Commissioning Brief - Background Information

Management of partial-thickness rotator cuff tears

This background document provides further information to support applicants for this call. It is intended to summarize what prompted the call and the existing evidence base, including relevant work from the HTA and wider NIHR research portfolio. It was researched and written on the basis of information from a search of relevant sources and databases, and in consultation with a number of experts in the field. Searches and information provided were up to date as of May 2018.

Source of topic
This topic was developed from one of the top 10 treatment uncertainties in Surgery for Common Shoulder Problems as part of a James Lind Alliance Priority Setting Partnership.

Patient group
Shoulder conditions were reported to account for 2.4% of all primary care consultations for adult patients in the UK in 2000. Problems with the rotator cuff are some of the most common shoulder conditions for which patients seek medical treatment. Recent HES data showed that over 19,000 finished consultant episodes related to the diagnosis or rotator cuff syndrome in 2016/2017 and over 9000 repairs of rotator cuff tears were carried out in this period.

The rotator cuff is a group of four muscles (supraspinatus, infraspinatus, subscapularis and teres minor) that come together to control movement of the shoulder and hold the joint together (Figure 1). Problems with the rotator cuff can include subacromial impingement, calcific tendonitis and rotator cuff tears.

Figure 1. Muscles of the rotator cuff. Taken from patient.info.
Rotator cuff tears are common, especially in those over 40, and occur when one of more of the rotator cuff tendons detaches from the humerus. Most are caused by wear and tear or overuse but tears can also be caused by trauma. Symptoms experienced by those with rotator cuff tears can include pain, weakness and a decreased range of motion. The supraspinatus is most commonly affected.

Rotator cuff tears can be classified as full or partial-thickness tears. Partial-thickness rotator cuff tears (PTRCT) occur when the tendon is not completely severed and can be described by location as articular-sided, bursal-sided or intratendinous. Articular-sided tears are most common. PTRCTs can be classified by the percentage of the tendon that is torn:

- **Grade I:** <3mm or 25%
- **Grade II:** 3-6mm or 25-50%
- **Grade III:** >6mm or 50%

**NICE and other guidance**

- There is no NICE guidance relating to the management of rotator cuff tears.

- **British Elbow and Shoulder Society/British Orthopaedic Association Patient Care Pathways Subacromial shoulder pain (2015)**

  Evidence for effectiveness and cost effectiveness of treatment
  
  **Surgery**
  
  - The management of partial tears is particularly controversial and patients with such tears have commonly been treated conservatively. Favourable results have been reported after debridement of partial tears in association with subacromial decompression.
  - Partial tears are most commonly managed without repair but some studies advocate repair to prevent progression to full-thickness tears. The evidence supporting this approach is weak.

- **Royal College of Surgeons Commissioning guide: Subacromial Shoulder Pain (2014)**

  Secondary care
  
  Rotator cuff repair should be considered in patients with:
  
  - Acute (traumatic or degenerative) rotator cuff tear.
  - Persistent subacromial shoulder pain and weakness with ultrasound or MRI findings indicating a full thickness rotator cuff tear after adequate and appropriate conservative treatment.

**Current practice and proposed intervention**

Initial management of a PTRCT is likely to be conservative and may consist of rest, changes to activity, pain relief and anti-inflammatory medication. Physiotherapy may help to strengthen the muscles and restore movement. Steroid injections may also be used to alleviate inflammation in the acromial space.

If this approach fails, surgical intervention may be indicated. This could involve debridement, subacromial decompression (acromioplasty) and repair of the tear. The percentage of the tendon thickness that is torn is an important factor in determining whether or not repair is carried out with tears involving >50% of the tendon thickness most commonly being repaired.

Subacromial decompression aims to increase the amount of space between the acromion (shoulder blade) and rotator cuff by removing bone spurs that may be contributing to or exacerbating damage to the rotator cuff tendons. The recently published CSAW trial reported that surgical decompression appeared to offer no extra benefit over arthroscopy alone and no clinically important differences between surgical groups and no treatment was found. Patients with PTRCTs were not excluded from this study however the number of included patients with PTRCTs is not clear.

Repair of PTRCTs can be carried out in arthroscopic or open procedures. There are a number of different techniques which can be used to repair the tear:

- Conversion repair involves converting the partial-thickness tear into a full-thickness tear before repair, allowing standard rotator cuff repair techniques to be used.
In situ techniques
- Transtendon repair aims to preserve the intact part of the tendon whilst restoring the torn surface to its native footprint on the tuberosity. This type of repair is generally performed on articular sided tears.
- Intra-articular repair aims to repair articular-sided tears without involvement of the bursal side unlike in transtendon repair. The potential benefit of this is to avoid overtightening of the bursal side which may contribute to post-operative symptoms of stiffness and pain.

Completed research
As listed below, no high quality randomised studies have compared surgical repair of partial-thickness tears with no repair.

