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CASE REPORT

Giant lipoma in the index finger of the dominant hand of a swimmer: A case report

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ABSTRACT

Lipoma is a very common benign tumor that occurs in areas of adipose tissue and is commonly found on the whole body, although its occurrence in the hand and finger is rare. Giant lipoma, defined as over 5 cm long in diameter, is a rare benign tumor of abundant soft tissue in the finger. A 24-year-old male patient presented with a giant lipoma on the volar aspect of the index finger of his right hand. Magnetic resonance imaging (MRI) showed an encased multilobulated mass that measured 7.1×1.2×2.3 cm, and histopathological examination revealed lipoma without malignant transformation. Surgical resection of the tumor with a longitudinal and zig-zag incision of the palm was performed exposing the mass surrounding the palmar digital branch of the median nerve. The mass was completely removed, and neurorrhaphy was performed via the microscope to repair the damaged neurovascular bundle. At four months of postoperative follow-up, the patient was completely recovered with no finger paresthesia or limitation of range of motion. As a professional swimmer, the patient has experienced no subsequent difficulty in swimming due to his finger.

Keywords: Finger, lipoma, microsurgery, swimmer.

Excluding malignancy, 95% of tumors of hand are of benign origin. Non-neoplastic ganglions are the most common benign tumors on hand and wrist. Following these tumors, inclusion cysts, warts, giant cell tumors, granulomas and hemangiomas are also common.[1] Lipoma is a type of mesenchymal neoplasm, often benign, that commonly occurs in areas of the body rich in fat. It can occur anywhere from the head, neck, upper and lower extremities to the trunk.[2] Giant lipoma, defined as lipoma greater than 5 cm, is even rarer in the finger and upper extremities.[3] The clinical spectrum varies depending on its size and location. Finger lipomas can grow slowly without any symptoms, while some can affect mobility and can even cause neurologic symptoms. Giant lipomas on finger should be carefully examined and removed as both functional and neurological outcomes are important.

In this article, we report a case of giant lipoma in a right-handed young swimmer without any history of trauma.

CASE REPORT

A 24-year-old male swimmer presented with a giant lipoma on the volar aspect of the index finger of his right hand (Figure 1). The mass was not tender, but the patient reported symptoms of tingling sensation and paresthesia in the right index finger that slowly increased over the last 10 years. On physical examination, a rubbery mass that stretched from the middle phalanx of the right index finger to the palm was noted. The mass measured 8 cm in length and incited a tingling sensation upon pressure. The patient had difficulty in clenching his fist and flexing his finger, which ultimately led to difficulty in swimming. An X-ray revealed no bony deformity or other abnormal findings. Magnetic resonance imaging (MRI) showed an encased multi-lobulated mass that measured 7.1×1.2×2.3 cm (Figure 2).

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We planned surgical resection of the tumor under general anesthesia. A longitudinal and zig-zag incision of the palm was performed exposing the mass surrounding the palmar digital branch of the median nerve, which innervates the index finger. The mass was yellowish and well-differentiated, and it was easily resected with no adhesion to any tendon or bone. One of the digital branches of the palmar digital neurovascular bundle was running through the mass; therefore, we had to transect the neurovascular bundle to completely remove the mass. The neurovascular structure and flexor tendon were carefully dissected from the mass, and total excision of the giant lipoma was done by meticulously dissecting the penetrating nerve. The mass was completely removed, and neurorrhaphy was performed via a microscope to repair the damaged neurovascular bundle.

The tumor was oval-shaped and measured 8.0×3.7×1.2 cm with no neural component (Figure 3). Histopathological examination revealed it as lipoma without malignant transformation (Figure 4). The patient experienced tingling and paresthesia for about two months following surgery, but these symptoms gradually disappeared over time. His finger movement also improved without additional rehabilitative treatment. At four months of postoperative follow-up, the patient was completely recovered with no finger paresthesia or limitation of range of motion (Figure 5). As a professional swimmer, the patient has

