

Parosteal Lipoma of Proximal Radius: A Case Report of an Unusual Swelling and Review of Literature

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Learning Point of the Article:

Although, parosteal lipoma accounts for less than 0.3% of all lipomas it is imperative to diagnose and treat early so as to alleviate future complications.

Abstract

Introduction: Lipomas are considered to be benign tumors comprising 50% of all soft tissue tumors. They originate from mesodermal germ layer but are classified based on component tissue and location. Parosteal lipomas are frequently located at the extremities, particularly at diaphysis or diamephysis of long bones.

Case Report: Here, we report a case of parosteal lipoma with a delayed presentation involving dominant right forearm without any neurological deficits to create awareness of the rare existence of this benign tumor.

Conclusion: A prompt diagnosis of such tumors has to be done as early as possible.

Keywords: Parosteal lipoma, forearm, benign, tumor.

Introduction

Lipomas can occur anywhere on the body but are commonly found in the subcutaneous layer [1]. There are many subtypes of lipomas and one of its rare variety is osseous involvement [2,3]. These are usually located intraosseously or adjacent to the bone attached by a pedicle through which they may derive blood supply, hence are better known as parosteal lipomas [4]. We report a case of 55-years-old otherwise healthy male involving a proximal aspect of right radius which was managed surgically at our center.

Case Report

A 55-years-old male without any comorbid conditions presented to the orthopedic outpatient department with a mass over right forearm for the past 30 years. The swelling was progressively increasing in size over the years and was not associated with any motor or sensory impairment. He was

unable to eat comfortably, as it was causing a mechanical block to the elbow movement due to its increasing size and atypical location. On examination, it was found that swelling was located over proximal half of forearm extending mainly on the anterolateral aspect. Skin overlying it was normal and non-adherent. The mass was soft in consistency and on supination and flexion of forearm muscles, it partially reduced in size indicating that it was in the submuscular plane, specifically deep to the brachioradialis. His elbow range of motion had a terminal restriction which probably was causing his disability (Fig. 1). On admission, all his blood parameters were within normal limits. Conventional radiographs of the forearm revealed spiculated periosteal bone formation at the junction of the proximal and middle one-third junction of the radius. There was an increase in the soft tissue shadow surrounding the lesion along with characteristic radiodensity of fatty tissue. Magnetic resonance imaging (MRI) showed multilobulated mass with the hypointense signal on T1-weighted images. The dimension

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Figure 1: (a) The location of lipoma in the proximal forearm, (b-d) range of movements pronation, supination, and flexion, respectively.

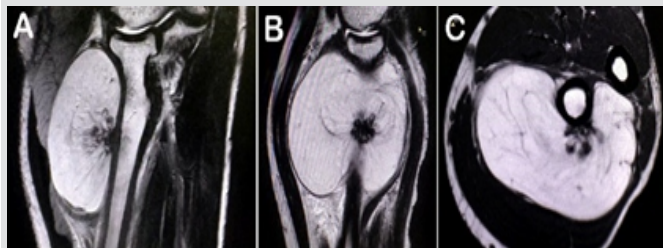


Figure 2: Magnetic resonance imaging images (T1 weighted) of the tumor (a) sagittal section, (b) coronal image, © axial image showing multiple hypointense bony spicules seen arising from the cortex and in continuity within the well-circumscribed mass.

of the mass was estimated to be 8 cm × 8 cm × 4.5 cm (Fig. 2). The mass was explored using elliptical incision and it was found underneath brachioradialis muscle. Enbloc resection of the well-capsulated mass with the stalk was carried out. The tumor weighed approximately 220 g (Fig. 3). Histological examination confirmed the diagnosis of encapsulated lipoma except for its attachment at the bone. Postoperatively, he had a full range of motion at the elbow (flexion:0–145°, supination:0–85°, and pronation:0–90°) and the wrist. The patient was followed-up for 2 years and was found to have a complete range of motion with no radiological or clinical evidence of recurrence of the tumor (Fig. 4).

Discussion

Parosteal lipomas are benign adipose tissue tumors arising from the bone cortex, particularly the periosteum. They have been described by a number of synonyms, such as “periosteallipomas,” “chondrolipomas of soft tissue,” and “lipomas of nerves.” Frequent association with chondroid and/or osseous tissue has allowed classifying them into four distinct variants: (I) No ossification; (II) pedunculated exostosis; (III) sessile exostosis; and (IV) patchy chondro-osseous modulation [2]. Parosteal lipoma presents as an immobile, non-tender, and

