Rheumatoid Wrist

Essay

Submitted for Fulfillment of Masters Degree in Orthopaedic Surgery

Presented by

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Aim of the Work

An essay to study and evaluate the pathology, complications, diagnosis and different methods of management of rheumatoid wrist.

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Abstract

- **Rheumatoid disease** affects almost all of the musculoskeletal system as well as some internal organs.
- The condition is widespread but the brunt of the attack fall on **synovium**.
- Early **symptoms** are pain, swelling and stiffness of the wrist.
- **Serological tests** for rheumatoid factor are positive in about **80%** of patients.
    - **Synovectomy**,
    - **Tendon repair** or **replacement**,
    - **Joint stabilization**,
    - **Arthrodesis**,
    - **Osteotomy** and **arthroplasty** are treatment options.

Key words: Rheumatoid Wrist.

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Introduction

Introduction

Rheumatoid disease affects almost all of the musculoskeletal system as well as some internal organs, such as the heart and lungs, pleura, eyes, lymph nodes and vessels. In the case of the upper extremity, we should know the time of onset and type of disease, as the extent and degree of tissue involvement varies among the different types of rheumatoid disease (**Lluch, 2006**).

The condition is widespread but the brunt of the attack fall on synovium. The constant and characteristic feature is a chronic inflammation; an inconstant but pathognomonic lesion is the rheumatoid nodule **(Solomon, 2001)**.

Before examining the wrist, shoulder and elbow function should also be assessed. Clinical examination of the hand joints and wrist is most important, as all deformities, including most tendon ruptures and tendon dislocations are secondary to joint involvement. We should carefully examine for the presence and intensity of joint synovitis, and the degree of joint deformity and record the range of active and passive joint mobility (**Herren and Simmen, 2004)**.

The onset of rheumatoid arthritis is usually insidious with symptoms emerging over a period of months. Occasionally the disease starts quite suddenly. Early symptoms are pain, swelling and stiffness of the wrist. At first the swelling is usually localized to the common extensor tendon sheath or the extensor carpi ulnaris, but as time progresses the joint becomes thickened and tender. Gradually the wrist becomes unstable. Subluxation of the radioulnar joint causes the head of the ulna to pop up on the back of the wrist (the piano-key sign). The radio carpal joint slides into adduction and volar subluxation. This usually proceeds, and may contribute to, the classic ulnar drift deformity of the fingers. Tendon lesions are common in the late stages. The first to rupture is usually the extensor digiti minimi, followed by the extensor communis tendons of the little and ring fingers. The flexor tendons seldom rupture but thickening of the synovium in the carpal tunnel may cause median nerve compression. These patients have normocytic, hypochromic anaemia. In active phases the ESR is raised, CRP may be present and mucoprotein levels are high.

Serological tests for rheumatoid factor are positive in about 80% of patients. X-rays will show osteoporosis and erosion of the ulnar styloid and of the radio-carpal and inter-carpal joint **(Solomon, 2001)**.

Radiological examination should be done in all cases to determine the degree of joint cartilage destruction, joint subluxation, and even joint ankylosis which is some times difficult to be assesed on clinical examination due to a fixed joint deformity from extra-articular causes. CT scan examination can be useful for wrist joint assessment. (**Leslie, 2001)**.

Magnetic resonance imaging provides high accuracy for detection and grading of erosions and synovitis (**Ejbjerg, 2005).**

Management is guided by five injunctions: 1- to stop the synovitis, 2- keep the joints moving, 3- prevent deformity, 4- reconstruct, 5- rehabilitate. At the onset of the disease the control of pain and stiffness is with NSAIDs. Low dosage corticosteroids and second line drugs such as gold and penicillamine are used in the early phase of established rheumatoid arthritis. Additional measures include the injection of long-acting corticosteroid preparations into the inflammed joints and tendon sheaths **(Solomon, 2001)**.

