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Review Article

Rotator cuff repair in older patients

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Keywords:
Rotator cuff repair
Elderly patients
Over 65 years

ABSTRACT

Increasingly, older patients expect a higher level of independence than people of previous generations. Traditionally rotator cuff tears in patients over 65 years of age were thought to be unsuitable for surgical repair even though patients may have reduced shoulder function as a result. With improved health of the older population, surgeons are now prepared to repair the torn rotator cuff. Published results of this surgery are discussed. Other treatment options such as physiotherapy, injections together with subacromial decompression, cuff debridement, tuberoplasty and reverse polarity shoulder replacement are considered.

1. Introduction

Rotator cuff tear (RCT) is a common cause of shoulder pain. MRI studies have shown the prevalence to be 28% in subjects over 60 years,[1] rising to 38% of over 70 years,[2] while 30% of cadavers of over 60 years have rotator cuff tears.[3] The incidence is expected to grow as the population ages and remains active. This same population also expects to be independent and is reluctant to accept functional limitations.

The age of 60 or 65 years, the retirement ages in developed countries, is said to be the beginning of old age. The United Nations describe 'older' people as those above the age of 60 years. The World Health Organisation reported that better living standards and nutrition, due to socioeconomic development in Asian developing nations, is reducing death rates and increasing the elderly population.[4] This explosion of the elderly population is inverting the demographic pyramid to a "top heavy" configuration. The elderly now consider that their longevity is preserved through keeping active and maintaining independence.[5]

In both the developed and developing worlds alike, chronological time has little or no importance in the meaning of old age with biological ageing being a more practical marker.[6] Taking into account the physical, mental and social functioning of each elderly individual, rather than solely considering chronological age would be more meaningful in guiding physicians in the management of lifestyle altering illnesses. The management of orthopaedic conditions, including RCT in the older patients should thus be considered in the same manner.

2. Rotator cuff tear and ageing

The pathogenesis of RCT has been extensively researched but is still not fully understood. RCT occurs through a complex

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2214-9635/$ – see front matter
http://dx.doi.org/10.1016/j.jajs.2013.12.001

interplay of intrinsic (intratendinous) factors and extrinsic factors. Trauma can certainly be identified in some presentations but equally, RCT's could occur in a proportion of patients without identifiable injury.

Intrinsic changes within the rotator cuff accompany ageing, the most important being reduction in vascularity of the tendon. Furthermore, age negatively impacts on tendon properties, with decreased elasticity, tensile strength, increased calcification and fibrovascular proliferation.[7] It is not clear if these factors contribute to tendon tears or vice versa, but we do know that both increase proportionately with age.[8]

Not surprisingly, RCT dimension correlate positively with age, with greater proportion of massive RCTs (>5 cm) observed in >65 years. Consequently, more technically challenging RCT repairs in this patient group are encountered. Anchoring RCT repairs is also compromised, as osteoporosis around the greater tuberosity is frequently present.[9,10] Increasing age has also been correlated with increasing re-rupture rates and poorer outcome following repair.[11,12]

Furthermore, the elderly frequently have comorbidities such as diabetes, rheumatoid arthritis and renal disease that weaken tendons and impair healing response. In particular, the increasing prevalence of obesity and diabetes in the ageing population is a major contributing factor to tendinopathy.[13] These, and other comorbidities, pose surgical and anaesthetic challenges.

For the reasons cited above, there has historically been reluctance among shoulder surgeons to offer surgical repair for RCT in this group. Some even argue that RCTs are natural progression of ageing and do not represent a pathological process. As symptoms of weakness, pain and functional limitations becomes unacceptable to the active elderly in our society, this view is increasingly disputed. Anaesthetic advancements, such as regional anaesthesia and surgery without general anaesthetic, together with refinement in surgical techniques, have encouraged repair of RCT to be offered.

3. Clinical presentation and indication for RCT repair

Whilst RCT can often be minimally uncomfortable, there are some classic symptom and signs. On presentation, typical features of RCT are pain over the anterolateral aspect of the shoulder, radiating towards the deltoid insertional area. This pain might frequently take the form of modest muscular ache. Sharp catches of mid arc impingement pain may also be observed. In advanced disease, weakness in mid abduction and flexion becomes apparent. Nocturnal pain is also frequently encountered. Pseudoparalysis, where the deltoid defunctions as it is no longer under tension due proximal migration of the humerus, usually represent advanced disease. In such circumstances RCT repairs might be prohibitively challenging. However, one must distinguish between true pseudoparalysis as opposed to pseudoparalysis from pain, as the RCT in latter might still be repairable.

Diagnostic tests have been extensively debated but ultrasonography performed by a skilled operator is reliable. This is the standard practice in our institution. MRI without arthrogram is notoriously unreliable in the shoulder and we would urge that if any such scans are to be undertaken, gadolinium arthrography enhancement is a prerequisite.[14]

3.1. *Indications for treating a cuff tear in over 65*

The aims of rotator cuff repair surgery are to reduce pain and improve strength and function. The argument against repairing cuff repairs in older patients, when surgery is not contraindicated, requires review. As stated earlier, older people are functioning at a higher level at a greater age than in previous generations and there is a pressing need to maintain upper limb function in this patient group.

Surgery is indicated when symptoms fail to resolve despite non-operative measure. Particularly, repair of RCT should be considered if the tear is acute and traumatic, the tear is small and the cuff not retracted, and if the cuff tendon appears to be of relatively good quality on pre-operative investigations.

The RCT is most reliably and definitively assessed at the time of surgery following a thorough bursectomy. If the tear appears reducible to the footprint, releases are performed, comprising of subacromial bursa excision, releases of adhesions, coracohumeral ligament release and interval slides. The improved tendon excursion allows the rotator cuff to be repaired without tension, either with a single or double-row configuration. It is when the cuff is retracted or the tissue appears poor that we do not attempt a repair, especially if the patient has got a pseudoparalysis.

In the situation where surgery is already underway and the cuff appears repairable, we believe that there is no greater morbidity with repairing the cuff rather than debridement only. Indeed studies suggest patients who have undergone repair have better functional outcome than those undergoing debridement alone.[15–17] In our experience, the cuff repair does not add considerably to the length of surgery or the morbidity of the patient. Following cuff repair we immobilise the shoulder in a sling for 4 weeks allowing passive motion. We have not found this to be difficult for our older patients or to be associated with any increase in morbidity such as frozen shoulder.

There are situations where we believe RCT repairs in patients over the age of 65 years should not be considered. Patients unsuitable for RCT repair include those with significant frailty, patients who are unable to comply with postoperative rehabilitation or those with advanced RC disease. In some cases other operations should be considered, such as in the cases where cuff tear arthropathy is present and joint replacement surgery is more appropriate.

The more controversial area encountered in indicating repair is the situation of mildly symptomatic patient with investigation-proven RCT. The argument for a surgical repair is the prevention of deterioration towards advancing weakness and pain and avoidance of cuff tear arthropathy. In our unit, we feel that this argument remains to be proven and as such, we counsel against repairs in such situations. The benefits of surgery has not been shown to clearly outweigh potential risks, hence RCT repair surgery is only offered if there are intrusive symptoms and limitation of function.