Schwannoma on palmar surface of the hand: A rare case report
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ABSTRACT
Schwannomas, also known as neurilemmomas, are benign, intracapsular peripheral nerve sheath tumors. They are the most common type of peripheral nerve sheath tumors and can be seen between the third and sixth decades of life, but are nevertheless rare. The goal of this report is to raise awareness in the medical community for this type of tumor. A 21-year-old male patient presented with a mass in the right palm. He reported that he had noticed the mass two years before and that the numbness started three months before. We detected a mobile, soft, palpable mass, 3X1 cm in size, in zone three of the palm. Tinel’s test was positive. There was no history of neither neurofibromatosis nor any other hereditary diseases. USG showed a lobulated, encapsulated, highly vascularized and high resistant arterial flow solid mass with 11.5X28mm in size. Total excision was planned. Under general anesthesia the patient was placed in supine position. A 3 cm mid-palmar incision was made on the volar side of the right hand. Digital nerves and arteries were explored. The mass, which was found to be 30X15X10mm in size, emerged from the common digital nerve in zone three and was excised with microsurgical instruments via blunt dissection. The patient healed uneventfully. Histopathological examination of the mass revealed Vimentin S-100 positive schwannoma.

Schwannomas are rare, benign tumors. To the best of our knowledge, a similar large mass was reported in an infant and no case has been reported in adults. Hand surgeons should keep the schwannomas’ diagnosis in mind if upper extremity masses are isolated that are palpable and slow growing with positive Tinel’s sign. The presented study showed how big schwannomas can be in size and that the cure is achieved by total excision.

Key words: Schwannoma, neurilemmoma, hand, palmar, neurofibromatosis, S-100

Introduction
Schwannomas, also known as neurilemmomas, are benign, intracapsular peripheral nerve sheath tumors derived from Schwann cells [1]. They grow up slowly, and rarely undergo malignant transformation. Peripheral nerve sheaths account for 5% of upper extremity tumors [2] and schwannomas are the most common type of the peripheral nerve sheath tumors [3]. They are usually seen between the third and sixth decades of life [4], generally as solitary tumors. However, they are also associated to Neurofibromatosis Type I, familial neurofibromatosis and sporadic schwannomatosis [5,6]. Although they usually present as an asymptomatic mass, pain, numbness and loss of movement correlated with the size of the tumor have been reported [1]. Early diagnosis is difficult. Schwannomas may be
confused with ganglia cysts, giant cell tumor of the tendon sheath and carpal tunnel syndrome. EMG (Electromyography), USG (Ultrasonography) and MRI (Magnetic resonance imaging) could be used for the diagnosis. Total excision is the most common choice of surgical treatment [7]. Although a number of studies have been published about the location, incidence and difficulty of diagnosis of the tumors, few studies have focused on the size of the schwannomas located in the palm. Kuo et al. reported that schwannomas in the upper extremity range from 7 to 46 mm in size [8]. We present a case of a considerable large schwannoma in zone three of the palm

**Case Presentation**

A 21-year-old male patient presented with a mass in the right palm. He told that he had noticed the mass two years earlier and that the numbness started three months before. We detected a mobile, soft, palpable mass, 3x1 cm in size, in zone three of the palm (Figure 1A, 1B). The Tinel’s test over the palmar mass was positive. There was no history of neurofibromatosis nor any other hereditary diseases. USG showed a lobulated, encapsulated, highly vascularized, 11.5X28mm solid mass with high resistance arterial flow pattern. Total excision was planned. Under general anesthesia, the patient was placed in a supine position. A 3 cm mid-palmar incision was made on the volar side of the right hand. Digital nerves and arteries were explored. The mass, emerging from common digital nerve in zone three and found to be 30X15X10mm in size (Figure 1C, 1D), was excised with microsurgical instruments via blunt dissection. The patient healed uneventfully. Histopathological examination of the mass revealed an encapsulated lesion, 3 cm in diameter (Figure 2A). The lesion was composed of hypercellular Antony A areas where the spindle cells were arranged in a palisading pattern and hypocellular Antony B areas in which a loose connective tissue and dilated vascular structures were located (Figure 2B, 2C). Immunohistochemical study illustrated strong S-100 positivity within the lesion (Figure 2D). Two weeks after surgery all the symptoms disappeared. In the follow-up period we did not encounter any neurovascular pathology.

Figure 1. A. Intraoperative image of schwannoma B. The mass emerged from common digital nerve at the zone three C. Size of mass was 30 x 15 x 10mm D. Postoperative image after total excision.
Discussion

Schwannomas are rare tumors and, in addition, their preoperative diagnosis is difficult [9,10,11]. Making a correct diagnosis is an important first step, which is possible with histopathological examination. Hand surgeons should keep the schwannomas’ diagnosis in mind if the upper extremity masses isolated are palpable and slowly growing with positive Tinel’s sign. MRI and USG both are useful to support the diagnosis. Schwannomas are seen as middle-low intensity signals at T1 weighted images and high-intensity signals at T2 weighted images on MRI [8]. They have been seen as a lobulated, encapsulated, highly vascularized and high resistant arterial flow solid mass on USG. We used USG, since we could not set the diagnosis by physical examination. Although USG showed statical and dynamic location in flexion and extension, and the relation of the tumor with the surrounding musculotendinous tissue and nerve tissue, histopathological examination was advised. Schwannomas are generally solitary and encapsulated benign tumors. The most effective treatment is surgical excision. Surgical procedure should be meticulously performed and a microsurgical approach should be employed to avoid damaging the neural fibers. Although paresthesia has been reported as the most common complication during the postoperative period, we did not see any complication in this case. The interval between onset of the symptoms and surgery may vary from a few months to a few years [12]. In our case, surgery was performed two years after the onset of the symptoms. During surgical excision the surgeon should avoid damaging the surrounding tissues and nerve fibers. There were no neurovascular complications in the postoperative period. The excised specimen was 3.1X5.1 cm in size. As far as we know, a similar large mass was only reported...
by Sando et al. in an infant and no similar case has been reported in adults [13].

**Conclusion**

Schwannomas are rare, benign tumors. Hand surgeons should keep the schwannomas in mind if upper extremity masses are isolated which are palpable and slow growing with positive Tinel’s sign. This study showed how big schwannomas can be in size and that these tumors can be cured with total excision.

**Conflict of interest statement**

The authors have no conflicts of interest to declare.

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