# CASE REPORT

Resection of Ulnar Nerve Giant cell Neurinoma

Tjokorda GB Mahadewa* 

## ABSTRACT

Giant cellular ulnar nerve neurinoma is a very rare condition. According to the literature, the author reports the first case while only two other reports of the cellular neurinoma can be found in English literature in different locations. The author presents the case of large size cellular neurinoma of the ulnar nerve, where the primary tumour was resected using the shelled out technique, without neurolysis and any nerve repair. Histopathologic characteristics, radiological findings and clinical data on these tumours were reviewed, and the proposed chosen surgical technique, which differs from that used in the previous cases and taking into account the rate of recurrence after total resection.

## Keywords:
Giant cellular neurinoma, ulnar nerve, treatment

Cite This Article: Mahadewa, T.G.B. 2018. Resection of Ulnar Nerve Giant cell Neurinoma. Neurologico Spinale Medico Chirurgico 1(1): 14-17. DOI:10.15562/nsmc.v1i1.5

## INTRODUCTION

Neurinoma (schwannoma) is a benign tumour of myelin nerve sheath, which consists of a collection of Schwann cells. The characteristic of the tumour is its homogeny, and sided outside the nerve, yet it still can repress and damage the nerve and other surrounding tissues. The growth of this tumour is relatively slow, mostly benign and only 1% malignant turn into neurofibrosarcoma. Cellular neurinoma is a benign variant of neurinoma, with the predominant characteristics of the Antoni A tissue, high mitotic index, lack of verocay body, hyperchromatic nucleus, and pleomorphism.

Cellular neurinoma is very rarely reported in the literature. Only two cases of cellular neurinoma have been identified in English literature. In fact, cellular neurinoma on the ulnar nerve has never been reported. This report adds a new case of cellular neurinoma involving the ulnar nerve, and the review of its operation procedure, and also the management of postoperative pain.

## CASE REPORT

A 36 years old male was complaining of pain in his right elbow that has lasted for 3 years. The pain is accompanied by movement disorder of finger 4 and 5 that tend to lock on a fixed position. The patient also felt a cramp in the hand at night with severe pain involving the lower arm, palm, and fifth finger. Six months prior to his examination at the hospital, the patient noticed a gradual muscle wasting in the medial of the right hand, and also a hardened lump on the medial aspect of his right elbow. The patient had already done a biopsy on the lump, but the result was not clear. There were no other pronounced abnormalities with respect to himself or his family.

Physical examination on the right-hand showed wasting atrophy of the hypothenar muscle and the interosseous dorsal muscle. The muscles innervated by the proximal ulnar nerve (flexor carpi ulnaris and flexor digitorum profundus muscle) also had atrophy (Figure 1.A). Muscle strength on manual muscle test (MMT) scale for intrinsic hand muscles (adductor pollicis, abductor pollicis brevis, opponens pollicis, flexor digitorum profundus muscle) also had wasting atrophy of the hypothenar muscle and the interosseous dorsal muscle. The muscles innervated by the proximal ulnar nerve (flexor carpi ulnaris and flexor digitorum profundus muscle) also had atrophy (Figure 1.A). Muscle strength on manual muscle test (MMT) scale for intrinsic hand muscles (adductor pollicis, abductor pollicis brevis, opponens pollicis, flexor digitorum profundus muscle) also had wasting atrophy of the hypothenar muscle and the interosseous dorsal muscle.

Radiological examination of the elbow had been performed previously, with the result of a solid mass measuring 10 × 5 × 7 cm which emerged from the ulnar sulcus, and did not cause bone destruction (Figure 1.B). Ultrasonography of the elbow revealed an ulnar nerve fusiform swelling over 102 mm. Swelling occurred along the ulnar sulcus from the distal to one-third proximal of the ulnar bone.

Surgical procedure. The affected ulnar nerve was proximal to the right forearm. The tumour was identified from the ulnar sulcus to the distal, pressing the surrounding muscles which are flexor carpi ulnaris and flexor digitorum profundus muscles, then extrafascicular resection was performed (Figure 2.A and 2.B). This procedure allowed blunt tumour resection which is separated from the normal nerves to be maintained. Neurolysis was not performed because of the location of the tumour is extracellular. All ulnar nerve fibres that are suppressed by the tumour can still be maintained because the tumour was locating outside the fascicular and did not need to be cut or split.
The resection was done bluntly with the dissector. Therefore, en bloc resection was done quickly considering the bleeding around the muscle occurs due to the oozing of the muscle vessels, even though the hand had been elevated and the tourniquet had been used. After the resection, the muscles can be approximated again and repaired in the direction of the fibres, a vacuum drain was mounted and surgical wound was closed. The total bleeding was 3.5 L, during the procedure, the patient experienced temporary shock with blood pressure ranging from 80-126/40-84 mmHg and pulse 70-120 beats per minute. The length of operation was 3 hours and 30 minutes and patient’s O2 saturation was 99%. Postoperative care was administered in an intensive room, and after transfusion of 4 bags of PRC, the haemoglobin level reached 8.8 gr%. The patient was stabilized and 3 days later transferred to anormal treatment room. Postoperative pain management was performed with analgesics: Morphine 20mg/24 hours at titration rate of 0.7mL/H and ketorolac 30mg every 8hours intravenously (IV).

