CASE REPORT

Unilateral fusion of the scaphoid and the trapezium

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SUMMARY

Fusion of the carpal bones is a rare anatomical abnormality, caused by a defect in the separation and cavitation during embryonic development. It has a prevalence of about 0.1% and most of the time, patients do not present with symptoms. Symptoms are usually caused by wear and tear of the ligaments attached to the fused carpal fragments. We present a case in which a woman aged 36 years experiences pain caused by a lunato-triquetral instability which in turn is caused by a unilateral complete fusion of the scaphoid and the trapezium. A unilateral complete fusion of the scaphoid and trapezium has not been reported before.

BACKGROUND

The carpal bones are formed during embryogenesis by separation and cavitation of the cartilaginous precursors of the carpals. When there is an incomplete separation or cavitation, a carpal coalition is formed.¹ This is a rare congenital defect with a prevalence of about 0.1%.^{2,3} The first clinical case of carpal coalition was described by Smith⁴ in 1908 and since then, many forms of carpal fusion were described.^{5,6} Fusion of the scaphoid and trapezium, however, is scarcely reported.⁷⁻⁹ In this case report, we present a case with a unilateral complete fusion of the scaphoid and the trapezium with symptoms of lunato-triquetral (LT) instability. Also a possible treatment for this phenomenon is presented and verified using the q-dash and PRWE scoring form.

CASE PRESENTATION

A right-handed woman aged 36 years presented at our outpatient clinic with bilateral wrist pain, which was worse on the left side. The pain was exacerbated by using her hands. At the time, she also had a sense of wrist instability. At this time, the grip strength was diminished. There were no symptoms of pain at night and there was no history of trauma. In the past, the patient had a passing episode of wrist pain. During physical examination, the patient did not have any symptoms of pain. We did not see any external abnormalities. Both wrists had fluid and full range of motion. The Watson test was positive and the shear test at the LT interval was also positive. Further specific wrist tests were negative and tests for neurological disorders were all negative.

INVESTIGATIONS

A series of wrist radiographs were taken of both wrists, including antero-posterior, lateral, ulnar and radial deviation and clenched fist with ulnar and radial deviation. The radiographs showed a unilateral scapho-trapezial (ST) fusion on the right side

(figure 1). A mild scapholunate (SL) dissociation, not DISI deformity was present. There was normal anatomical configuration of the left side (figure 1). CT scan also showed a coalition between the scaphoid and the trapezium as seen on the radiographs. The scan did not show SL dissociation (figure 2).

Full blood workup showed no inflammatory elevation or other signs of autoimmune disease.

DIFFERENTIAL DIAGNOSIS

- ▶ SL dissociation
- ▶ LT instability
- ▶ Post-traumatic
- ▶ Carpal coalition
- ▶ Inflammatory arthritis

TREATMENT

The pain in both wrists might have been caused by an LT instability which, on the right side, could be caused by the congenital fusion of the scaphoid and trapezium. MRI was performed to further confirm LT instability; however, we decided on a conservative approach with a removable wrist brace and stabilising hand-physiotherapy to start with.

OUTCOME AND FOLLOW-UP

After 3 months of treatment, the patient was asked to fill out the q-dash and the PRWE score. All questionnaires showed a significant improvement in pain and mobility.

DISCUSSION

Carpal coalition of the scaphoid and trapezium is a rare congenital defect. Only three case reports could be identified. Interestingly, this is the first time a unilateral fusion is described. Our patient presented with wrist pain at the LT interval. A carpal coalition is normally asymptomatic,¹⁰ but in this case, the scapho-trapezium fusion was symptomatic. In cases where the carpal coalition is symptomatic, it could be the cause of formation of osteoarthritis in non-osseous coalition.¹¹ However, because of the ST fusion, flexion in the scaphoid is not possible and the stresses need to be transferred to the adjacent LT joint, causing a higher stress load on the LT joint and ligament in turn causing the pain.¹² Weinzwieg *et al.*⁷ describe two cases of fusion between the scaphoid and the trapezium; however, in the first case, he describes a partial fusion and the second case, a fusion of the scaphoid and trapezium was found, and a fusion of the scaphoid and trapezoidium. In contrast to the previous studies, in our case, the fusion is complete and isolated between the scaphoid and the trapezium. Also no sign of external abnormalities was seen unlike Apard *et al.*⁸ Wilson *et al.*⁹ describe a

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Figure 1 Scapholunate fusion in the right hand with a normal anatomical configuration on the contralateral side.

Figure 2 CT scans of scapholunate fusion.

bilateral partial and complete fusion of the scaphoid and the trapezium. This is the first mention of a complete, unilateral fusion of the scaphoid and the trapezium. The patient presented with symptoms. The symptoms were localised at the LT interval and

not at the site of the ST fusion or nearby. She did not have symptoms of the SL joint instability as one would expect with an ST fusion. This case demonstrates the complex kinematics of the carpal bones. The effect of conservative treatment was measured using a q-dash and PRWE scoring system. The scores improved in 2 months from 64,47 to 39,47 for the q-dash and 40 to 22 for the PRWE. The conservative treatment therefore seems to be a good option. If symptoms should progress, a reinforcing capsula interposition could be considered.

Learning points

- Carpal coalition of the scaphoid and trapezium is a rare congenital defect.
- A carpal coalition is normally asymptomatic.
- Conservative treatment shows a fair result.
- Always rule out inflammatory arthritis.

Contributors ARP is responsible for planning, collecting, analysing of data and writing of the case report. GK is responsible for analysing of the data and writing and reviewing. G-JK is responsible for reviewing and writing.

Competing interests None declared.

Patient consent Obtained.

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