



## **Isolated Intermuscular Lipoma of the Forearm with Posterior Interosseous Nerve Syndrome: A Rare Case Report**

Dr.Dhruv Paul<sup>\*a</sup>, Dr. Prashant Kamble<sup>a</sup>, Dr.Umang Sheth<sup>a</sup>, Prof.Shubhranshu Shekhar Mohanty<sup>a</sup>, Dr  
Deekshith Shetty K<sup>b</sup>, Dr Punith Kumar PC<sup>c</sup>

a. Department of Orthopaedics, Seth GSMC & KEM Hospital, Mumbai, India.

b. MS orthopedics, AJ institute of medical sciences, Mangalore, India.

c. MS orthopedics, Hassan institute of medical sciences, Hassan.

**\*Correspondence to:** Dr. Dhruv Paul, Department of Orthopaedics, Seth GSMC & KEM Hospital, Mumbai.

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**ABSTRACT**

*Intermuscular lipomas in forearm are a rare entity, however, when they involve the area around proximal radius, they almost always result in a posterior interosseous nerve (PIN) palsy because of the peculiar anatomy of the region.*

*In this report, we describe an unusual case of a 57-year-old male who presented to us with posterior interosseous nerve palsy due to intermuscular lipoma of the forearm. MRI was done to confirm the diagnosis and to know the exact location of the same. EMG -NCV was done to precisely delineate the area of nerve compression. The case was managed with marginal excision of the lipoma and patient was followed up till 6 months.*

*Intermuscular lipomas presenting with PIN palsy have to be excised carefully and at the earliest to facilitate neurological recovery. A complete excision also prevents future recurrences.*

**Keywords :** *Case Report , Proximal forearm , Intermuscular Lipoma , Posterior interosseous nerve palsy , Marginal excision.*

**Introduction**

Lipomas are the most common soft tissue benign tumors of the body [1]. Lipomas can either arise superficially, that is within the subcutaneous tissue or from the deeper structures, that is underneath the fascial planes [2]. The deep-seated lipomas can either arise from within the muscles (intramuscular/intermuscular) or from the periosteum of the bones (parosteal) [3].

Intra or Intermuscular lipomas of the proximal forearm commonly results in posterior interosseous nerve palsy due to the close proximity of the nerve to supinator muscle, which passes underneath the Arcade of Frohse (arch formed by the proximal part of supinator muscle) and then continues between the superficial and deep layers of the muscle [4,5].

## Case Report

A 57-year-old male came to the outpatient department with complains of left proximal forearm swelling which was gradually progressing since 5 months and weakness of left hand middle, ring and little fingers since 3 months due to which he was unable to carry out his activities of daily living (ADL). There was no history of any trauma or any underlying disease.

On examination, a swelling measuring around 6 \* 5 cm was palpable on the postero-lateral aspect of left proximal forearm around the brachioradialis muscle below the elbow as shown in Fig 1: Obvious swelling on the postero lateral aspect of proximal forearm



**Fig 1**

The swelling was firm in consistency, immobile, not fixed to the underlying skin, no overlying dilated veins or any signs of inflammation. The elbow and wrist function was normal however there was a weakness of extension of the middle, ring and little fingers at the MCP joint, the PIP joint as well as DIP joint (Power 0/5), as shown in Fig 2. There was no sensory deficit noted. Fig 2 : Weakness of finger extension in the middle, ring and little fingers.



**Fig 2**

Anterior-posterior and lateral radiographs revealed a soft tissue swelling as shown in Fig 3. Fig 3 : Red arrows show soft tissue swelling evident in the radiographs

MRI showed a well-defined multiseptate lesion measuring about 5 \*4.2 \*7.2 cm which is hyperintense on T2 weighted images located between the brachioradialis anteriorly , supinator muscle posteriorly and extensor muscles laterally and posteriorly as shown in Fig 4 and Fig 5 and was suggestive of a lipoma. Fig 4 : Sagittal T2 Weighted MRI – Red arrow shows the bilobed enhancing soft tissue mass , Green arrow shows anteriorly displaced posterior interosseous nerve

Fig 4 : Sagittal T2 Weighted MRI – Red arrow shows the bilobed enhancing soft tissue mass , Green arrow shows anteriorly displaced posterior interosseous nerve

Fig 5 : Axial T2 weighted MRI – Red arrow shows the extent of the lipoma around the proximal radius.