Evidence Synthesis
  - Search date: November 2015.
  - Included studies: 19 including 2 small RCTs comparing transtendon repair with conversion to full thickness then repair (n=48 and n=60).
  - Patient group: Partial-thickness rotator cuff tears.
  - Findings: Arthroscopic repair of partial-thickness rotator cuff tears >50% thickness ultras in significant pain relief and good to excellent functional outcomes. No significant differences in functional or structural outcomes or complication rates between in situ repair and repair after completion to full-thickness tear. The best treatment method for low-grade PTRCTs remains unclear.
  - Level of evidence: IV.
  - Search date: March 2017.
  - Included studies: 18, 3 retrospective and 15 prospective (6 were level IV evidence therapeutic studies), n=507.
  - Patient group: Partial-thickness articular supraspinatus tendon tears.
  - Findings: Surgical repair of articular partial-thickness supraspinatus tears is recommended when the tear involves over 50% of the supraspinatus footprint and conservative management has failed. No evidence of superiority of transtendinous repair over tear completion and repair.
  - Level of evidence: IV.
  - Search date: October 2014.
  - Included studies: 3 RCTs, n=182 (n=93 transtendon repair, n=89 repair after completion of tear).
  - Patient group: Partial-thickness rotator cuff tears.
  - Findings: No significant difference in Constant score (level of pain and ability to carry out ADL), range of motion or complications between techniques. Healing rate was 98.2% in transtendon group and 93.9% in tear completion group (2 studies).
  - Level of evidence: II.
  - Search date: October 2014.
Included studies: 11 studies including 2 RCTs, 4 on repair after tear completion (n=99) and 7 on transtendon repair (n=224).

Patient group: Articular side partial-thickness rotator cuff tears of more than 50% thickness.

Findings: No significant difference between techniques in American Shoulder and Elbow Surgeons Shoulder score (clinician and patient reported, patient focus in joint pain, instability and ADL). Re-tear rate was lower in the transtendon group (p<0.05).

**Primary Research**


Research in progress

Evidence Synthesis

Alessandra Menon. Arthroscopic rotator cuff repair in patients older than 70 years. PROSPERO 2018 CRD42018088613

• Patient group: Adults over the age of 70 who have undergone arthroscopic rotator cuff repair.
• Intervention(s): Rotator cuff repair. Techniques used in association with repair e.g. patch augmentation are excluded.
• Anticipated completion date: April 2018.

Long Chen, Fei Xing, Lang Li. The clinical effect of arthroscopic rotator cuff repair techniques: a network meta-analysis and systematic review. PROSPERO 2017 CRD42017071720.

• Patient group: Rotator cuff tear requiring arthroscopic rotator cuff repair including partial-thickness tears.
• Intervention(s): Arthroscopic single row repair, arthroscopic double row repair or arthroscopic suture bridge repair.
• Anticipated completion date: September 2017.
• No planned subgroup analysis.
**Primary Research**

**NCT014981998** A Randomized Study of Non-Operative Management Versus Expedited Surgery Among WCB Patients With Small Rotator Cuff Tears: Affect Upon Time to Claim Closure in 2 Prairie Provinces.

- Patient group: Age >18 years, active Workers Compensation Board claim and high grade (>50%) partial-thickness or small (<1cm) full thickness tear of the supraspinatus and/or infraspinatus confirmed by diagnostic imaging, n=144.
- Intervention(s): Expedited surgery (within 3 months) or non-operative management (with referral back to surgery if not progressing).
- Estimated primary completion date: Jan 2014.
- Location: Canada.
- Recruitment status unknown, no publication identified.

**NIHR Evaluation, Trials and Studies (NETS) research**

NETS programmes have funded the following studies related to rotator cuff disorders:

- **HTA 15/103/03** Patch Augmented Rotator Cuff Surgery Study (PARCS) – A feasibility study. Status: active. End date: 12/2018. Mixed methods feasibility study to determine current practice, evidence and views about patch use; achieve consensus on the design of a randomised trial to evaluate patch augmented rotator cuff surgery; and assess the acceptability and feasibility of the proposed design.

- **HTA 15/26/06** Clinical and cost effectiveness of progressive exercise compared to best practice advice with or without corticosteroid injection, for the treatment of rotator cuff disorders: a 2x2 factorial randomised controlled trial (The GRASP trial). Status: active. End date: 05/2020.

- **HTA 05/47/02** Clinical and cost-effectiveness of surgical (arthroscopic or open) versus conservative management for tears of the rotator cuff (UKUFF) trial. Status: published.


A number of other shoulder projects have been funded by NETS programmes:

- **HTA 09/13/02** Management of frozen shoulder: a systematic review and decision analytic model. Status: published.

- **HTA 01/39/01** The effectiveness of diagnostic tests for the assessment of shoulder pain due to soft tissue disorders: a systematic review. Status: published.

- **SRP 15/81/03** Interventions for the reduction of shoulder pain following gynaecological laparoscopic procedures. Status: complete.


- **HTA 13/84/10** Exercise to prevent shoulder conditions in patients undergoing breast cancer treatment. The PRevention Of Shoulder Problems Study (PROPSPER). Status: active, end 02/2019.
Central Commissioning Facility (CCF) programmes have funded the following related study:


References


