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A Giant Gluteal Mass in a One1-Year-Old: A Case Report on Pediatric Lipoblastoma

Abigail Rivera Tud[1], Albert Jerome C Quintos[1]

Abstract

Introduction: Lipoblastomas are a rare type of benign neoplasm arising from embryonal fat, found primarily among young children. Predominantly small tumors of the head and neck, trunk, and extremities, less than twenty 20 cases of gluteal lipoblastoma have been reported in the English literature. Complete surgical resection is recommended, with recurrence rates at 14–-46%.

Case Report: A one1-year-old female presented with a large, painless gluteal mass of one 1 year. Growth was consistent since shortly afer birth, with no history of manipulation, constitutional symptoms or trauma. Magnetic resonance imaging showed a heterogenous, encapsulated, lobulated mass without bone or vascular invasion, and marginal excision was completed without need for soft so -tissue reconstrtruction. At e 5 years post-surgery, the outcome has been uneventful, without evidence of recurrence.

Conclusion: Lipoblastomas present with characteristic features on clinical examination, diagnostic imaging, and histology. While benign, they may share features with more aggressive soft tssue tumors, emphasizing the need for careful assessment prior tobefore surgery.

Keywords: Gluteal, lipoblastoma, pediatric.

Introduction

Among the sof-tissue neoplasms in the pediatric population, an estimated 6% are adipose tumors. Of these, lipomas constitute the majority at over 60%, while lipoblastomas comprise 5–30% [1, 2]. Occurring primarily among infants and young children, lipoblastomas are mesenchymal tumors originating from embryonic white fat [1, 2, 3, 4]. Patients typically present with a slow-growing sof-tissue mass in the head and neck region, extremities, or trunk [1]. Rarely, lipoblastomas may develop in the peritoneum, mediastinum, perineum, spinal cord, or butock [5, 6, 7, 8].

Despite continued growth and capacity to elicit compressive mass effects on surrounding organs and neurovascular structures, lipoblastomas do not exhibit metastasis or malignant transformation. Surgical excision remains the mainstay of treatment, with excellent prognosis. Recurrence rates have been estimated between 14% and 46%.[2, 6, 7, 8].

Case Report

A 1-year-old female presented with a pea-sized mass on the right butock at 3 months of age, unaccompanied by constitutional symptoms or history of trauma. Birth history was unremarkable, and developmental milestones were at par for age.

The ass was initially diagnosed as a furuncle and treated with 2 week-long courses of oral Cephalexin. Afer completion of antibiotics however, the mass doubled in size, prompting consult at another institution.

Ultrasonography revealed a complex mass measuring 2.4 cm × 2.5 cm × 2.3 cm. Fine-needle aspiration biopsy was done, showing epithelioid cells in fbrous stromaa. Ts was signed out histopathologically as benign fbrohistiocytoma, prompting referral to a specialty center.

On arrival, the patient was asymptomatic and laboratory examinations were normal. Computed tomography (CT) scans revealed an enhancing sof-tissue mass on the anteromedial aspect of the right pelvis closely related to the medial thigh compartment. Magnetic resonance imaging (MRI) of the pelvis revealed a contrast-enhancing, encapsulated mass with portions isointense to both muscle and fat, located at the right inguinal to perineal region, measuring 9.8 cm × 9.5 cm × 9.4 cm. Thre was no evidence of extension to the rectum or bone. A core needle biopsy was advised but due to logistic constraints, the patient was lost to follow-up.

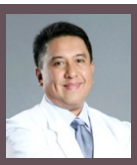
At 19 months of age, the patient returned for consult. Thre was notable progression in size of the mass, which was doughy and non-tender, originating from the right gluteal area with a fxed base, illl-defi d margins, and no pulsations or audible bruit (Fig. 1a, b, c). Hip adduction was limited due to size, but otherwise, the patient was able to ambulate without assistance, as well as void and pass stools without difficulty. Pulses were full and equal for both lower extremities.

Repeat MRI now showed the lobulated mass measuring 10 cm × 14 cm × 11.4 cm, inseparable from the right adductor groove, obturator externus, and pectineus muscles. A fbrous stalk intimately associated with the

[1]Department of Orthopedics, The edical City, Pasig City, Philippines.

