision of the epineurium; b) enucleated. Note nerve fascicle connected with the tumour; c) excised

Throughout the operation, the patient did not feel any pain, bleeding was minimal despite the lack of a tourniquet, and the operating conditions were very good. The operating conditions were as good as those previously performed in the brachial plexus block and with a tourniquet. The next day, the patient felt only a slight numbness in the fingertips II and III, and she did not have any sensory disturbances. The postoperative course was uneventful. Histological examination confirmed the diagnosis of schwannoma. At a follow-up visit 2 months after the surgery, the patient reported complete recovery of her previous complaints.

DISCUSSION

Operations for nerve tumours are rare and performed as standard under general anaesthesia or brachial plexus block. After checking the PubMed and Scopus literature databases, the authors did not find a similar case, which prompted them to write this article. There are a few articles in the literature on the results of surgical treatment of schwannomas, including a paper from the authors' institution [3]. All surgeries in these publications were performed under general anaesthesia or brachial plexus block [4, 7, 8]. In the opinion of the authors, WALANT is a good and safe anaesthesia for enucleation of benign nerve tumours in the upper limb. Compared to general anaesthesia, WALANT is free of adverse effects such as nausea and vomiting, dizziness, as well as other rare but serious complications. It is simpler than the brachial plexus block, it is less demanding and does not require an USG device and the ability to use it. It is performed by surgeons themselves, which makes them independent from anaesthesiologists [5, 6].

There are many other benefits of WALANT in hand surgery, including reduction of additional medical staff, reduction of time of patients' stay in hospital and, at the same time, it does not worsen their safety, because the rate of adverse events after WALANT is very low. Another strong argument is that most patients prefer this anaesthesia and "1-day care" surgery. Economical aspect is also important: operations under WALANT are 2–3 times less expensive than under brachial plexus block, and 5 times cheaper than under general anaesthesia [9, 10]. Review of the literature shows high level of efficacy and

safety of this procedure and multiply benefits associated with operating without anesthesiologist's assistance. They concern greater availability of operations for patients burdened with concomitant diseases, shortening the waiting time to operation and reduction of costs of operations. The reviewed studies show that WALANT allows operating patients at older age, with obesity and other concomitant diseases for whom standard anaesthesia (general or brachial plexus block) might be dangerous, and who (for this reason) are frequently disqualified by anesthesiologists from surgery [11].

In conclusion, presented report shows that operation of nerve tumours can be performed under WALANT, without deteriorating of patients' safety and surgeons comfort. The authors believe that presentation of this case can be interesting for hand surgeons and will encourage them to extend the scope of operations performed under WALANT.

REFERENCES

- Żyłuk A, Mazur A. Statistical and histological analysis of tumors of the upper extremity. *Obere Extremität* 2015;10(4):252-7.
- Żyłuk A, Owczarska A. Outcomes of surgery for benign tumours in the upper extremity. *Handchir Mikrochir Plast Chir* 2023;55(5):344-9.
- Żyłuk A, Owczarska A. Outcomes of surgery for schwannomas of the upper extremity. *Pol Przegl Chir* 2021;94(2):49-53.
- Kokkalis ZT, Stavropoulos NA, Mavrogenis AF, Panagopoulos A, Soucacos PN. Benign peripheral nerve tumors. *Injury* 2019;50 Suppl 5:S77-83.
- Żyłuk A, Szlosser Z. Local infiltration anaesthesia with a bloodless operative field (WALANT). Presentation of the technique and its use in hand surgery. *Ortop Traumatol Rehabil* 2020;22:203-9.
- Żyłuk A. WALANT anaesthesia in hand surgery: an analysis of adverse events and complications. *Pomeranian J Life Sci* 2024;70(1):15-7.
- Padasali PS, Shankaregowda VS, Kshirsagar SD. Median nerve schwannoma: a case report and review of literature. *Asian J Neurosurg* 2015;10:212-5.
- Strike SA, Puhaindran ME. Nerve tumors of the upper extremity. *Clin Plast Surg* 2019;46:347-50.
- Sardenberg T, Ribak S, Colenci R, Campos RB, Varanda D, Cortopassi AC. 488 hand surgeries with local anaesthesia with epinephrine, without a tourniquet, without sedation, and without an anaesthesiologist. *Rev Bras Ortop* 2018;53(3):281-6.
- Connors KM, Guerra SM, Koehler SM. Current evidence involving WALANT surgery. *J Hand Surg Glob Online* 2022;4(6):452-5.
- Kurtzman JS, Etcheson JI, Koehler SM. Wide-awake local anaesthesia with no tourniquet: an updated review. *Plast Reconstr Surg Glob Open* 2021;9(3):e3507.