

Case Report

Symptomatic hamulus-pisiform coalition in a 53-year-old woman with a flexor carpi ulnaris pain

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ABSTRACT

Hamulus-pisiform coalition is a rare form of carpal bone fusion that is usually asymptomatic but can occasionally cause chronic wrist pain and ulnar neuropathy. We present the case of a 53-year-old woman with persistent ulnar-sided wrist pain lasting over a year despite multiple corticosteroid injections and physiotherapy. Imaging confirmed a complete osseous fusion between the pisiform and hamulus of the hamate bone, accompanied by moderate chronic enthesopathy of the flexor carpi ulnaris tendon. Due to ongoing symptoms and failure of conservative management, surgical excision of the coalition was performed. Three weeks postoperatively, the patient experienced complete pain relief and full recovery of wrist range of motion. This case emphasizes the importance of considering hamulus-pisiform coalition as a possible diagnosis in patients presenting unexplained ulnar-sided wrist pain nonresponding to conservative treatment.

Keywords: Carpal coalition, Pisiform-hamulus coalition, Nerve compression, Hamulus, Pisiform

INTRODUCTION

Carpal bone synostosis is uncommon but not exceedingly rare, occurring in 0.1% to 2% of the population, with a higher prevalence among Black individuals.¹⁻⁶

Most fusions remain asymptomatic. However, when symptoms occur particularly in rare cases of hamulus-pisiform fusion they often present as Guyon's canal syndrome.^{3,4,7}

This condition is characterized by motor and sensory deficits, along with paresthesia, typically in the absence of trauma or repetitive stress to the area.⁸ Alternatively, symptoms may result from isolated tendinopathy rather than the fusion itself.

Here, we present a case of symptomatic fusion between the pisiform and hamulus of the hamate bone, which was surgically excised.

CASE REPORT

A 53-year-old right-handed woman with known degenerative osteoarthritis presented in March 2023 with chronic pain along the ulnar border of her right wrist, persisting for over a year. She denied any history of trauma. Clinical examination revealed localized tenderness over the pisiform region, with slight swelling over the flexor carpi ulnaris (FCU) tendon. The pain was constant, localized, and unaffected by movement.

To manage her ongoing pain, the patient underwent four corticosteroid injections between February 2023 and January 2024. The first injection provided temporary symptom relief for approximately six weeks, but the pain gradually recurred. The second injection offered moderate relief, but for a noticeably shorter period. Physiotherapy was also attempted without significant improvement.

On 07 March 2023, a right wrist X-ray shows a hamulus-pisiform coalition (Figure 1). However, on 30 March 2023, an ultrasound revealed mild swelling at the distal FCU and minor osseous reaction on the pisiform, consistent with moderate chronic enthesopathy. No tendon fissures or hypervascularity were observed on Doppler (Figure 2). On 21 September 2023, a magnetic resonance imaging (MRI) confirmed a complete osseous coalition between the hamulus of the hamate and the pisiform, with total ankylosis of the joint space. A small effusion was noted in the radiocarpal and midcarpal compartments, but there was no arthropathy (Figure 3). On 20 November 2024, a computed tomography (CT) scan of both wrists was performed due to persistent symptoms and contralateral wrist pain, but no abnormalities were found in the left wrist.



Figure 1: X-ray of the right wrist (a) frontal view, (b) three-quarter view, and (c) lateral view.

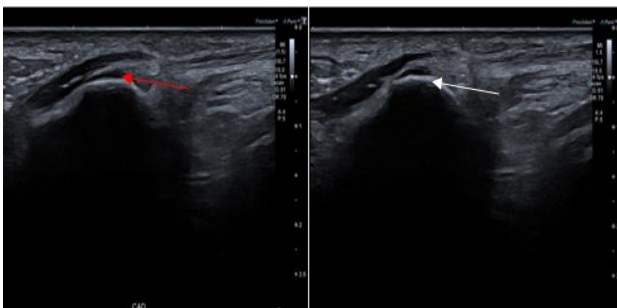


Figure 2: Ultrasound of the insertion of the FCU of the patient; swelling (red arrow), osseous reaction of the pisiform (white arrow).