Address of Correspondence
Dr. Abigail Rivera Tud,
Department of Orthopedics, The edical City, Pasig City, Philippines.
E-mail: abitud@gmail.com

Dr. Abigail Rivera Tud



Dr. Albert Jerome C Quintos

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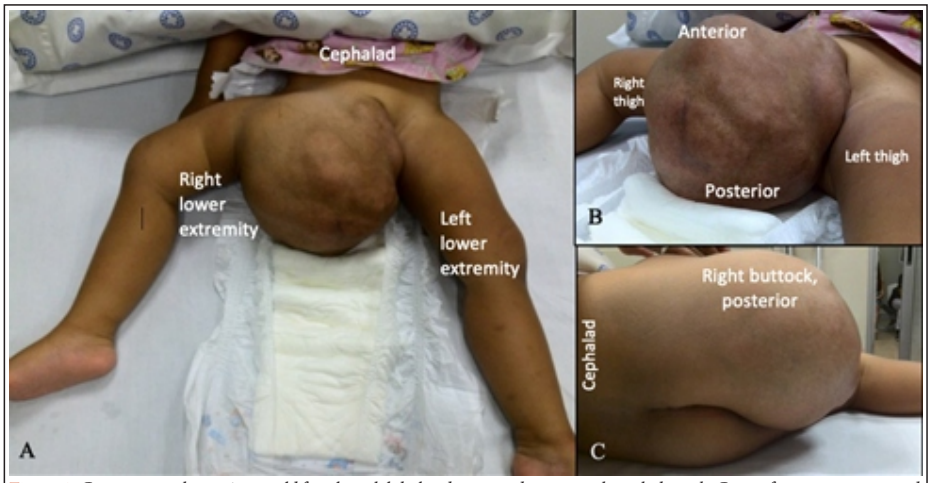

Figure 1: Gross images show a 1-year-old female with lobulated, non-tender mass at the right butock. Circumference was measured at 36 cm (a) anterior aspect, (b) left lteral aspect, and (c) posterior aspect.

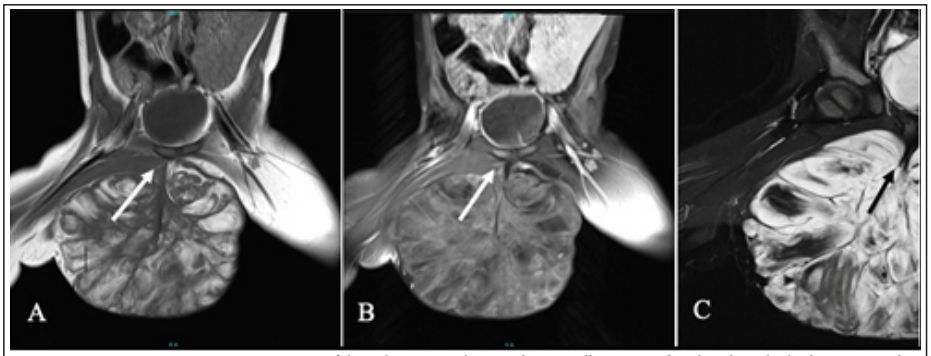

Figure 2: Magnetic resonance imaging scans of the pelvis, coronal cuts. Fibrous stalk associated with right ischial tuberosity can be seen (white/black arrows). (a) T1-weighted image showing heterogenous, encapsulated, lobulated mass with portions isointense to fat, (b) T1W, fat-suppressed image with portions isointense to muscle, and (c) contrast-enhanced T2W image showing high uptake and no signs of intrapelvic extension.