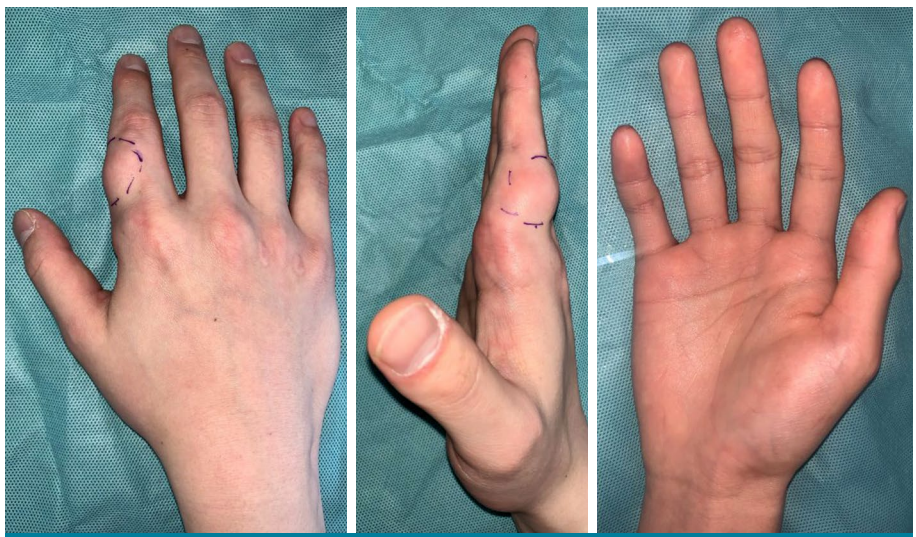


FIGURE 1. Clinical image of the patient's right hand.

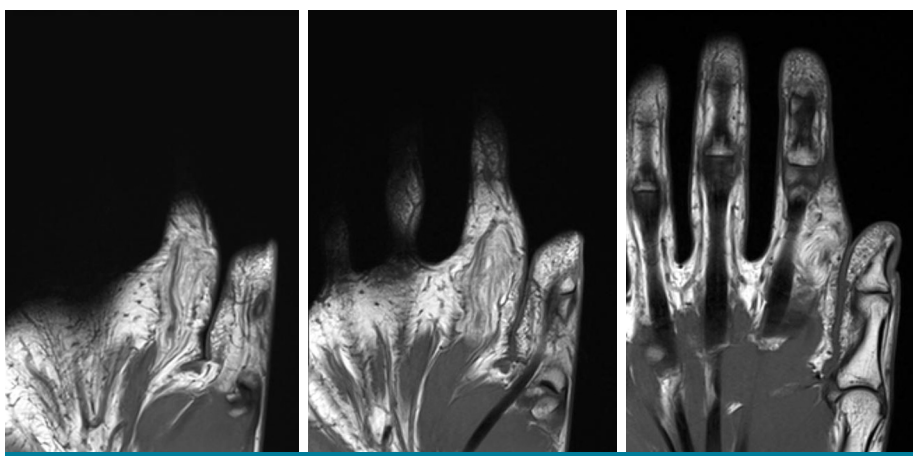


FIGURE 2. A magnetic resonance imaging scan showing a 7.1×1.2×2.3-cm-sized, T1-weighted high-signal intensity mass from the base of the index finger to the palm.