On 03 February 2025, the patient underwent surgery for the symptomatic hamulus-pisiform coalition in her right wrist. The procedure was carried out under regional anesthesia assisted by sedation, with the patient positioned in a supine position and the right arm placed on an arm table. A longitudinal palmar-ulnar incision was made along the 5th ray. The ulnar nerve, including both motor and sensory branches, were released while preserving the ulnar artery (Figure 4a). The coalition between the hamulus of the hamate and the pisiform was dissected, preserving the attachment of the FCU and leaving a part of the hamulus in place (Figure 4b). An osteotomy was performed under radioscopy, and the coalition was completely excised, the bony coalition measured 1.6 cm in

length and 1.1 cm in width (Figure 4c-e). Hemostasis was achieved using bipolar cautery and deep sutures were placed (Figure 4f). The wound was covered with dry dressing and steri-strips, and a Paris plaster splint was applied.

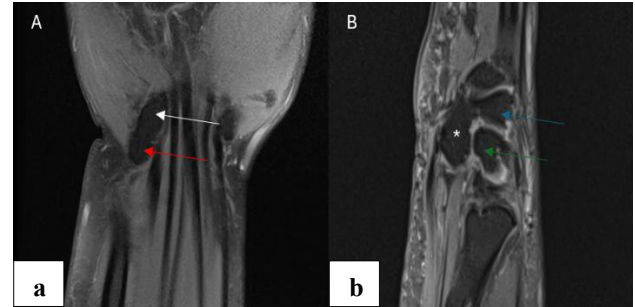


Figure 3: MRI T1 sequence of the right wrist (a) coronal cut, and (b) sagittal cut, pisiform (red arrow), hamulus (white arrow); hamatum (blue arrow); triquetrum (green arrow).

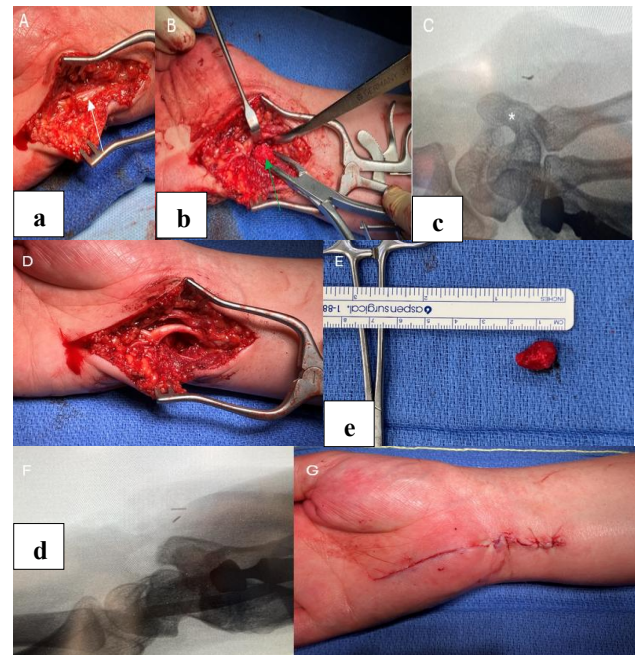


Figure 4: (a) Ulnar nerve (white arrow), (b) dissection of the ulnar nerve to visualize the pisiform-hamulus coalition in the gouge (green arrow), (c) intraoperative radioscopy view of the coalition (*), (d) released coalition space, (e) the pisiform-hamulus coalition excised, (f) intraoperative radioscopy view after the resection, and (g) skin closure.

Preoperative assessments included grip and pinch tests, Froment's test, ulnar sensitivity evaluation, and muscle strength testing (Table 1).

