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A CASE OF SYNOSTOSIS IN THE DISTAL RADIO-ULNAR JOINT

BY

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Union of the two bones of the forearm is a recognized congenital deformity, but it is rare. According to some 200 published cases the synostosis occurs invariably at the proximal radio-ulnar joint, though in a few cases the distal joint may also be affected, but usually in these cases the bones are also generally malformed. *Jemma* says that he could not find any case in the literature in which only the distal joint was involved, but he himself described a case in which the whole arm was deformed and shortened by union of the ulna and radius above the wrist. Synostosis may also occur after an arthritis which has led to ankylosis and gradual formation of a bone bridge. In infections of the joints, ankylosis generally includes both the radio-ulnar joints and the adjacent joints of the elbow or wrist.

In the case described here there was synostosis of the distal radio-ulnar joint, without any other change or deformity of the bones of the limb. I have been unable to find any similar case in the literature.

The patient is a female professional pianist, aged 38, who, in February 1948, sought advice for inability to rotate the left forearm. The hand was held in mid-position between pronation and supination and there was no rotation. Movements of the wrist and fingers on the other hand were quite normal. Radiography showed synostosis at the distal radio-ulnar joint (Fig. 1); the proximal joint was normal. At first sight the picture suggests a congenital synostosis. The outlines are regular and there is no evidence of an earlier pathological process. The history, however, excludes a congenital origin. The patient states definitely that she had

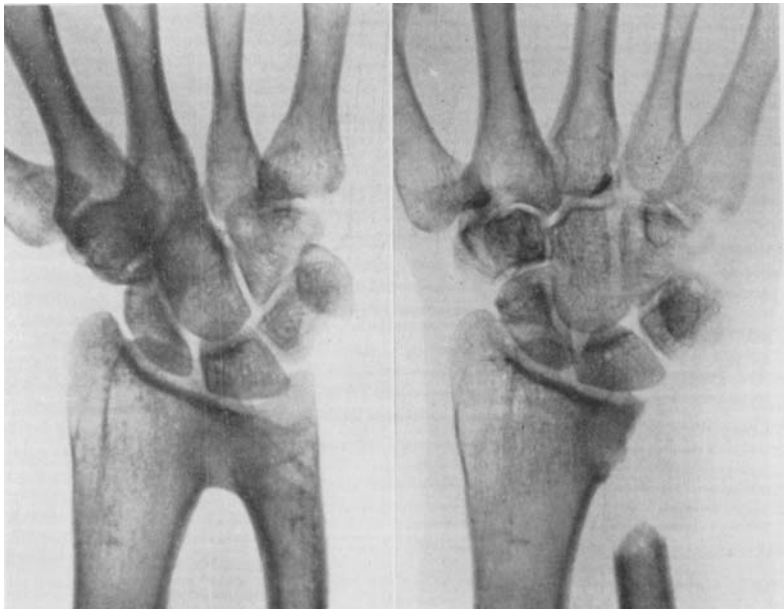

Fig. 1.
Radiograph before and after operation.

previously been able to rotate the forearm, particularly when playing the piano. The limitation developed in 1935, i.e. 12 years earlier, after a high fever with acute onset accompanied by severe tenderness, swelling and a bluish-red discoloration of the left wrist. At the same time she had milder pains in the other joints. The high fever lasted for 10 days and was followed by mild fever for about 10 weeks. After immobilization the wrist became stiff. Subsequent x-ray treatment gradually improved the movements, but without any improvement in rotation. These reports were obtained from a hospital for rheumatism, to which the patient was admitted one year after the acute onset. The diagnosis there was polyarthritis rheumatica chronica. The joint involvement was then reported to be mild, but the S. R. varied between 40 and 60 mm. There was no rotation of the left forearm, and radiography showed synostosis of the distal radio-ulnar joint. Re-examination of the pictures showed that the bony connection was then less compact than now.

