

Compressive radial neuropathy by a synovial cyst during pregnancy

A clinical case report

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Abstract

Rationale: Compressive radial neuropathy by a synovial cyst in the radial tunnel during pregnancy is a rare occurrence. The management of radial nerve compression caused by a synovial cyst in a pregnant patient is a surgical dilemma owing to the fetal and maternal risks of treatment.

Patient concerns and diagnosis: A 37-year-old pregnant woman presented with progressive forearm pain at the gestational age of 12 weeks. A cyst was identified via musculoskeletal ultrasound and magnetic resonance imaging examinations in the radiocapitellar joint causing radial compressive neuropathy.

Interventions: After regional nerve block and surgical removal of the cyst, the patient's forearm pain was alleviated without neurological deficits.

Outcome: symptoms from nerve compression were improved after surgical treatment

Lessons: This report illustrates the case of a pregnant woman presenting a compressive neuropathy by an enlarged cyst possibly due to the unbalance of growth factors during pregnancy. With proper diagnosis and timely surgical intervention, such patients can achieve good neurologic recovery without maternal or fetal complications.

Abbreviation: None.

Keywords: compressive neuropathy, radial nerve, radial tunnel syndrome, radiocapitellar joint, synovial cyst

1. Introduction

Compressive radial neuropathies are often associated with significant disabilities or morbidities that can affect the functions of daily life. These neuropathies at the elbow can lead to 2 clinical conditions, namely posterior interosseous syndrome, presenting as motor weakness in the wrist and finger extensions and during supination, and radial tunnel syndrome, presenting as pain along the radial tunnel and extensor muscle mass.

Variable lesions reported in previous literature can cause compressive radial neuropathy at the elbow, including rheumatoid synovitis/synovial cysts,^[1–4] ganglion cysts,^[5–7] proximal radius periosteal lipoma,^[8,9] myxoma,^[10] or intra-capsular chondroma.^[11]

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Surgical removal of the cyst causing neurologic symptoms remains the standard management of compressive neuropathy. However, the procedure is of concern during pregnancy because of its operation and anesthesia risks. Here the case of a pregnant patient found to have a synovial cyst at the radiocapitellar joint causing radial nerve compression was reported. The cyst was successfully removed under local anesthesia and regional nerve block, and thus, risks of general anesthesia to the mother or the fetus were avoided.

2. Method

This is a case report and approval of the ethics committee or institutional review board was not obtained. Informed consent was obtained from the patient.

3. Case presentation

A 37-year-old woman, G1P0, at the gestational age of 12 weeks presented with sudden forearm pain that had lasted 3 days. She denied recent trauma or history of systemic disease. The pain aggravated with resistance to elbow extension, and she experienced finger extension weakness as well as radial wrist numbness sensation. Soft tissue elbow ultrasonography revealed a left cystic lesion with septum formation below the supinator muscle. Magnetic resonance imaging revealed an 18-mm cystic lesion at the radiocapitellar joint with internal septation (Fig. 1A). A nerve conduction velocity test confirmed left radial axonopathy.

Considering the progressive neurologic symptoms, surgical removal was indicated. Axillary nerve block anesthesia was