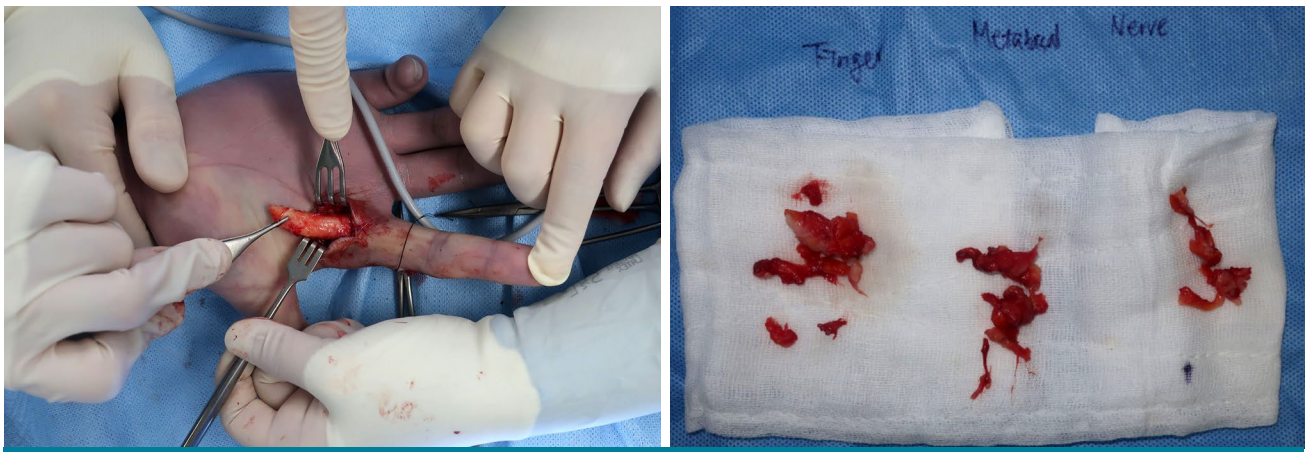


FIGURE 3. Clinical image of the excised mass.

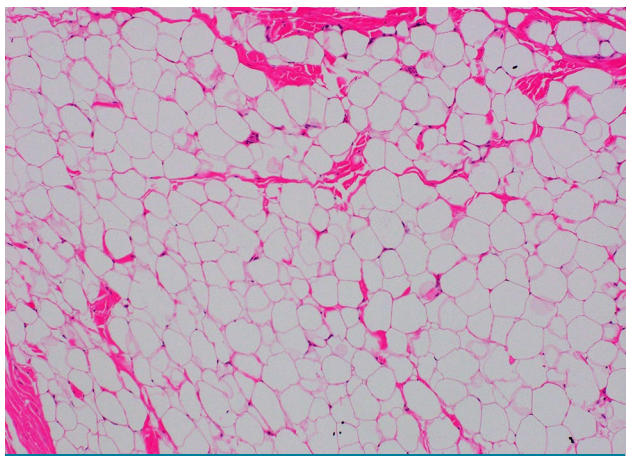


FIGURE 4. Histological image of the tumor showing mature fat cells (H&E, ×100).

experienced no subsequent difficulty in swimming due to his finger.

DISCUSSION

In our case, a male patient in his 20s was diagnosed with a giant lipoma stretching from the volar aspect of the right second finger to the palm. The lipoma was adjacent to the common digital nerve and the flexor tendon sheath, resulting in motor and neurological symptoms. Finger lipomas should be carefully examined and properly treated due to its involvement with the surrounding anatomical structures.

A tumor of the finger, particularly in the soft tissue, is benign in 95% of cases. While lipoma can occur anywhere in the body, finger lipoma is rare with a

