

Radiological studies of arthritis of the carpo-metacarpal joint of the thumb

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Radiographic assessment

Standard radiographic evaluation of the trapezio metacarpal joint should include the following:

1. Antero-posterior (AP) and lateral (Fig. 1).

Abstract

Osteoarthritis of the trapezio metacarpal joint of the thumb is a common problem. Good X-ray studies will help to demonstrate the problem better and therefore the correct treatment can be applied.

Osteoarthritis of the trapezio metacarpal joint is a common problem in middle-aged women, with a reported prevalence of 33% in post-menopausal women.¹ The clinical diagnosis is usually not difficult, with pain as the main symptom during power grip. The grinding test, where axial pressure is exerted on the joint and rotational movement is performed at the same time will reproduce the pain. However, the staging of the arthritis is done by X-rays and treatment is planned accordingly. Therefore one needs accurate X-rays.



Fig. 1. AP X-rays of a patient with CMC pain. The (L) side shows signs of arthritis with one-third subluxation. The (R) side shows less than one-third subluxation.

2. Dynamic stress views. The dynamic stress view is an AP view with the radial borders of the distal phalanx of the thumb pressed together. This view is useful to demonstrate ligamentous laxity with subluxation of the joint (Fig. 2).²

3. The Robert pronated AP view.^{3,4} This AP view is taken with the dorsal surface of the thumb metacarpal positioned on the X-ray plate by hyperpronation of the forearm and internal

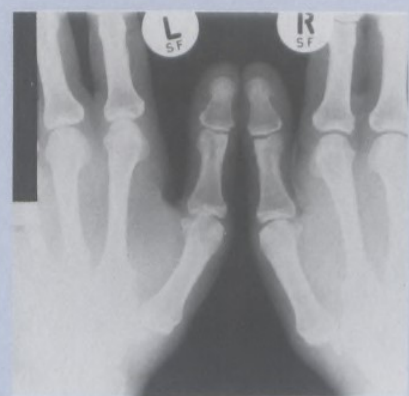


Fig. 2. Stress views of the same patient show the subluxation more clearly and will change the classification and the treatment of the patient.



Fig. 3. This is the Robert's views of the same patient. Now one can see the arthritic changes very clearly, even on the (L) side, which looked almost normal on the ordinary AP views.

rotation of the shoulder. This projection provides excellent views of all four trapezoidal facets and demonstrates arthritic changes very well (Fig. 3).

According to Eaton and Littler² four stages of carpometacarpal (CMC) arthrosis are recognised roentgenographically:

Stage I: In the synovitis phase, before significant capsular laxity has developed, the roentgenogram may show slight widening of the joint space (joint capsule distension due to

effusion), normal articular contours, and less than one-third subluxation in any projection.

Stage II: Significant capsular laxity is now present. There may be at least one-third subluxation of the joint. The instability is particularly apparent on stress roentgenograms. Small bone or calcific fragments less than 2 mm in diameter are present, usually adjacent to the volar or dorsal facets of the trapezium.

Stage III: Greater than one-third subluxation is present. Fragments greater than 2 mm are present dorsally or volarly, usually in both locations. There is slight joint-space narrowing.

Stage IV: Advanced degenerative changes are now present. Major subluxation is apparent, and the joint space is very narrow, with cystic and sclerotic subchondral bone changes.

Dell *et al.*⁵ renewed their classification in 1988:

Stage I: The CMC joint is normal or early narrowing may be present, no subluxation or osteophytes.

Stage II: Narrowing or small ulnar osteophytes, subluxation less than one-third.

Stage III: Marked narrowing and significant osteophytes, subluxation more than one-third, occasional peritrapezial arthrosis.

Stage IV: Loss of articular contact, more significant subluxation. Often peritrapezial arthrosis.

It is important to demonstrate and recognise subluxation as described in both Eaton and Littler² and Dell *et al.*⁵ classification stages I and II because at this stage a repair of the beak ligament, to prevent subluxation, is still a surgical option. In stage III disease, excision of the trapezium has become the treatment of choice, although arthrodesis of the trapezio metacarpal joint is also a possibility.

In stage IV disease with peritrapezial arthritis excision of the trapezium or a replacement of the CMC joint is the treatment of choice.

Good radiographic studies make it possible for the orthopaedic surgeon to stage the disease accurately and therefore to apply the right treatment option.

References

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4. Robert P. *Bulletins et Memoires de la Societe de Radiologie Medicale de France* 1936; **24**: 687.
5. Dell PC, Brushart TM, Smith HRJ. Treatment of trapezio-metacarpal arthritis: Results of resection arthroplasty. *J Hand Surg* 1978; **3**: 244.

Differential Diagnosis in Abdominal Ultrasound 2/e

This practical reference combines an extensive list of differential diagnoses with concise descriptions of important clinical and sonographic features most commonly found in abdominal and pelvic ultrasound studies. Each chapter contains a brief overview of a specific region, in which anatomy, normal measurements, and tips for performing an accurate, complete study are described. Pathologic processes typically identified with ultrasound are discussed in short paragraphs providing information on causes and sonographic appearance. Most importantly, the authors explain the rationale for obtaining certain scans and why specific features must be identified for a complete and useful examination.

Features

- Ultrasound features are considered in conjunction with a full clinical history and physical exam. Shortens the list of possible diagnoses and guides the clinician to a firm diagnosis or to further relevant investigations.
- Sonographic features are well described and all important normal measurements are included. Will assist the clinician in diagnostic test selection and in interpreting the significance of findings in ultrasound reports.
- The gamuts are well formulated by introducing the most common causes first. Saves the reader valuable time by weighting the causes towards clinical importance and frequency.
- Addition of all the latest modalities and their clinical application (power doppler, colour doppler)
- Increased coverage of sonographic appearance/differential diagnosis in pediatric patients.

RAL Bisset and AN Khan, Dec 2001, 576 pp, WBS, R780

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