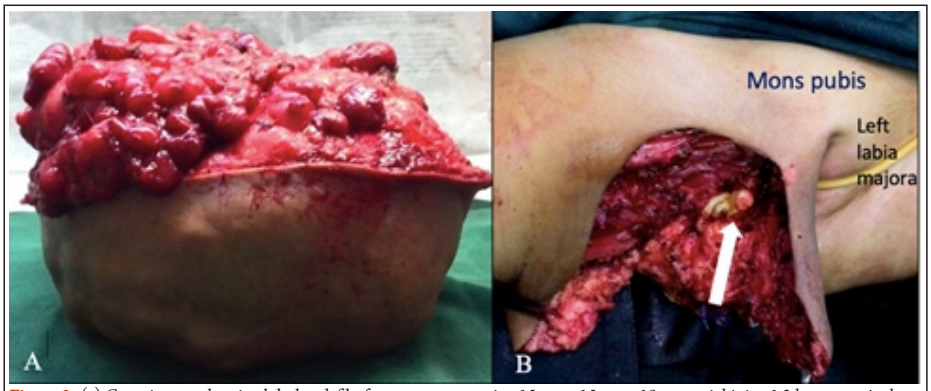

Figure 3: (a) Gross images showing lobulated, fibofaay tumor measuring 15 cm × 15 cm × 10 cm, weighining 1.2 kg er marginal excision (b) Stump of fibous stalk (arroww) aer transection from tumor base, exposing right ischial tuberosity.

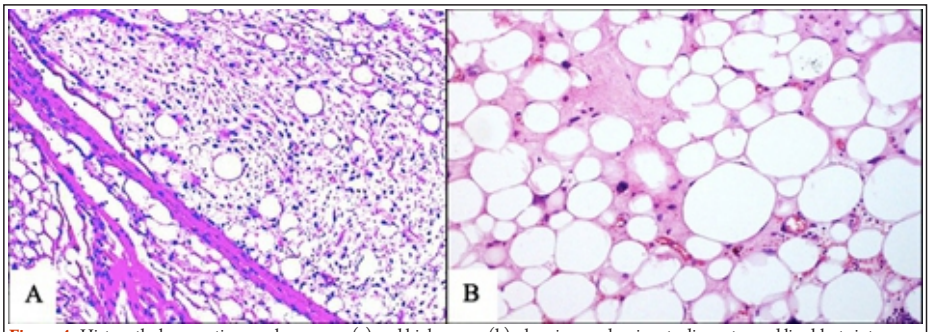

Figure 4: Histopathology sections on low power (a) and high power (b), showing predominant adipocytes and lipoblasts interspersed with fibous tissue, vascular elements, and myxoid areas, consistent with lipoblastoma.

right ischial tuberosity was also noted, with no signs of intrapelvic extension, neurovascular or bony involvement (Fig. 2a, b, c).

A core needle biopsy was performed, revealing fbromyxoid tissues with prominent vascular proliferation and no evidence of malignancy. Marginal excision was then carried out. The esected specimen measured 15 cm × 15 cm × 10 cm and weighed 1.2 kg. It was intimately associated with fbers of the gluteus maximus and adductor compartment of the right thigh, without extension into the external obturator and pectineus muscles. Careful sof-tissue dissection allowed for removal of the tumor intact with its fbrous stalk and capsule (Fig. 3a, b). The exision required no bone resection, and there was minimal skin and muscle loss, obviating the need for a flp or skin grafts o facilitate closure.

Final histopathology revealed predominant adipocytes and lipoblasts interspersed with fbrous tissue, vascular elements, and myxoid areas, consistent with lipoblastoma (Fig. 4a, b). The pos-operative course was unremarkable and the patient was discharged well by the 5th hospital day. Surveillance ultrasonography and MRI of the operative site every 6 months for the 1st 2 years revealed no signs of recurrence. The atient is currently 5 years post-surgery, symptom-free with a well-healed scar, full range of motion at the right hip and no limitations in activities of daily living (Fig. 5a, b, c).

Discussion

Adipocytic tumors are relatively rare in the pediatric population. Lipoblastomas account for 5–30% of benign faty neoplasms in children, with only 12 cases having been reported in the gluteal region [1, 4, 5, 6, 7, 8]. Lipoblastomas are classifid into two types: Circumscribed and diffusee. The circumscribed type is more common and typically presents as a solitary painless mass, which may grow slowly or rapidly. Most range in size from 3 to 5 cm, but rare cases have reported large tumors as ranging in size from 10 to 25 cm [1, 5, 8]. The sigle lipomatous tumor excised from our patient was measured at 15 cm.

