



Review article

Surgical management of the elderly elbow

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ABSTRACT

The elbow has a major role in helping with the positioning of the hand in space. Any pathology of the joint can result in pain, loss of function and difficulties with activities of daily living. With an increasingly elderly population the degenerative conditions affecting the elbow are becoming more prevalent. Besides traumatic injury, the more commonly encountered problems are osteoarthritis, inflammatory arthritis, nerve compression and stiffness. An awareness of these conditions is important for those who provide care to this patient group. Whilst many of these conditions can be managed conservatively in primary care, some patients are referred to secondary care and elect for surgical treatments. This review considers the surgical treatments for the common elbow pathologies in the elderly population, including the potential complications associated with such treatments.

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1. Introduction

The elbow is a complex synovial hinge joint consisting of the radio-capitellar, ulno-humeral and radio-ular articulations, surrounded by ligaments, joint capsule and muscles. As a consequence, the elbow is at risk of a number of disorders. Considering these disorders as either intra-articular or extra-articular is a useful pragmatic approach to clinic diagnosis and management. This review does not deal with fracture treatments, but aims to help inform the readers about the common orthopaedic elbow problems seen in the elderly and reviews current surgical treatments. (Table 1).

Primary osteoarthritis of the elbow is probably the most common elbow problem and is estimated to affect 2% of the population, with an average age at presentation of 50 years (ranging from 20 to over 70 years of age) [1]. The exact aetiology is not fully understood but is thought to involve processes separate to those of normal aging [2]. For example, repetitive loading of the elbow joint in male manual labourers seems to increase the risk of osteoarthritis [3]. Degenerative changes also occur more frequently in the radio-capitellar joint than the ulna-trochlear joint [4].

Post-traumatic and secondary osteoarthritis results from elbow injury or cartilage derangement or damage from another cause. Damaged articular cartilage or joint incongruity results in secondarily accelerated cartilage wear. Fractures of the distal humerus, olecranon and radial head are common and because they are often intra-articular these also directly disrupt the articular cartilage.

The elbow joint is also a common site of *nerve compression*, with the ulnar nerve being the second most common compression neuropathy (after the median nerve at the wrist) resulting in cubital tunnel syndrome [5]. In the majority of patients, the aetiology of cubital tunnel syndrome remains unclear but anatomical causes have been commonly implicated (Table 2).

Another common complaint is *elbow stiffness*. The causes of elbow stiffness may be classified as either intrinsic or extrinsic [7]. Intrinsic causes are commonly a result of trauma resulting in some derangement within the joint, osteoarthritis, loose bodies, loss of joint congruity and articular adhesions. Extrinsic causes include capsular, ligamentous or musculotendinous contractures and heterotopic bone formation [8]. While rarer, heterotopic bone formation is the formation of aberrant bone in the soft tissues around the elbow, most commonly due to direct trauma and haematoma formation but also seen after head injuries and in burns patients. It can occur at any age [9,10].

Table 1

Common elbow problems in the elderly.

- Primary osteoarthritis of the elbow
- Post- traumatic and secondary osteoarthritis
- Nerve compression
- Elbow stiffness
- Rheumatoid and Inflammatory arthritis

Table 2

Common causes of cubital tunnel syndrome.

- Osteophytes from osteoarthritis
- Malunion elbow fractures resulting in cubitus valgus [6]

Rheumatoid and other inflammatory arthritis of the elbow can cause many of the problems detailed above and these patients are usually managed through a multi-disciplinary approach involving rheumatology and orthopaedic specialties.

In managing elderly elbow problems, the focus initially should be conservative and medical treatments. Activity modification, analgesia and physiotherapy are often all that is required, although a correct diagnosis is important. When surgery is considered, it must be remembered that the elbow is an unforgiving joint regarding injury (including surgery). The suitability of elbow surgery for a patient needs to be assessed on an individual basis with the clear aims and risks being understood by the patient. One of the key concepts of successful surgical elbow intervention revolves around rehabilitation potential.

2. Osteoarthritis

2.1. Clinical presentation

Osteoarthritis of the elbow is characterised predominantly by discomfort and a reduction in the range of elbow movement, although can present with locking and ulnar nerve symptoms. The patient tends to report an inability to fully extend the elbow and experiences dull aching pains which may be worse at night. In addition, patients may report being unable to perform activities of daily living such as opening doors, using a telephone or eating, particularly if flexion falls below a functional arc of 30–130° [11]. If osteoarthritic changes are present in the radio-capitellar joint, forearm rotation may be limited or exacerbate any symptoms.

2.2. Investigations

Generally anteroposterior (AP) and lateral radiographs are sufficient to make the diagnosis. These typically show osteophytes, along with joint space narrowing, sclerosis, subchondral cysts and loose bodies. Loose bodies can be difficult to visualise on standard radiographs; up to 30% of loose bodies are not detected on plain radiograph [12,13]. In these circumstances, further imaging such as Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) may be helpful.

2.3. Surgical treatments

Arthroscopic (keyhole surgery) debridement has been commonly performed for elbow osteoarthritis. Surgery has typically involved osteophyte resection, removal of loose bodies and capsular release, however evidence for its use has been mainly limited to several small retrospective studies, although positive results and improvements in range of motion and patient reported outcome measures have generally been reported [14,15]. One trial assessing arthroscopic treatment for elbow arthritis compared arthroscopic treatment with open debridement [16]. The study reported a greater reduction in pain with arthroscopy compared to the Outerbridge-Kashiwagi (OK) open procedure at 35 months, but with greater improvements in elbow motion seen with the OK procedure. The authors concluded that in patients where pain is the main symptom, arthroscopy is preferred, whereas if loss of range of

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