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Case Report
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Removal of a Rare Digital Tumor and Reconstruction of the Pulp and Nail Bed Defect with a New Approach: Composite Dermofat Graft

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Abstract

Subungual myxomas are rare, benign neoplasms that cause clubbing of involved digits. Common treatment approach for these lesions is the marginal resection, being usually curative. This report presents a new surgical approach for the reconstruction of the nail bed and pulp defect with a composite dermofat graft during the surgical treatment of a large subungual myxoma of the thumb. To our knowledge, this is the first report of the use of a dermofat graft for the reconstruction of the nail bed and pulp defect.

Keywords: Subungual myxoma; Pulp; Dermofat graft; Nail; Composite graft

Introduction

Myxomas are benign lesions that usually arise in the heart and striated muscles [1]. They are composed of spindled or stellate cells of unicentric origin, and are poorly vascularized [2]. Among these rare tumors, digital myxomas are even rarer [1].

The common surgical approach is the removal of the tumor along with the nail bed and later reconstruction of the deformity [3]. Previous reports of subungual myxoma cases had focused on the histopathology of the disease, but not on the reconstruction technique for the nail and pulp defects. Techniques such as lipofilling for the reconstruction of the volume defects on the pulp had been reported in other fingertip injury case reports [4]. In our case, after excision of the lesion, a dermofat graft, harvested from the right inguinal region of the patient, was used to reconstruct the existing defect. This approach provided full recovery without any significant deformity. The case we present is a subungual myxoma on a thumb which was treated with marginal excision and reconstruction with a dermofat graft.

Case Presentation

A 38-year-old woman presented with a deformity on her left thumb tip that started 8 months ago. The nail was thickened and rounded by time (Figure 1). The patient denied any pain, drainage, or recent growth of the lesion. No swelling or pain was detected upon palpation. She did not report any other complaints. Physical examination revealed clubbing of the fingertip, full interphalangeal joint movement, and normal sensibility. No erythema was present. Magnetic resonance imaging revealed a 9 mm × 6 mm × 9 mm lesion that was adjacent to distal phalanx in the subungual region of the thumb on the ulnar side. On T1-weighted images, the lesion was hypointense; on fat-suppressed T2-weighted images, the lesion was hyperintense and well-demarcated. The lesion had caused an indentation on the adjacent bone. The surgery was performed under general anesthesia. After the removal of the nail plate, a perilesional incision was made to excise the encapsulated tumor. The tumor was excised without any difficulty, and the final specimen was 1.3 cm × 1 cm × 0.5 cm grossly and pink-white in appearance. Since the lesion was between the skin of the pulp and the nail, invading the nail matrix; there was a significant pulp volume defect after excision (Figure 2a and 2b). Therefore, the decision was to reconstruct the pulp defect with a composite graft consisting of dermis and subcutaneous fat from her right inguinal region. Once the composite graft was taken, the donor site was closed primarily, and the composite graft was trimmed to fit into the defect (Figure 3a and 3b). In the post-operative course, scars healed well; her fingertip and nail remodeled without any deformity. At the 19th month post-op evaluation, patient did not have any symptoms or

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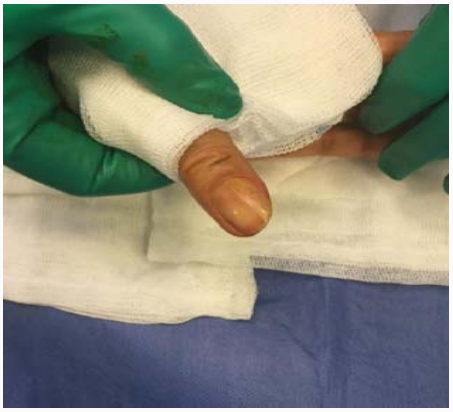

Figure 1: Preoperative view if the thumb.