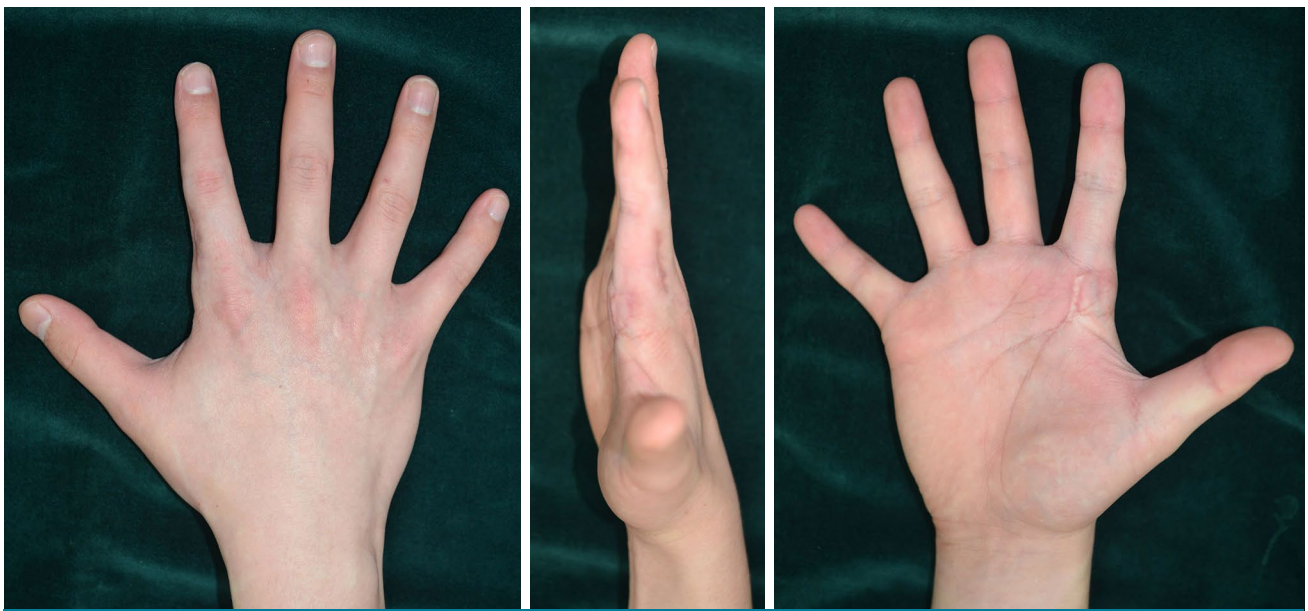


FIGURE 5. Clinical image of the patient's hand four months after surgery without any complications.

prevalence of 1%. Finger lipoma, unlike other types of tumors, develops slowly without pain and has a soft feature like its surrounding tissue. Finger lipoma was first reported by Stein[4] in 1959. Ramirez-Montaño et al.[5] reported a 5-cm lipoma in the middle finger of a 50-year-old female. A simple lipoma was noted with no involvement of the neurovascular bundle, and it was confined to the interphalangeal joint and caused limitation of range of motion.

In another report, Kim et al.[1] presented a 49-year-old male with an 8-cm lipoma in the palm which compressed the ulnar nerve, resulting in paresthesia of the fourth and fifth finger. Ultrasonography, which has certain advantageous such as being a simple tool without ionizing radiation exposure, is the most widely used diagnostic tool for finger tumors. Also, MRI is a useful tool to reveal whether there is tumor involvement in the surrounding anatomical structures including bone, tendon, and the neurovascular bundle. In our patient, we were able to make the differential diagnosis via MRI prior to surgery that the subcutaneous fat was clearly separated from the septum and was surrounding the neurovascular bundle.

Kim et al.[6] reported a female patient with a large palmar lipoma arising from the flexor tenosynovium of the hand; a growing intramuscular fatty mass measuring 5.0×3.0×3.7 cm in size, wrapping around the second flexor tendon, which was located between the flexor pollicis longus and third flexor tendon causing digital nerve compression which was successfully treated with surgery. Yoon and Jung[7] also reported a 1.5-cm finger lipoma in a 35-year-old male, again with limited range of motion in the finger. Additional reports describe motion-limiting tumors involving the proximal and distal interphalangeal joints in middle-aged patients.[8,9]

Fingers have tendons, bones, and bundles of nerves and vessels in an anatomically compact space. Finger tumors, regardless of their size, may manifest in symptoms such as limited range of motion, tingling sensation, and paresthesia as a result of a compressed tendon, nerve or vessel-depending on their location-before they become grossly visible.

Lipomas may cause bony erosion. Yadav et al.[10] reported a parosteal lipoma covering the proximal phalanx in the second webspace, and Kitagawa et al.[11] reported a case in a male patient in his 30s who had a lipoma in the distal phalanx of the index finger that caused pain and bony erosion for two years. In both cases, removal of the lipoma resulted in recovery of bony erosion. Suginaka et al.[12] reported a case of a male patient in his 60s who was diagnosed with a 4-cm lipoma in the flexor tenosynovium compressing the common digital nerve and leading to neurological symptoms. Gurich and Pappas[13] reported a lipoma of tendon sheath origin in the fourth extensor compartment of the hand. Lipoma originating from the tendon sheath should be differentiated from other diseases that cause neurological suppression of the upper extremities, such as carpal tunnel syndrome.

Our patient was a young professional swimmer who, despite being aware of the enlarging mass, delayed his visit to the hospital, as his job required him to contact water. A finger mass, regardless of its size, may become difficult to treat due to its anatomical vicinity to surrounding bone, tendon, and a neurovascular bundle.[14]

In conclusion, if a patient complains of symptoms and a mass is not clinically palpable, expeditious and proper clinical examinations should be done before a potential mass grows in size. Giant lipomas in the hand and finger can extend to vital components such as neurovascular structures, muscles, tendons and bones; therefore, a meticulous and complete resection is required to provide excellent clinical results.

Patient Consent for Publication: A written informed consent was obtained from patient.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: Idea/concept, control/supervision: B.F.S.; Design, writing the article, references and fundings: J.Y.C.; Data collection and/or processing, analysis and/or interpretation, materials: Y.J.C.; Literature review, critical review: S.N.J.

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