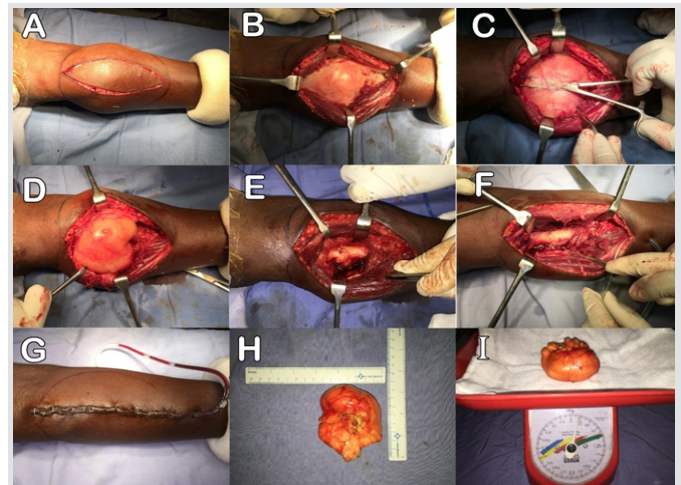


Figure 3: Intraoperative images of the tumor. (a) Skin incision, (b) soft tissue dissection, (c) capsular dissection, (d) tumor exposure, (e) tumor stalk can be noted, (f) complete excision of the tumor pedicle, (g) skin closure, (h) tumor dimension, and (i) weighing of the tumor.

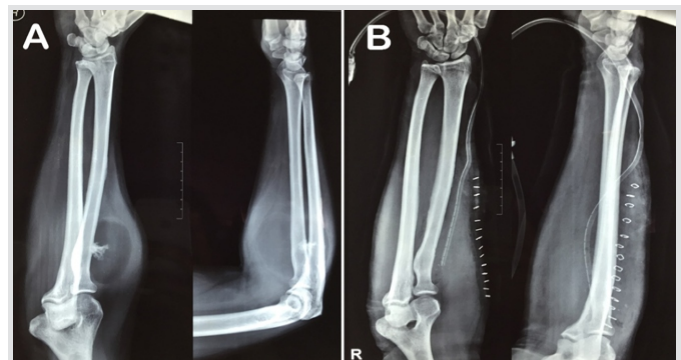


Figure 4: Plain radiographs of the forearm in anteroposterior and lateral views. (a) Pre-operative image showing soft tissue shadow of the tumor arising from proximal radius (b) post-operative image showing complete excision of the mass.

slow growing mass over bones that are not fixed to the skin [5]. On plain radiographs, a parosteal lipoma is a well-defined area of lucency located adjacent to the cortex of a long bone. Very rarely they can cause bony alterations in the form of hyperostotic reactive changes [6]. Superior imaging modalities such as computed tomography (CT) and MRI show a homogeneous lobulated appearance adherent to the surface of the adjacent bone [7, 8]. Sites which are commonly involved are the proximal forearm and the sciatic nerve. MRI is considered better as compared to CT for evaluation of parosteal lipoma. These tumors on MRI appear as a juxtacortical mass with signal intensity identical to that of subcutaneous fat and heterogeneity in these lesions are invariably present corresponding to the pathologic components in the lesion. On the one hand, T1-weighted images show intermediate signal intensity; on the other hand, T2-weighted images display high signal intensity which represents the cartilaginous components in parosteal lipoma. Parosteal lipomas are frequently found in the extremities in contrast to the subcutaneous lipomas which are commonly located in femur, radius, tibia, and humerus [9, 10]. They have also been reported in scapula, clavicle, ribs, pelvis, metacarpals, metatarsals, and mandible [6]. The clinical

presentation of these ossifying lipomas in the radius varies. They are usually slow-growing tumors with an indolent course. Very often they present as large painless lesions over a long period of time [11]. Symptoms caused by nerve compression are unusual; however, those occurring adjacent to the proximal radius may lead to compression of posterior interosseous nerve [12]. Avramand Hynes [13] in his literature review up to 2004 found out only 18 such reported cases presenting neurological involvement. Tzeng et al. [14] found superficial radial nerve involvement with proximal radius parosteal lipoma which is very rare as the superficial sensory radial nerve has more superficial and medial course than the posterior interosseous nerve. In our case, the patient presented with a mechanical block while eating rather than sensory-motor symptoms. Neurological symptoms have been well documented in the literature, but to the best of our knowledge, there were no reports described with a mechanical block. In

addition to this, the duration of growth of the mass was around 30 years which are unusual. Apart from sensory-motor symptoms caused by these benign tumors, mechanical block, especially in a dominant upper limb, may be considered as a relative indication for surgery.

Conclusion

An early diagnosis of such tumors is very vital because it not only reduces the chances of speculated neoplastic changes but also improves the quality of life.

Clinical Message

Parosteal lipoma should be considered as a differential diagnosis in a proximal elbow swelling case. This clinical entity can be diagnosed on MRI scans.

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