The scond type is diffuse, also referred to as "benign lipoblastomatosis." Exhibiting an infltrative growth paaern, the diffuse form originates from deeper soft tssues and while

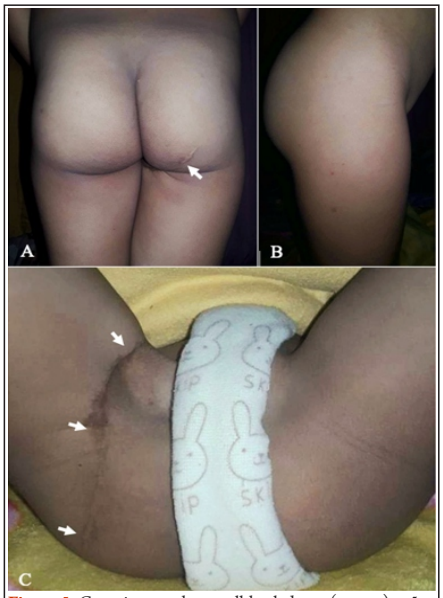

Figure 5: Gross images show well-healed scar (arrows) at 5 years post-surgery, seen posteriorly (a), from the lateral aspect of the right butock and thigh (b), and from lithotomy position (c).

less common, has been associated with a higher rate of recurrence and need for re-excision [1, 4, 8]. Both subtypes have the capacity to differentiate, but neither have been shown to metastasize or undergo malignant transformation [1, 4, 5, 8].

Diagnosis is based on a combination of clinical findi gs, gross analysis following surgical excision, diagnostic imaging, and histopathologic analysis.

On magnetic resonance imaging, a lipoblastoma appears as a lobulated, well-defind, or encapsulateed so-tissue mass, frequently with septations. Echogenicity and signal intensities vary according to the proportion of fat interposed with the myxofbromatous stroma. Lipomatous portions of these tumors appear hyperechoic on ultrasonography, isointense to fat (high signal intensity) on both T1 and T2-weighted MRI images, and typically show high uptake of contrast due to interspersed vascular elements. In contrast, myxoid components of these tumors will appear hypoechoic on ultrasonography, with low atenuation on CT and low signal on MRI (T1-weighted images) [1, 4, 5, 6, 7].

Histologically, lipoblastomas are composed predominantly of immature fat cells (lipoblasts) and mature adipocytes separated into lobules by fbrous septa in a myxoid stroma with variable amounts of mesenchymal cells as well as a plexiform capillary network. Ths was consistent with the histopathologic findi gs noted in our patient [1, 2, 5, 7].

An important differential to distinguish between benign lipoblastoma would be myxoid liposarcoma. While presenting with similar features on gross examination, malignant lipomatous tumors predominate within the 3rd–6th decades and present with a more irregular appearance as well as nuclear atypia, abnormal mitotic fi ures, and pleomorphism [1, 7]. All of these are absent from lipoblastoma, as well as in the reported patient.

Cytogenetic studies have also been advocated by some authors, with mutations at chromosome 8 (region 8q11-13) and aberrations in the PLAG1 gene identifid as possible contributory factors to development [3, 4, 5]. Chromosomal abnormalities are also another method of differentiating between malignancy: Myxoid liposarcoma has been shown to arise from rearrangements in chromosome 12q13 [1, 4, 5]. Ths remains an area of potential study.

Surgical excision remains the mainstay of treatment for lipoblastomas, with excellent prognosis. Recurrence rates have been estimated between 14% and 46% and as a result a minimum follow-up of 2–5 years has been recommended. Specific i aging modalities for surveillance and monitoring have not been identifid but various methods including MRI and ultrasonography have been advocated [1, 2, 6, 7, 8].

Conclusion

Lipoblastomas are rare adipocytic tumors of childhood presenting with characteristic features on clinical examination, diagnostic imaging, and histology. While benign, they have the capacity to grow to large sizes and ofen share features with more aggressive sof-tissue tumorss. Ts emphasizes the need for careful assessment using diagnostic imaging and histopathologic analysis, as well as clinical presentation. Surgical excision remains the mainstay of treatment, with an excellent prognosis. The ate of recurrence ranges from 14% to 46%, and a minimum follow-up period of 2–5 years is recommended.

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