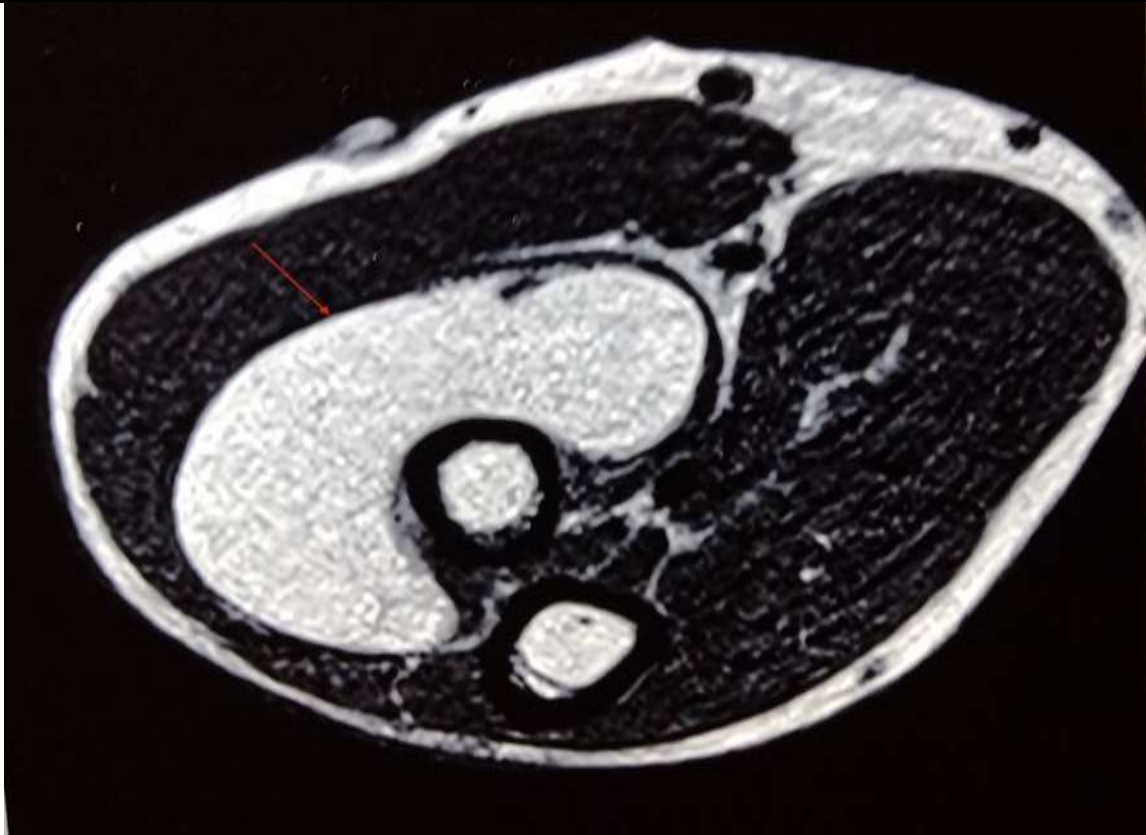
**Fig 3**

An EMG-NCV was done to evaluate the cause of the finger weakness which was suggestive of a neurogenic lesion in the branches of the left radial nerve.