With regard to the pathogenesis, it would seem improbable that polyarthritis can produce ankylosis of this joint with retention of normal movement in the wrist. *Payr* writes, in his book "Gelenksteifen und Gelenkplastik", that the radio-ulnar joint with its loose capsule, its

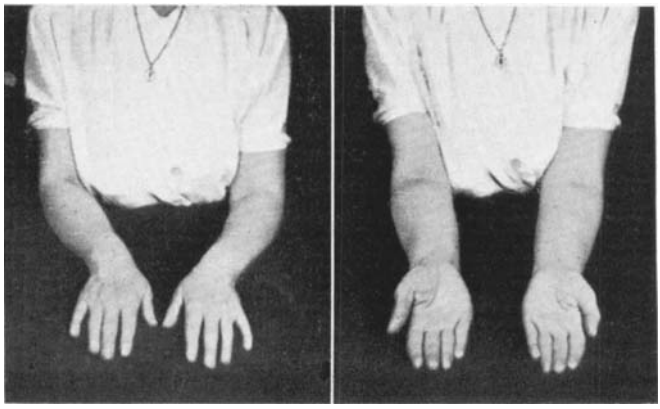

Fig. 2.
Pictures showing pronation and supination after operation.

unique structure, and its independence from the radio-carpal joint, is rarely the site of ankylosis, and that when it does ankylose the radio-carpal joint is also involved. Further, polyarthritis is unlikely to give rise to ankylosis in so short a time. The description of the illness suggests that the condition was septic or, more exactly, a septic metastatic focus, which might conceivably have healed with resultant bony ankylosis in a relatively short time. Gonorrheal arthritis has a strong tendency to ankylosis, but it probably never occurs alone in this small joint. On the whole, it is remarkable that a serious infection could be confined to the radio-ulnar joint, which is so intimately connected with the radio-carpal joint. However, they are separated by the discus articularis, a triangular ligament with its base attached to the radius and its apex to the processus styloidei ulnae. According to text-books of anatomy there is sometimes a narrow fissure in the disc near its attachment to the radius connecting the two joints, but this connection is not general. *Patrick* studied the radio-ulnar joint by arthrography and found that the contrast medium only entered the radio-carpal joint in cases with fractures in this region, and in these cases the disc had been torn.

In discussing the treatment of radio-ulnar synostosis one should perhaps caution against intervention in patients in most occupations. As already described above, the position of the hand between pronation and supination was satisfactory. This case, however, was a pianist, who intended to train further as a professional. She compensated the loss of rotation by rotation and abduction at the shoulder-joint; this enabled her to get her fingers down onto the keys, but it was a tiring and ugly position. Arthroplasty of this small joint must be considered to be

hopeless. For painful and limited rotation after fractures of the radius, resection of the distal part of the ulna may give good results, and this was the method we used in this case. The operation offered no technical difficulties. The bone was excised and the synostosis was chiselled through without opening the wrist. The disc and capitulum ulnae were quite adherent. Normally, a small cartilage-covered area is found, i.e. a joint where the disc glides transversely on the capitulum during pronation and supination. Adhesions preventing these movements may also occur after fractures. Local anaesthesia was administered, and after resection the arm could be passively pronated and supinated to the fullest extent. Movements, first passive, later active, were begun on the day after operation. The movements of the fingers and wrists soon became normal, and on the 15th day the patient was able to resume her piano-playing. The power of pronation and supination improved rapidly, although this movement had been lost for 12 years.

The patient was re-examined 6 months after the operation; she was quite recovered, and was able to carry on her profession without disability. The movements of the wrist and fingers, and supination were normal; pronation was slightly limited. The cosmetic result was also excellent. The ulnar defect was scarcely noticeable (Fig. 2).

SUMMARY

A case with isolated synostosis of the distal radio-ulnar joint, probably caused by a septic metastatic focus is described. It was successfully treated by resection of the distal end of the ulna.

RESUME

Description d'un cas avec synostose isolée de l'articulation radio-ulnaire distale, probablement causée par un foyer metastatique. Ce cas est traité avec succès par la résection de l'extrémité distale du cubitus.

ZUSAMMENFASSUNG

Ein Fall von isolierter Synostose des distalen radioulnar Gelenkes, wahrscheinlich herforgerufen durch einen septisch-metastatischen Herd, wird beschrieben. Sie wurde mittels Resektion des distalen Endes der Ulna erfolgreich behandelt.

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