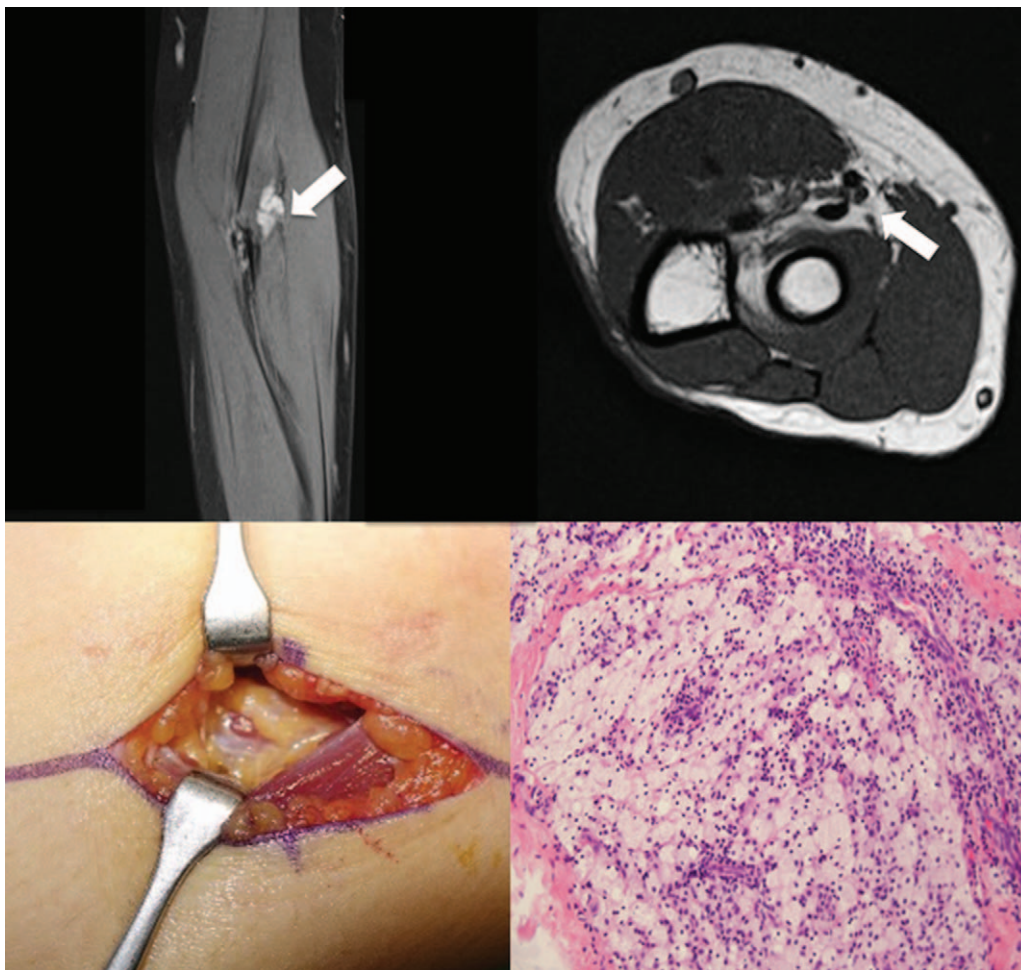


Figure 1. (A and B) Magnetic resonance images of the elbow in coronal and axial views showing a small cystic lesion with internal septation, approximately 18×11 mm, at the radiocapitellar joint (arrows). (C) The patient underwent surgical removal of the cyst. (D). Microscopically, the tumor comprised cystic lesion lined by inconstant synovial epithelium, lobules of adipose tissue, bundles of skeletal muscle, fibrous soft tissue with mild lymphocytic infiltration, and aggregation of foamy histiocytes. Hematoxylin and eosin stain; original magnification $\times 400$.

chosen to prevent using general anesthesia and affecting the fetus. The tumor was excised via synovectomy (Fig. 1B). The pathology proved that the tumor was a synovial cyst (Fig. 1C and D). She experienced no postoperative complications. At the 3-month follow-up, the pain completely resolved, and she had a full range of motion of the elbow.

4. Discussion

Radial nerve compression by a cyst at the elbow occurs often at the radial tunnel, a space at the radiocapitellar joint comprising the radial nerve, its posterior interosseous nerve, and its superficial sensory branch. In this case, both the interosseous nerve and the sensory branch were involved, which may be due to the protruding cyst irritating both branches during elbow motion.

Most synovial cyst cases are associated with the posttraumatic degeneration of connective tissue and inflammation. In the present case, the patient denied recent trauma. Additionally, heavy lifting is traditionally not performed by pregnant women in the oriental culture. The spontaneous development of synovial cysts causing radial nerve palsy is an unusual presentation;

however, an increase in circulating growth hormones during pregnancy may play a role in the rapid growth of tumor.^[12]

In cases of synovial cyst nerve entrapment, nonoperative management with corticosteroid injections can be used as an effective therapeutic approach for radial tunnel syndrome.^[13] In addition, some cases are treated with ultrasonography-guided aspiration^[14] or nerve decompression through arthroscopy to relieve the compression.^[15] Open decompression and cyst excision are considered the gold standards of management; however, the risks of general anesthesia and systemic medications on the fetus were considered in this study because the fetus was small for the gestational age. Local anesthesia is associated with lower overall drug exposure and less variability in fetal heart rate.^[16] In this study, a regional axillary nerve block was applied, which achieved a good surgical outcome without fetal or maternal compromise.

In conclusion, radial nerve compression by a synovial cyst in the radial tunnel is an uncommon finding in a pregnant woman. The possible management approaches include local corticosteroid injection, ultrasonography-guided aspiration, or arthroscopic decompression; however, the definite treatment is surgical removal of the cyst. Because the concerns for effects of anesthesia

on the fetus are warranted, regional nerve block can be considered to successfully remove tumors for neurologic symptom improvements with minimal risks of fetal complications.

Author contributions

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Methodology: Ching-Min Hsiao.

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Writing – review & editing: Chia-Chieh Wu, Hsin-Chiao Wen.

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