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## International Journal of Surgery Case Reports

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# Compression neuropathy of the common peroneal nerve caused by an intraosseous ganglion cyst of fibula

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## ARTICLE INFO

## Article history:

Received 3 June 2017

Received in revised form 26 August 2017

Accepted 27 August 2017

Available online 8 September 2017

## Keywords:

Case report

Ganglion cyst of fibula

Common peroneal nerve neuropathy

Compression neuropathy

## ABSTRACT

We present a case of a compression neuropathy of the common peroneal nerve caused by an intraosseous Ganglion cyst of fibula.

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## 1. Introduction

Ganglion cysts are cystic lesions surrounded by soft tissues. They originate from tendon sheath or joint capsule [1]; and are mostly found on hand, wrist and ankle. They are commonly seen in patients between 30 and 50 years of age. A few authors reported Neuropathy related to ganglion cysts in current literature. However; we could find only one case report on intraosseous ganglion cyst causing symptoms in the literature [2]. Sultan et. al first reported a case of compression neuropathy related to a synovial cyst in 1921 [3] (C, 1921). Bassett et al. described the characteristics of ganglia on MRI; on T1 weighted images the signal intensity is low to intermediate and on T2 weighted images they appear homogenous and with high signal intensity [4]. Synovial cysts consist of two layers. The outer layer consists of fibrous coat and inner layer is synovial lining and contains a clear, lucent, gelatinous fluid [5]. This case report has been reported in line with the SCARE criteria [6].

## 2. Presentation of case

A 61-year old female presented with pain and numbness in the left lower limb. The physical examination revealed loss of sensation on lateral side of the foot. Plain radiographs of lower extremity were obtained. X-ray showed a lucency in the medulla of the head of the fibula (Fig. 1). Further investigation was performed by MRI

which revealed a hyperdense lesion at the same place as X-ray (Fig. 2a,b). This was followed by surgical excision of the cyst. The peroneal nerve was exposed and detected as swollen and edematous (Fig. 3). During surgical exploration we found that the cyst was well surrounded by intramedullary spongy bone. The cyst was completely intramedullary and no cortical bone erosion was detected (Fig. 4). It was assessed to be 25\*34 mm in size. Gross examination of the cyst revealed lobulated, lucent, serous gelatinous fluid (Fig. 5).

## 3. Discussion

The common peroneal nerve is the most commonly damaged nerve of the lower extremity. The common reasons are fracture of the head of fibula, compression due to the splint or cast, compression during sleep, traumatic knee dislocation, gunshot injuries and iatrogenic injury [7,8]. Rare causes include traction applications, ganglion cyst, fabella, hematoma due to hemophilia, compression of callus, tumors of the head of the fibula or nerve sheath.

Spjut et al. classified these cysts as separate distinct entities of “subchondral bone” and “synovial cyst of bone” both separate from degenerative subchondral cysts [9]. The histological features of the intraosseous ganglia are essentially the same as those of a soft tissue ganglion “cyst” with internal mucoid gelatinous content, and fibrous lining [3,9]. Since it lacks an epithelial lining, it is therefore not a true cyst [3,10].

Lipoma, fibroma, osteoma, sarcoma, tuberculosis, rheumatoid tenosynovitis and aneurysm should be considered in the differential diagnosis [11]. Different recurrences varies between%10 and 40 [11,12].

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<http://dx.doi.org/10.1016/j.ijscr.2017.08.050>

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Fig. 1. X-Ray of ganglion cyst in the head of right fibula.