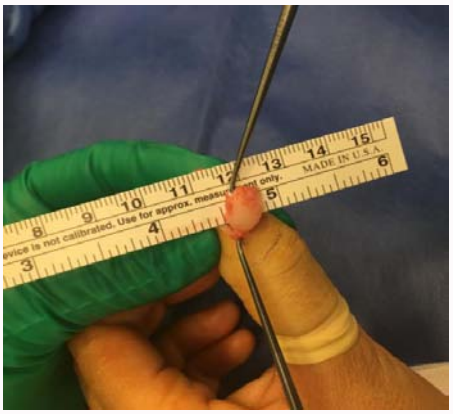

Figure 2a: Subungual Myxoma of the thumb.

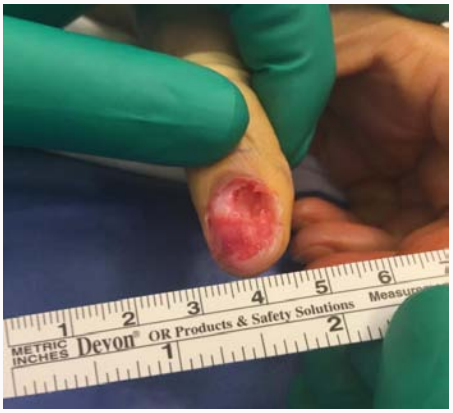

Figure 2b: The defect formed after the excision.

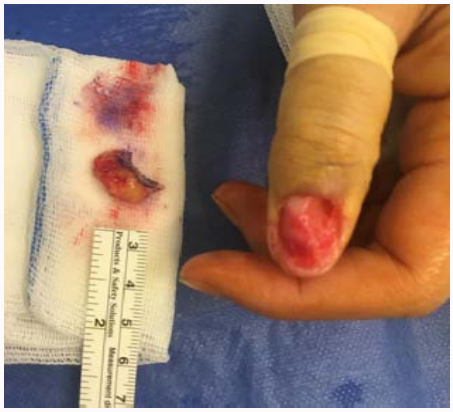

Figure 3a: The dermofat graft before trimmed; the nail bed and pulp volume defect.

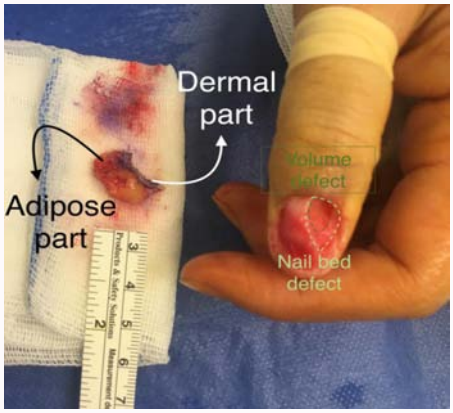

Figure 3b: The dermofat graft before trimmed; the nail bed and pulp volume defect (labeled).

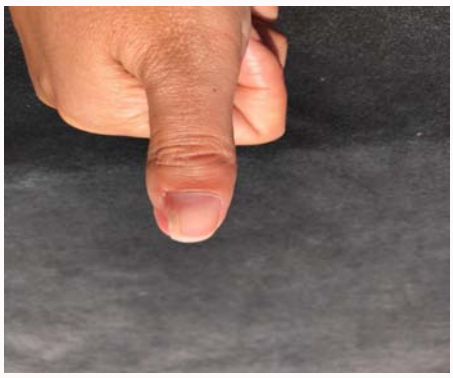

Figure 4a: Dorsal view of the thumb.

signs of recurrence (Figure 4a and 4b).

