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Case Report

Pedunculated Lipofibroma in a Pediatric Patient: A Rare Case Report

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Abstract

Background: Pedunculated lipofibroma (PLF) is a rare, benign, solitary clinical variant of nevus lipomatosus cutaneous superficialis (NLCS). It is histologically distinguished by the ectopic presence of mature adipose tissue within the dermal compartment. While solitary variants typically manifest during or after the third decade of life and demonstrate a predilection for pressure-prone or non-pelvic sites, presentation in the pediatric age group is exceedingly rare.

Case Presentation: A 9-year-old girl presented with a large, solitary, painless, cerebriform pedunculated mass over the central aspect of her right arm that had been growing continuously since early childhood. Histopathological evaluation of the completely excised mass revealed scattered lobules of mature adipocytes interspersed within dense fibrocollagenous dermal tissue, confirming a diagnosis of pedunculated lipofibroma.

Conclusion: This case highlights an atypical presentation of solitary NLCS/PLF due to its giant size, distinct anatomical location on the upper extremity, and manifestation during early childhood. Surgical excision remains the definitive, simple treatment providing excellent cosmetic and therapeutic outcomes.

Keywords: *Forearm, Pedunculated, Solitary, Lipofibroma, Nevus lipomatosus cutaneous superficialis.*

Introduction

Nevus lipomatosus cutaneous superficialis (NLCS) is an uncommon, idiopathic connective tissue hamartoma defined by the presence of mature ectopic adipocytes within the papillary and reticular dermis [1]. Historically, this benign dermatological entity was first characterized by Hoffmann and Zurhelle in 1921. Clinically, NLCS presents in two distinct forms: the classic multiple form (Hoffmann-Zurhelle type) and the solitary variant [1, 2].

The classic multiple variant is often congenital or develops within the first two decades of life, characterized by clusters of soft, yellowish, or skin-colored papulonodules that can coalesce into plaques, primarily localized to the pelvic girdle, gluteal region, lower trunk, or upper thighs. Conversely, the solitary form manifests as an isolated, skin-colored, sessile or pedunculated nodule [1]. To delineate it clearly from the classic syndromic plaque-like presentation, the term "pedunculated lipofibroma" (PLF) is preferentially utilized in contemporary literature to describe these solitary forms [1, 4].

Solitary PLFs predominantly occur in adults past their second or third decade of life and are frequently documented in areas such as the axilla, knee, ear, or scalp [1]. Its presentation as a large, progressive, cerebriform mass in a pediatric patient is highly unusual. We report a rare case of a solitary giant pedunculated lipofibroma arising on the right arm of a 9-year-old girl.

Case Presentation

A healthy 9-year-old girl presented to our outpatient facility with a gradually increasing, painless, cerebriform mass on the central aspect of her right arm. The lesion had been present for the past 4 years, starting as a small, innocuous nodule that steadily enlarged. Recently, the patient experienced localized itching and foul odor, secondary to transactional friction and difficulty maintaining local hygiene within the deep skin folds. There was no associated history of local trauma, systemic symptoms, or similar lesions among family members.

On physical examination, a prominent, solitary, non-tender, cerebriform pedunculated mass was noted hanging down from a well-defined stalk on the central part of her right arm [Figures 1, 2]. The lesion measured approximately 9.5 cm × 7.0 cm, exhibiting a variegated consistency and a highly convoluted, cerebriform surface. Systemic evaluation and baseline routine biochemical and hematological investigations revealed no abnormalities.

The mass was completely managed via primary surgical excision under local anesthesia. Grossly, the excised tissue was lobulated and soft to firm. Histopathological examination using Hematoxylin and Eosin (H&E) staining at ×40 magnification demonstrated a thin rim of epidermis overlying a dermal compartment featuring scattered aggregates and lobules of mature adipocytes entrapped between intersecting bundles of dense fibrocollagenous tissue [Figure 3]. Crucially, these ectopic fat deposits were confined to the reticular and papillary dermis without showing structural continuity with the deep subcutaneous fat layer [1]. Based on the correlation of clinical morphology and definitive histopathological features, a diagnosis of solitary pedunculated lipofibroma was established. The surgical site healed via primary intention without any complications, and no recurrence was noted at follow-up.

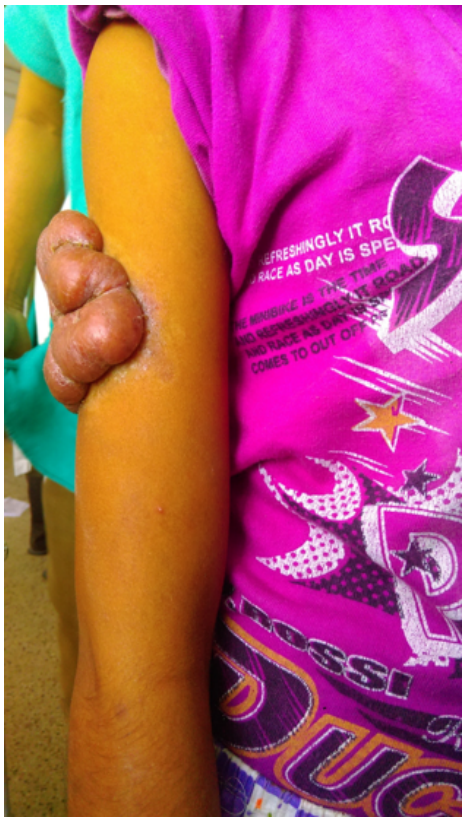

Figure 1. Clinical morphology of the solitary cerebriform pedunculated lipofibroma hanging via a stalk from the right arm of a 9-year-old female patient.