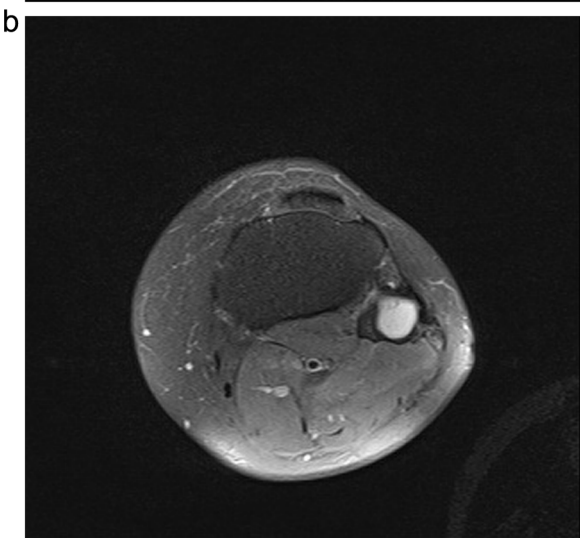
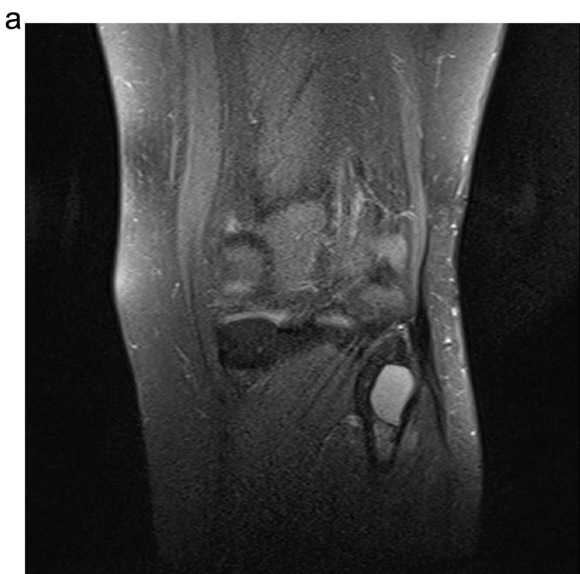


Fig. 2. a: Coronal view of the ganglion cyst on T2 weighted MRI. b: axial view of the ganglion cyst on T2 weighted MRI.

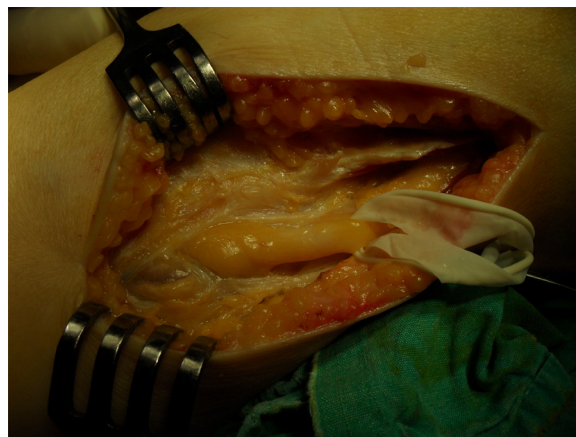


Fig. 3. Swollen common peroneal nerve.

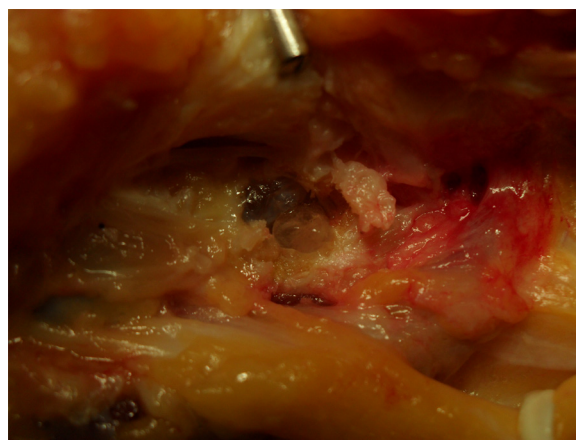


Fig. 4. Intramedullary ganglion cyst.



Fig. 5. View of the ganglion cyst after removal.

Radiological studies and electromyography (EMG) are used in establishing the diagnosis [7]. EMG may demonstrate the site and severity of a lesion, which is particularly important in the presence of a non-palpable mass. Plain radiographs are of little value although they may rule out a bony abnormality or fracture at the neck of the fibula of this case which caused suspicion of a soft tissue

mass [7]. Ultrasonography has been successfully used to demonstrate occult ganglia at the wrist. It may confirm cystic nature of the mass and therefore distinguish it from solid tumors [13]. In doubtful cases, a combination of MRI and ultrasonography would improve diagnostic accuracy.

#### 4. Conclusion

Compression neuropathy of the common peroneal nerve caused by an intraosseous Ganglion cyst of fibula is a rare entity. We believe that this case report would contribute to the literature by presenting this rare entity.

#### Conflict of interest

I, on behalf of all authors, confirm that there is no conflict of interest.

#### Funding

There is no funding source.

#### Ethical approval

Since it was a case report there was no need to obtain ethics committee approval.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Author contribution

Adnan Kara: Surgery, Photographing, Writing.  
Sercan Yalym: Collection of information and Writing.  
Ersin Kuyucu: Review of the manuscript Ali eker: Writing.  
Haluk Çelik: Writing.

#### Guarantor

Adnan Kara, am the guarantor of this case report.

#### Acknowledgement

We obtained consent from this patient in terms of publishing of photos and information.

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