

# Shoulder pain in a middle-aged patient

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**A 57-year-old shopkeeper develops shoulder pain after a weekend of unaccustomed overhead activity. What diagnoses should be considered and what management is appropriate?**

## Case presentation

A 57-year-old shopkeeper presents 10 days after a strenuous weekend of stock-taking and stacking shelves. She has pain located about her right shoulder and upper arm, particularly on reaching above head height, washing her hair and fastening her bra. Sleeping on her right side (her usual habit) is no longer possible. She has never had a problem with her shoulder before.

On examination, this patient has subtle wasting of the supraspinatus – as is generally the case, this wasting is more easily felt than seen. She has a full range of active and passive shoulder movement,

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including external rotation; however, the arc of abduction in the scapular plane is markedly painful between 80 and 120° and is associated with some soft crepitus.

What is the cause of this patient's pain and how should she be managed?

## Discussion

### Differential diagnosis

This story of first time shoulder pain in a middle-aged patient after strenuous overhead activity is classic of impingement. Nevertheless, there are other diagnoses that need to be excluded.

The most common other condition consistent with this patient's features is early adhesive capsulitis (frozen shoulder), possibly complicated by secondary impingement or more extensive rotator cuff pathology such as a full thickness tear. However, the fact that the patient has full external rotation (as compared with the opposite side) makes a diagnosis of frozen shoulder less likely. Similarly, the full range of motion – especially in external rotation – makes primary osteoarthritis unlikely. Acute calcific tendonitis is another possibility, but the patient's pain does not appear to be severe enough for this diagnosis.

In order to establish the diagnosis of impingement the following signs should be looked for:

- Neer's sign – pain on passive elevation of the arm as demonstrated in Figure 1
- Hawkins' sign – pain in forward flexion with forced internal rotation of the humerus (Figure 2).

It is also helpful to perform the Neer impingement test, which involves a test of abduction after abolishing the signs of impingement by subacromial injection of local anaesthetic. Normalised power of abduction after the injection provides evidence that the rotator cuff is probably intact – or at least not severely torn. Furthermore, the injection becomes therapeutic if corticosteroid is combined with local anaesthetic.

## Investigations

Plain radiographs of the shoulder are mandatory, and should be taken in the anteroposterior (AP), axillary lateral, and outlet views. Osteoarthritis of the glenohumeral joint and acromioclavicular joint can readily be excluded with radiography, and calcific tendonitis may be seen. The outlet view may show a curved or hooked acromion, possibly with an associated spur (see Figures 3a and b).

## Treatment

A provisional diagnosis of impingement syndrome having been made, a trial of conservative therapy should be commenced. Conservative measures should include advice about modifying behaviour to avoid painful motion in addition



Figure 1. Neer's sign for impingement of the rotator cuff tendons. The arm is fully pronated and placed in forced flexion; the supraspinatus outlet is fixed by the examiner's hand to limit scapular movement.



Figure 2. Hawkins' sign for subacromial impingement or rotator cuff tendonitis. The arm is forward elevated to about 90°, then forcibly internally rotated.



Figures 3a (left) and b (right). Shoulder radiographs showing a large subacromial spur (arrows). The presence of the spur in the AP view (a) is confirmed by the outlet view (b).

to a directed physiotherapy regimen – specifically, the patient should be instructed in exercises for stretching the posterior capsule, stabilising the scapula and strengthening the rotator cuff. Use of NSAIDs and application of ice after physiotherapy sessions may be helpful. Judicious use of subacromial cortisone injections (with a maximum of three injections at three-monthly intervals) is recommended.

If conservative measures fail, surgery should be considered. The condition of the patient's rotator cuff tendons will need to be established if surgery is planned – information is gained from the clinical examination and plain x-rays, but further investigations can be helpful. Additional detail may be obtained using ultrasound, but the results are extremely operator dependent. MRI is very useful, particularly with gadolinium arthrogram enhancement, for establishing the location and size of a cuff tear. The surgical choice is between arthroscopic subacromial decompression and open decompression; the latter is usually reserved for complicated cases or situations in which simultaneous rotator cuff repair is planned. When assessing the significance of any cuff tear, one should remember that up to 70% of 70-year-olds have a full or partial thickness

cuff tear and that the vast majority of these individuals are symptom-free.

### Outcomes

The majority of patients suffering cuff impingement (tendonitis) without cuff tear gain good relief from nonoperative treatment. Surgery for impingement is effective, with reported success rates over 90% and relatively short convalescence. If cuff tears are present and require repair, the prognosis is a little more guarded – pain relief is the rule, with some return of strength, but the convalescent period is lengthy.

### Key points

- Subacute shoulder pain in a middle-aged patient, especially after unaccustomed overhead activity, is most likely to be caused by rotator cuff impingement.
- Conservative measures, including use of a combination of activity modification, physiotherapy and corticosteroid injection, are effective in the majority of cases.
- Surgery may be required in resistant cases. Arthroscopic decompression is generally the preferred technique. Surgical results depend on the state of the underlying rotator cuff. **MT**