The histopathological examination of the tumor revealed that it consisted of spindle shaped mesenchymal cells within a poorly vascularized myxoid matrix. There was no nuclear atypia or necrosis. Surgical margins were intact. Immunohistochemically, the cells did not stain for S-100 protein and Pan-CK. Positive reactivity was seen with CD-34 on vessel walls, and with Smooth Muscle Actin (SMA) on vessels. Histochemically, no reactivity for Masson's Trichrome (MTC) stain was seen whereas cells in the matrix did stain positively with Alcian blue stain. The differential diagnosis included glomus tumor, chondroma, chondromyxoid fibroma, neurokethoma, myxoid/mucoid cysts and mxyoid sarcomas such as low-grade fibromyxosarcoma, chondrosarcoma, fibrosarcoma, botryoid rhabdomyosarcoma and myxoid malignant fibrous histiocytoma [3,5,6]. Findings were compatible with the myxoma of soft tissue.

Discussion

The term myxoma was first used by Virchow for tumors consisting of myxomatous tissues of the umbilical cord [7]. In 1948, Stout defined the histopathologic criteria for myxomas [2]. Etiology of myxomas is unknown. Myxomas usually arise in the heart, the jaw and the striated muscles of extremities whereas they rarely arise in

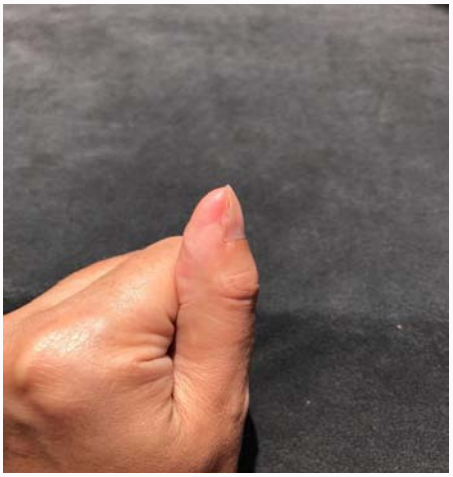

Figure 4b: Lateral view of the thumb.

fingers and toes [1]. These tumors may also arise from the dermis or bone. There is also an association between fibrous dysplasia and multiple myxomas. Local recurrence of myxomas is extremely rare even after marginal excision [5].

To our knowledge, only six previous cases of subungual myxomas had been reported in the literature. The common treatment approach is marginal, meticulous resection of the tumor which can cause a sequela of nail deformity [1]. This is usually curative. Common treatment for the nail deformity is the later reconstruction [3]. Rozmaryn and Schwartz performed a surgical method with a mid-lateral incision preserving the nail matrix which did not produce any nail deformity by the 6th month after the excision [8]. We present a previously unreported surgical approach for a subungual myxoma lesion which involves the traditional trans-nail matrix technique of tumor excision and immediate reconstruction with a composite dermofat graft. The advantages of our approach include the following: The tumor and the possible defects are eliminated in a single session. The dermal part of the composite dermofat graft covers the sterile matrix defect while the adipose part supports the pulp preserving the normal contour and filling the volume defect. This enables the nail to re-grow without any aesthetical or functional deformity. Harvesting the dermofat graft from the inguinal area, which takes approximately 5 min and results with a minimal vertical scar at the donor site, can be counted as a disadvantage of our reconstruction approach.

The successful uses of composite dermofat grafts include the reconstruction of the nasal ala, columella, nasal bridge, vermilion border, cleft lip/palate, maxillary and mandibular defects, laryngeal defects, hemifacial asymmetry, third-degree burns, auricle replantations, and nail plate matrix defects [9]. In this report, a dermofat graft was used for the reconstruction of the nail bed and pulp defect. To our knowledge, this is the first report of the use of a dermofat graft for the reconstruction of the nail bed and pulp defect.

Conclusion

Patient with a painless subungual myxoma on the left thumb tip that caused clubbing was treated with a marginal excision of the tumor and subsequent reconstruction of the nail bed with a composite dermofat graft from the patient's right inguinal region. Six months after surgery, no recurrence or deformity was observed; the nail had grown out without any defect. Nineteen months after surgery, the patient was still asymptomatic. As a result, using a composite dermofat graft to reconstruct the defect after the removal of the tumor in the same surgical session can be a good option with satisfactory outcomes for the treatment of subungual neoplasms, especially for those which are benign and which invade the nail matrix.

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