A very accurate preoperative assessment of both the functional and social implications of the patient's problems should be performed. This forms the basis upon which an opinion as to which surgical procedures would be of benefit in any given patient situation can be made. At the same time it has to be taken in mind the importance of various structures in the surgery. These have been outlined: nerves, flexor tendons, wrists, thumbs, metacarpophalangeal joints, extensor tendons, proximal interphalangeal joints, and distal interphalangeal joints (**Stanly**, **2006).**

During the phase of progressive erosive arthritis operative treatment is indicated. At first this consists mainly of soft tissue procedures (synovectomy, tendon repair or replacement and joint stabilization). In late rheumatoid disease severe joint destruction; fixed deformity and loss of function are clear indications for reconstructive surgery (arthrodesis, osteotomy and arthroplasty) **(Solomon, 2001)**.

Patients with rheumatoid arthritis can and do accommodate to wrist arthrodesis or wrist arthroplasty (**Murphy, 2003).**

It is important to bear in mind that each surgical procedure takes a definite recovery time and takes a little more out of the patients, particularly if they have had rheumatoid arthritis for many years and are perhaps less able to withstand repeated major surgical procedures. These patients have often had hip surgery, knee surgery, shoulder surgery and elbow surgery before they come to their hand and wrist surgery. It is very important to ensure that patients are not overwhelmed by this list of surgical procedures that have been identified as being helpful **(Grosland, 2004).**

ANATOMY OF THE WRIST

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BONY STRUCTURE (Fig. 1, 2, 3)

The bony structure of the wrist and hand has been will known to anatomists and surgeons since Vesahus first described and illustrated its structure in 1543. It is only relatively recently, however, that the delicate and complicated nature of the wrist has been fully appreciated. Basically, the wrist is a synovial joint of triaxial ellipsoid variety, which comprises the interconnecting group of joints between the hand and forearm and, includes the radiocarpal, midcarpal, the radioulnar joints; it is composed of the distal ends of radius and ulna, the proximal and distal carpal rows. The orientation of the wrist is based on the skeletal landmarks of the distal radius (**David and Harold, 2005**).