**Fig 4**





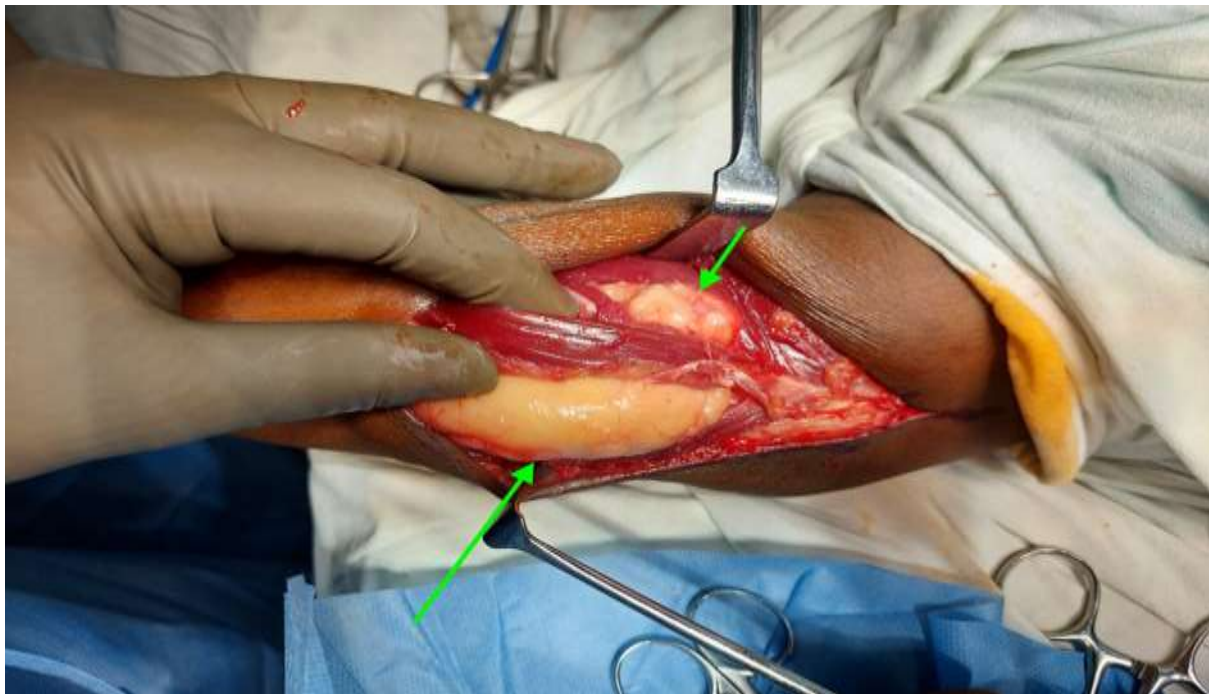
**Fig 5**

**Surgical procedure: -**

The patient was operated in supine position under General anesthesia. Kaplan's approach was taken to dissect the mass by taking a 8 cm incision from the lateral epicondyle distally towards lister's tubercle and creating an inter muscular plane between Extensor carpi radialis brevis and Extensor digitorum communis. The lipoma along with its capsule was visualized on either side of the brachioradialis muscle extending from the extensor to the volar compartment(Fig 6). Fig 6 : Green arrow shows the bilobed structure of the lipoma on either side of Brachioradialis muscle

The mass was carefully and completely dissected en masse along with its capsule from the supinator muscle and muscles of the proximal volar compartment(Fig 7 a & b) Fig 7 (a & b): Encapsulated lipomatous mass, the posterior interosseous nerve was visualized and protected until the excision(Fig 8).