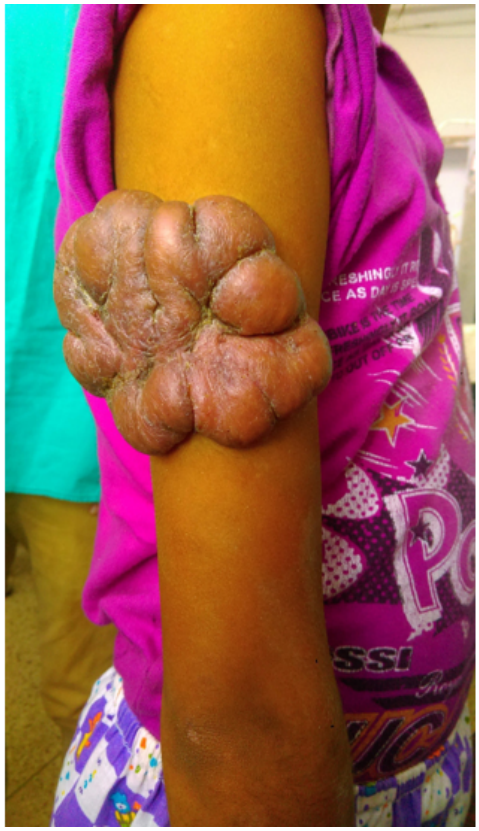

Figure 2. Alternative perspective highlighting lesion margins and stalk attachment.

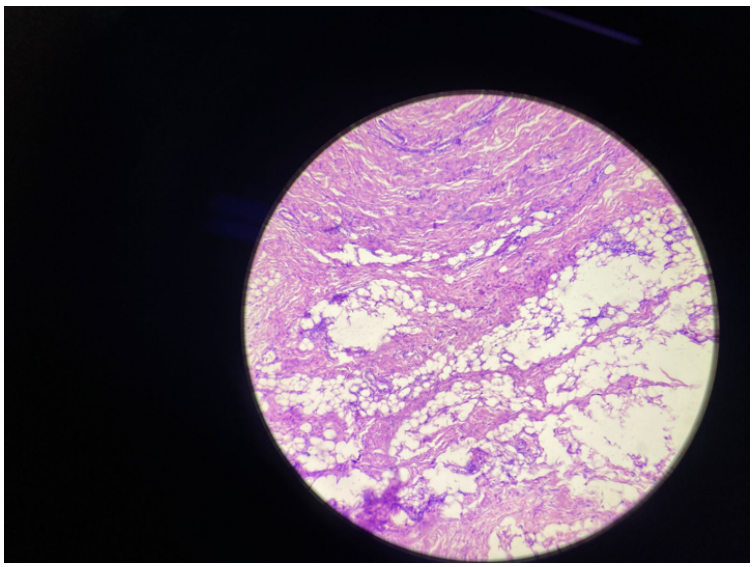

Figure 3. Photomicrograph showing diagnostic aggregates of mature dermal adipocytes interweaved with dense fibrocollagenous bands (Hematoxylin and Eosin, ×40).

Discussion and Conclusion

Pedunculated lipofibroma represents a distinct, localized subset of NLCS [1, 4]. While the exact etiopathogenesis of this hamartomatous growth remains obscure, several mechanisms have been proposed in modern dermatopathology. These include the focal developmental displacement of embryonic adipose tissue, metaplastic differentiation of dermal connective tissue elements, or the differentiation of perivascular mesenchymal cells into mature adipocytes within the dermis [1]. Recent cohort reviews have suggested potential metabolic syndromic associations, noting correlations with elevated Body Mass Index (BMI) and diabetes in adult cohorts [1]; however, its occurrence in non-obese, healthy pediatric patients points toward a primary developmental anomaly.

The standard clinical trajectory of a solitary PLF is a slow, asymptomatic growth pattern that peaks during adulthood [1]. The clinical presentation in our patient was atypical for two reasons:

1. **Age of Onset:** Solitary variants are characteristically seen in adults past their second to third decades [1]. Manifestation and rapid propagation into a large mass during early childhood (ages 5 to 9) is exceptionally rare [3, 4].

2. **Morphology:** While classic multi-lesional NLCS presents with a highly folded, cerebriform structure, solitary variants typically feature a smooth, unilobular surface resembling a large acrochordon [1]. The giant size (9.5 cm × 7.0 cm) combined with a heavily convoluted, cerebriform surface on an extremity is an extraordinary presentation for a solitary PLF [1, 3].

Histopathologically, PLF must be differentiated from other benign adnexal or mesenchymal skin lesions. While entities like standard lipomas are sharply encapsulated and located entirely within the subcutis, PLF demonstrates non-encapsulated mature fat lobules interspersed among collagen bundles within the reticular and papillary dermis [1]. Unlike skin tags (acrochordons) or fibroepithelial polyps that may show passive, minor fat herniation at the base, PLF exhibits structural ectopic adipocytes intimately woven through the dermal core [1]. It is also differentiated from conditions like naevus sebaceous or cylindromas by the conspicuous absence of abnormal skin appendages or adnexal epithelial nests within the fatty dermal stroma [5].

The primary indication for treatment in giant variants is alleviating functional discomfort, eliminating hygienic complications arising from skin folds, and cosmetic restoration [3]. While non-invasive modalities such as cryotherapy may be considered for micro-lesions, complete formal surgical excision remains the gold standard treatment for large or pedunculated masses [3]. Surgical intervention is universally curative, simple to execute, and carries an excellent prognosis with negligible rates of local recurrence [1, 3].

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Conflict of Interest

The authors declare no competing financial or personal interests.

Ethical Approval & Consent

Institutional authorization was secured. The patient's parents provided written informed consent for participation and the publication of clinical data and relevant clinical/photomicrograph photographs.

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