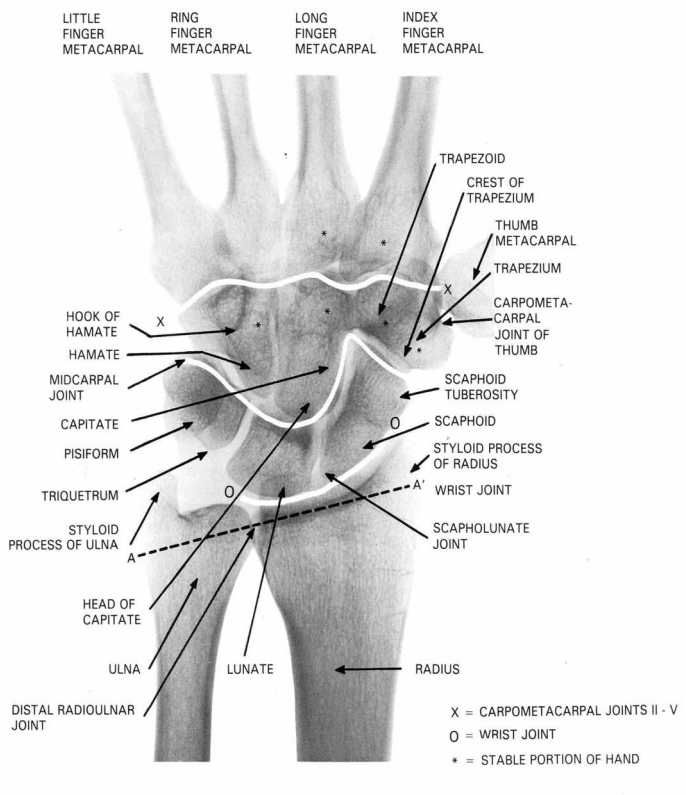

Figure (1): PA radiograph of a normal wrist **(Sandzen, 2001).**

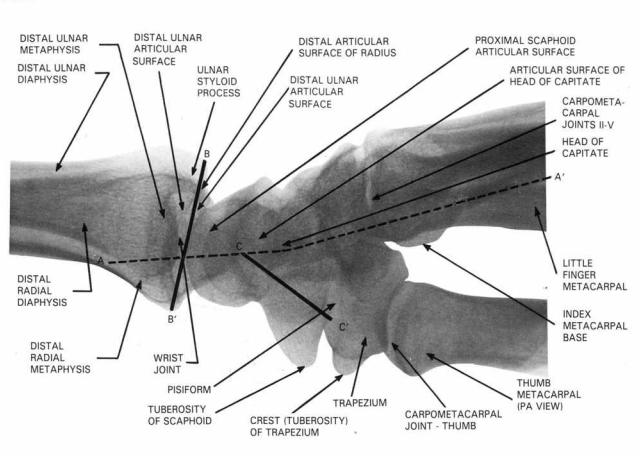

Figure (2): Lateral radiograph of the wrist **(Sandzen, 2001).**

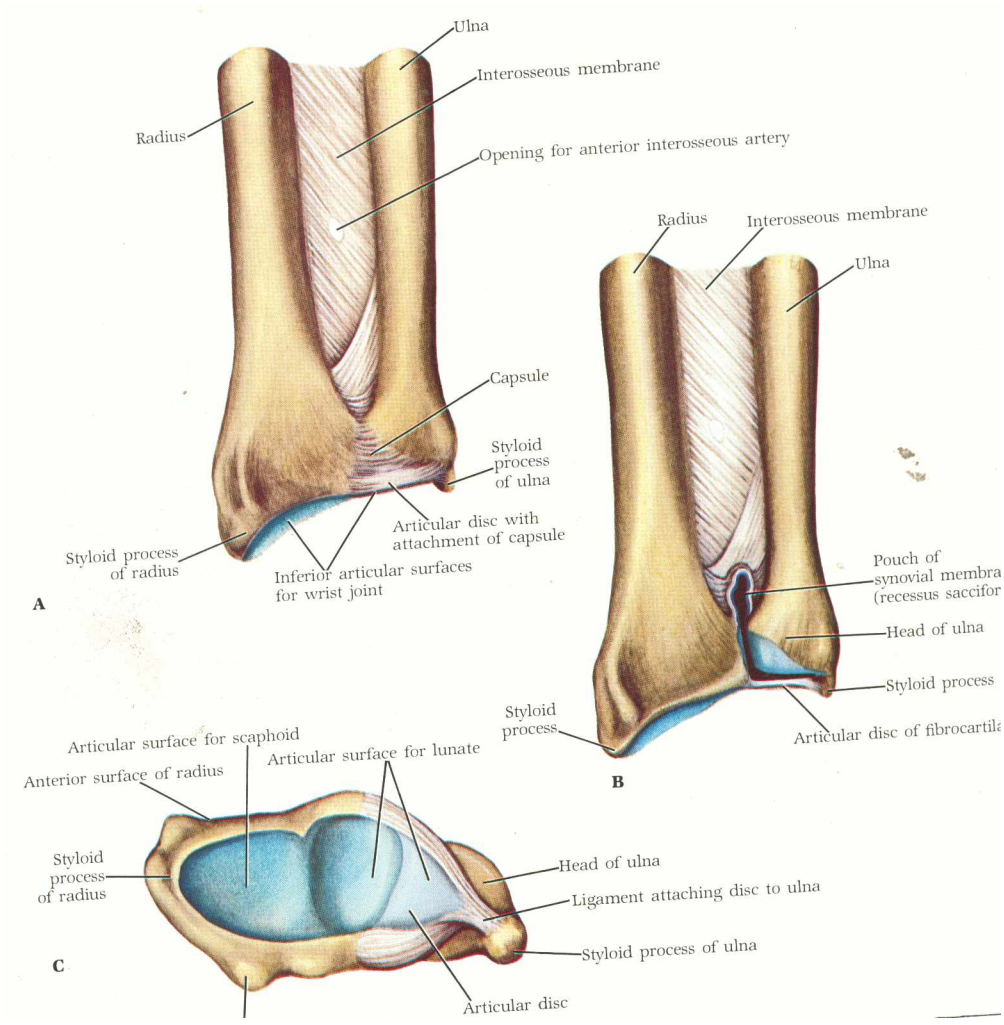

Figure (3): A) Anterior view of distal radius and ulna,

B) Coronal section of distal radius and ulna,

C) Inferior view of distal radius and ulna **(Snell, 1998).**