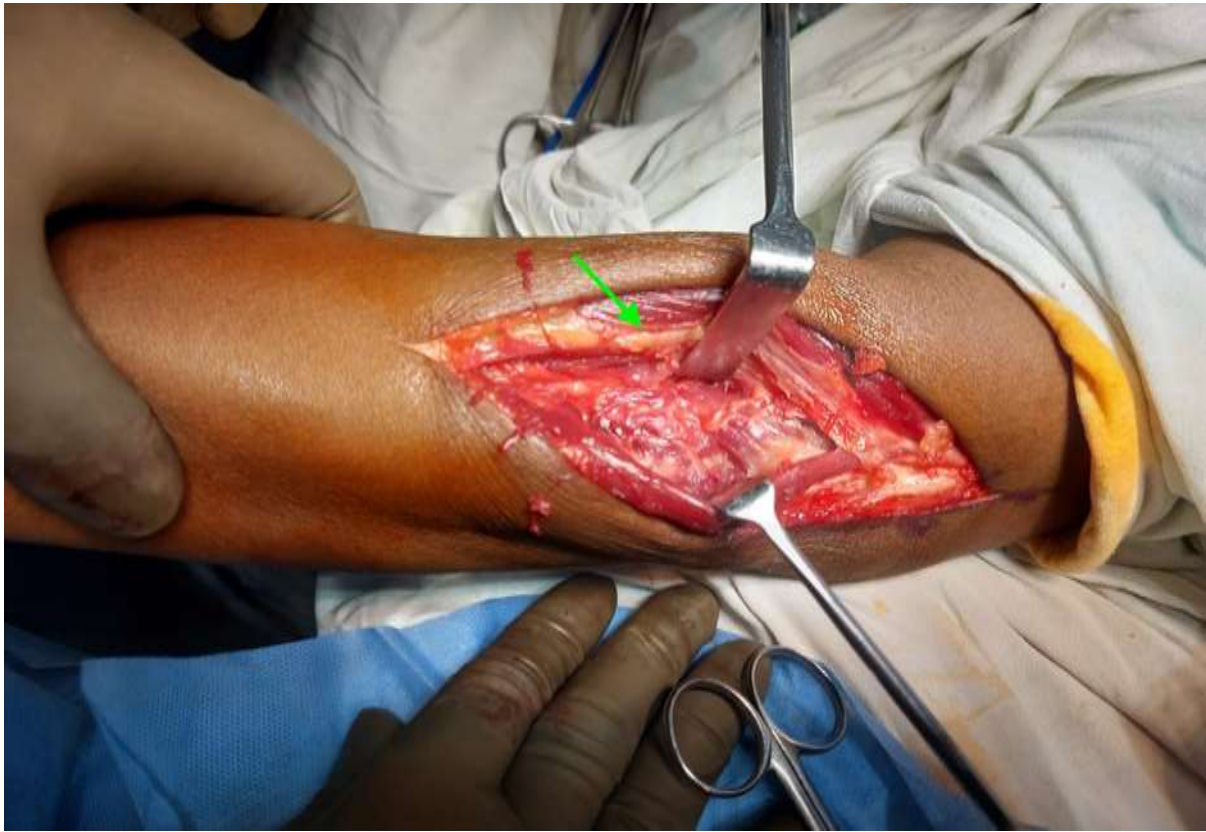
Fig 8 : Green arrow shows intact and carefully dissected posterior interosseous nerve