Macroscopic examination revealed the nature of tumour was soft, had a firm boundary yet fragile, yellowish-white colour, and easily bled. A microscopic examination showed that the mass-cut preparation of the tumour forming a solid structure, with several long fasciculi consists of cell proliferation with an oval-shaped core. Antoni A area has increased cellularity and Antoni B is hypocellular, and also a lot of erythrocytes. These findings support the clinical diagnosis of neurinoma with morphological features appropriate for cellular schwannoma (Figure 4).

At follow up 1 month after the surgical procedure, the patient showed a significant increase in ulnar nerve function. He experienced an increased dexterity in taking small objects with his right hand and also an improvement in the sensory function. Examination of the motor function showed the strength of the little finger was MMT Grade 2/5.

DISCUSSION

Cellular schwannoma is a very rare tumour, and in the literature, we can find there are only 2 English literature, which happened in spinal and presacral regions.
The pathognomonic sign is it made up of the cellular fibres component of the Antoni A region without the Verocay body (palisade component). The location of these tumours is usually in the retroperitoneum (32%), pelvis (21%), mediastinum (23%). The tumour may have an atypical nucleus and focal necrosis, with a mitotic 0-3/10 high-power-field (HPF) index. The case that the author reports here is the first cellular schwannoma located in the upper extremity/elbow that affects the ulnar nerve. The cases documented in the literature suggest that this histotype is rare but is a benign variant of schwannoma, which is totally different from the malignant schwannoma. The recurrence tendency is low (<5%), and until now, no reports of metastasis have been reported.2,4

A case similar to this case is reported by Yasutomi et al, a granular type of schwannoma, measuring 1.5 cm near the right wrist, which occurred 3 months before surgery. The tumour was successfully resected with the technique of “shelled out” (peeled) yet leaving a permanent paralysis after 2 years of follow-up. Another technique is an interfascicular neurolysis technique, namely cutting the nerve containing the tumour, followed by a nerve graft to repair the nerve. The case that the author reports is a 10 cm diameter tumour, located on the right elbow with a long illness of 3 years before surgery. The “shelled out” or “peeled” technique of surgery was also used, but the size of a very large tumour caused the difficulties to occur, especially bleeding from the surrounding muscles. Thoughts for artery embolization preoperatively did occur, but due to the limited cost as well as such facility was still a “luxury” in the hospital where the author works, then it was not done.

The operation began with a linear incision along the surface of the tumour, followed by blunt dissection using Metzenbaum. The author then identified the right trochanter of the patient, which appeared intact, while splitting the muscles flexor carpi ulnaris and deep flexor digitorum. Debulking was done simultaneously with the biopsy, and the tumour “peeled” in the distal direction until gross total removal was achieved (Figure 3.A). Homeostasis was done by re-hecting the muscles to their original position and also by approximation of the surrounding muscles to eliminate dead space as well as for control bleeding. The drain vacuum was installed and the wound operation was closed layer by layer using Vicryl 2.0, with skin closure using Dermalon 3.0.

What is interesting about this case is that this large tumour causes the author to initially think that it was a malignancy and most likely the ulnar nerve cannot be peeled. So the author has also prepared a region for grafting suralis nerve when needed if interfascicular techniques, which is cutting the nerves as well as lifting the tumour, was used. A biopsy by a surgeon at a local hospital was done 3 years ago but unfortunately, the histopathology results were not found by the patient. The differential diagnosis that the author thinks of including neurofibrosarcoma, rhabdomyosarcoma, and Malignant Peripheral Nerve Sheath Tumour (MPNST). In this case, because of its clinical appearance of the malignant tendency in size, it is unlikely that neurosurgeons suspect cellular schwannoma, which is a benign variant of schwannoma. In this case, the precise diagnosis of early histopathology is important so that unnecessary treatment can be avoided, ie a radiation adjuvant or advanced chemotherapy, because the recurrence rate is less than 5% and there has never been a metastasis. In this case, if recurrence is proven, then local radiotherapy is given, as well as if proven to have metastasis, the patient will be given chemotherapy. To this day the author still believes that total resection with a directly peeled technique without neurolysis, that has been done, is an appropriate treatment option for this patient.

CONCLUSION

Cellular Schwannoma that affects the ulnar nerve has never been reported in the literature, especially with the size of the giant tumour that authors report. The patient’s complaint begun with a lump on the elbow, enlarged with pain and tingling, until finally the weakness of the muscles that move the 4th and 5th fingers of his right hand. Total resection with peeled techniques without nerve neurolysis can provide a good result in this patient.

REFERENCES


This work is licensed under a Creative Commons Attribution