Three weeks postoperatively, the patient reported complete resolution of the pain in the region of the former pisiform-hamulus coalition, with a complete recovery of range of motion (ROM).

Table 1: Preoperative tests performed bilaterally.

Hand	Right*	Left
Grip test (3 measures) in kg	20/18/18	16/20/15
Pinch test (3 measures) in kg	3/5/3.5	5/5/7
Froment test	Negative	Negative
Ulnar sensitivity	Normal	Normal
Muscle strength	4/5	4/5

*Thumb prosthesis

DISCUSSION

Carpal bones fusion primarily involves two bones at a time but can involve more, with the most commonly described fusion in the literature being between the lunate and triquetral bones.^{3,4} These fusions may be part of congenital malformation syndromes such as otopalatodigital syndrome, Turner syndrome, or foetal alcohol syndrome, among others.^{1,4} Nevertheless, most often they occur isolated and separated from any syndrome or co-occurring malformations. Several unclear physiopathological processes could induce this fusion, including uncavitation during the embryological process, a calcification of the flexor carpi ulnaris or a metaplastic alteration of the pisohamatum ligament to bone tissue.^{3,9,10} However, the uncavitation process is highly disputed since the pisiform is a sesamoid bone and does not form a cartilaginous link with the hamate for it to be cavitated in opposition to the other more classical carpal bone fusions.¹⁰ The real process is still to this day debated in the literature.

In order to better manage the fusion, Minnaar developed in 1952 a classification types to characterize lunate and triquetral fusions, which are the most common, but it was generalized for all carpal fusions.⁵ Type 1 is described as an incomplete fusion taking the form of pseudarthrosis. Type 2 is partial fusion. Type 3 is a complete fusion of the two carpal bones and lastly the type 4 which is a type 3 coupled with another malformation of the carpal bones.^{3,5}

Tsionos et al describe a bilateral coalition of the hamulus and the pisiform bone in a 29-year-old woman, which was treated in two separate procedures one for each hand using a similar technique to our patient with a complete resection of the pisiform, the coalition, and the remaining bony protrusions in a single block.¹¹ Suwannaphisit et al detailed a case of a 13-year-old boy with a congenital pisiform-hamatum coalition presenting as chronic wrist pain; the patient underwent resection of the synchondrosis but not of any carpal bones.¹² On the other hand, Inui et al., in the case of a 13-year-old boy, performed excision of the pisiform bone.¹³ Zeplin et al described a similar case of congenital pisiform-hamatum fusion, which was treated by resection of the synchondrosis followed by screw stabilization of a bone graft, preserving the pisiform bone.¹⁴ In the context of the clinical manifestations, Berkowitz et al. described two cases of ulnar neuropathy due to a pisiform-hamatum fusion, which were surgically treated by excision of the pisiform and decompression of the Guyon canal.¹⁵

In many cases the patients suffering from this pathology present a young age in opposition with our case of a 53-year-old woman, and the context in which we discover the pathology varies greatly, so in the presence of a patient presenting stiffness of the wrist, chronic pain without notion of trauma, professions that involve repetitive movements with signs of involvement of the ulnar nerve, a radiographic exploration with a front, side and three quarter view is advised in research of this condition.

In the literature we can find different approaches in the management of pisiform and hamatum fusions as we saw with many different surgical techniques that give a relieve of the pain in addition to a good restoration of ROM.^{9,12-15} If detected early enough the condition, we can control the symptoms with an immobilization and anti-inflammatory drugs for a period. Furthermore, we can consider multiple local corticosteroid injections to reduce the inflammatory process in the Guyon canal. But ultimately a surgical approach will have to be considered for a complete resolution of the symptoms.

CONCLUSION

Hamulus-pisiform coalition is rare but can cause chronic pain and ulnar neuropathy. When conservative treatments fail, surgical excision is effective, providing complete pain relief and functional recovery.

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