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BJSM Editorial

Title:

Bloodletting for pneumonia, prolonged bed rest for low back pain, is subacromial decompression another clinical illusion?

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Bloodletting for pneumonia, prolonged bed rest for low back pain, is subacromial decompression another clinical illusion?

In 1972 Charles Neer published a clinical commentary proposing that abrasion from the antero-inferior aspect of the acromion resulted in 95% of all rotator cuff (RC) pathology. The associated condition, termed subacromial impingement syndrome (SIS), has become the most commonly diagnosed musculoskeletal condition involving the shoulder. Others went on to suggest a causative relationship between acromial morphology and RC pathology, and clinical tests such as the Neer sign and the Hawkins's test were described to support a diagnosis. Acromioplasty, also known as subacromial decompression (SAD), is a surgical procedure widely used to eradicate the hypothesised source of the irritation. Between 1996 and 2006 the number of SADs increased in New York State (USA) by 254% and from 2001 to 2010 in England (UK) by 746%,¹ with successful outcomes being reported in up to 80% of cases. There has been a concomitant 141% increase in the number of surgical repairs of the RC performed between 1996 and 2006. Embedded within this figure is a 600% increase in the number of repairs performed arthroscopically. Many physiotherapists and other health professionals have embraced the SIS model describing how poor upper body posture, colloquially termed a forward head posture, is associated with an increase in the thoracic kyphosis with an imbalance of the shoulder girdle muscles. This results in an abnormal scapular posture (typically anterior tilt and downward rotation) resulting in impingement and RC pathology. The extent by which postural abnormalities follow a defined pattern has been previously challenged² and in this edition, Ratcliffe et al have reviewed the literature and have concluded that there is no evidence for a consistent abnormal posture of the scapula for those diagnosed with SIS.

An alternative theory suggests that the symptoms associated with SIS result from intrinsic failure of the RC tendons (RC tendinopathy) primarily due to excessive and mal-adaptive loading and potentially influenced by age, lifestyle, hormonal status and genetics. McCreesh et al (this edition) have reported on the reliability of measuring the acromiohumeral distance (AHD) and elsewhere have (i) demonstrated the validity and intra and inter-tester reliability of measuring the AHD³ and (ii) that when exposed to an exercise fatigue protocol, people diagnosed with RC tendinopathy demonstrate significant swelling of the RC tendons.⁴ This finding suggests that an alternative explanation for the symptoms associated with RC tendinopathy may be due to an intrinsic mechanism involving tendon swelling and not primarily from acromial abrasion.

Surgical procedures for SIS and RC tears are typically recommended to rectify abnormalities in structure, but this in itself persists as an area of uncertainty. The combined cost of SAD and RC repairs performed in the UK National Health Service would conservatively exceed GB£60,000,000. This does not include the associated costs to the individual and the economy. The increase in surgery and the staggering costs associated with these procedures need be critically examined as research findings suggest that; (i) there is no difference in outcome between SAD and a graduated exercise program for people diagnosed with SIS at 1 year, 2 year and 5 year follow-up. In addition, 80% of people on a surgical waiting list for SAD who had previously failed conservative care who underwent a 12 week comprehensive rehabilitation program reported improvement and choose not to undergo surgery.⁵

For those diagnosed with atraumatic partial RC tears (<75%) no clinical differences were reported for people randomised to (i) 10 physiotherapy exercise sessions, (ii) physiotherapy *and* acromioplasty or (iii) physiotherapy *and* acromioplasty *and* RC repair, at one year follow up, with the surgical procedures costing substantially more than the exercise protocol.⁶ For those with atraumatic full thickness tears non operative treatment was effective at 2 year follow up reducing the need for surgery by 75%.⁷ Difficulties in deriving a structural diagnosis⁸ together with consistent reports of a poor correlation between observed structural failure and symptoms² and findings that clinical outcomes may be comparable for those with intact and failed RC repairs following surgery⁹ oblige ongoing research and evaluation of the role of surgery. Placebo surgery has shown to be as effective as surgery performed to rectify structural abnormalities in other musculoskeletal conditions and this type of research is required to better understand the benefits of SAD and RC repairs. For those treating RC tendinopathy, relative rest and a period of graduated rehabilitation are considered essential components of management.² Following SAD and RC repair there are substantial periods of relative rest followed by graduated rehabilitation often at a level unachievable in non-surgical rehabilitation protocols. It may be that the relative rest imposed by the surgery and the graduated post-surgical RC reloading rehabilitation and motor control programmes promotes RC homeostasis and facilitates a return to improved function, and not the surgery itself.

There are many other areas requiring ongoing investigation, including the role of central sensitisation and cortical changes associated with RC tendinopathy. The relationship between psychosocial influences and low back pain has been investigated. The influence of psychosocial issues for people experiencing musculoskeletal shoulder pain, including RC tendinopathy, lacks an equivalent depth of understanding.

Results for both surgical and non-surgical interventions commonly report suboptimal outcomes associated with persistent morbidity. Clinicians face the challenge of translating the available research, which is often of low to moderate quality, and commonly conducted in populations not representative of their own clinical practice. These substantial deficiencies in our knowledge challenge both clinicians and researchers to engage in on-going and innovative research.

Although potentially many millions of people worldwide will receive a subacromial corticosteroid injection this year for SIS there is a surprising and disquieting lack of research to inform this practice. Clinical research investigating the benefit of injection therapy in the treatment of SIS has demonstrated equivalent results when injecting lidocaine alone in comparison with injections combining corticosteroids with lidocaine¹⁰ challenging the incontestable need for corticosteroids. In this edition, Dean et al report on the potentially deleterious effect of glucocorticoids on RC tendon, a finding that may support lidocaine only injections when injection therapy is considered in the staged treatment of this condition.

There is insufficient research to support the premises underpinning the subacromial impingement theory. The belief that the acromion and variations in its shape are the primary cause of RC attrition resulting in symptoms and that an acromioplasty is essential to reduce symptoms has not been proven, and possibly the benefits attributed to SAD may be a clinical illusion. There is a growing body of research that clearly demonstrates appropriately constructed exercise therapy has at least comparable results with lower associated costs when compared to surgical interventions. Time has come for all those treating this problem (including patient groups) to determine together what this condition should be called, what constitutes best assessment and management at the different stages of the condition and what thresholds need be reached before treatment is escalated to other procedures such as surgery. Clinicians should also discuss what is currently known on the effectiveness of different treatment approaches and the range of possible outcomes associated with treatments. It is also essential for healthcare professionals to choose their words carefully and be mindful not to over emphasis the relationship between structure, structural failure and symptoms.

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Competing Interests

None

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