**Fig 6**



**Fig 7 a & b**



**Fig 8**

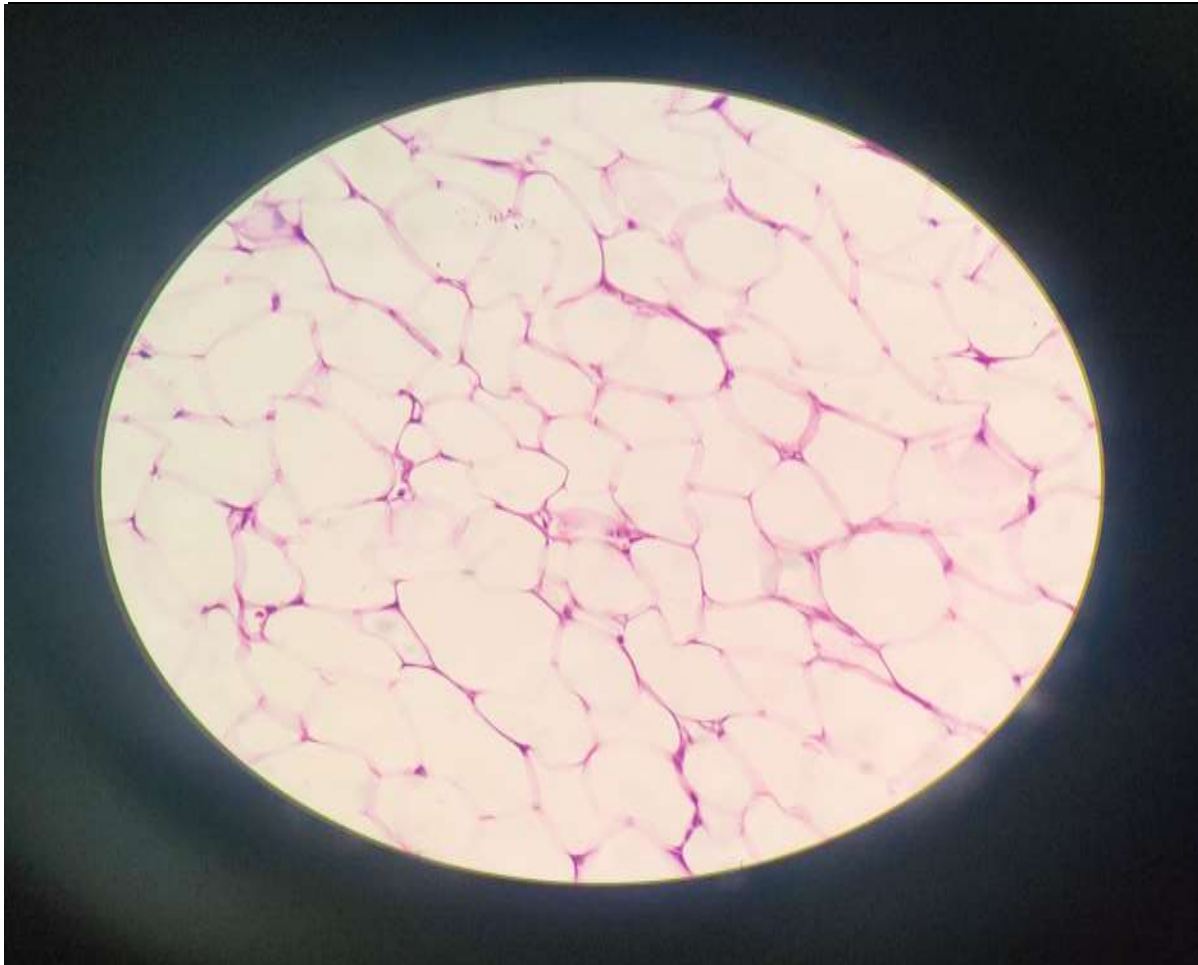
## **FOLLOW-UP AND OUTCOMES**

In the immediate post – operative period , the patient suffered a wrist drop for which a dynamic cock up splint was offered to the patient. The surgical specimen was sent for pathological evaluation. The specimen measured 6 \* 4.5 \* 2.5 cm ,on microscopy , well circumscribed , benign soft tissue lesion composed of lobules of mature adipocytes and separated by fibrovascular septae was noted as shown in Fig 9. Fig 9 : Shows High power microscopic image of the lipoma

There was no evidence of malignancy/atypia.

The patient underwent intensive physiotherapy and was followed up regularly at monthly intervals , and a complete neurological recovery was seen at the end of 6 months.





**Fig 9**

## Discussion

Intermuscular forearm lipomas causing PIN palsy is extremely rare and all the previous cases have been reported in literature [6-9]. Lipomas and other soft tissue tumors are uncommon causes of PIN palsy and the myriad of symptoms of PIN palsy due to compression has classically been described as PINS (Posterior interosseus nerve syndrome) [10].

PINS is usually diagnosed clinically on the basis of a painless palpable swelling with no sensory symptoms and paralysis of the extensor muscles of the forearm [10].

Confirmation of diagnosis is done with the help of an MRI, and all cases of nerve palsies should be documented by an EMG-NCV [10]. All intermuscular lipomas causing PINS should be excised at the earliest

because the duration of symptoms directly correlates with the recovery of the palsy [11] and there are lesser chances of reinnervation if sufficient time has elapsed since the development of palsy [12].

Intermuscular lipomas should be diagnosed clinically and anatomically delineated with the help of an MRI and ultrasonography. Although rare, some degree of suspicion regarding sarcomatous change should be kept at the back of the mind of the clinician.

Although, earlier case reports and studies have advocated the use of an anterior approach, this is the first case in which Kaplan's approach has been used to dissect out the lipoma from its bed because of the peculiar bilobular structure of the lipoma. All said and done, early diagnosis and prompt excision is the key to facilitate complete neurological recovery.

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**CONFLICT OF INTEREST** None

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**INFORMED CONSENT**

Due informed consent has been obtained from the father of the patient

**INSTITUTIONAL ETHICS COMMITTEE APPROVAL**

Not applicable

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