

PARTIAL-THICKNESS ROTATOR CUFF TEARS UPDATE ≡ PATHOGENESIS, DIAGNOSIS AND TREATMENT

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Partial-thickness tears of the rotator cuff are not rare but have been poorly defined. This important cause of shoulder disability has three subtypes, namely bursal-side, intratendinous, and joint side tears, and they occupy a prominent place in the subacromial impingement syndrome.

This review is based on 103 partial-thickness tears of the rotator cuff, verified at operation. There were 44 bursal-side, 19 intratendinous, 36 joint-side tears, and 4 combined cases of bursal- and joint-side tears. The mean age was 54.3 years. The male patients and the right side predominated.

Pathogenesis

Based on our data and evidences of 103 cases of partial tears, we must conclude the pathogenesis of the rotator cuff tendinopathy is multifactorial. There is an interplay of inherent property of the supraspinatus tendon, that is, its location, vascularity and its fiber arrangement, age-related degeneration of tendon and insertion, trauma and/or microtrauma, primary subacromial impingement and others. They are all inherent or predeterminate factors which may be complementary and dependent on each other to explain the etiology. In addition to subacromial impingement being a cause of rotator cuff disease, it can also aggravate the process secondarily as a mechanism.

Diagnosis

For the diagnosis of partial-thickness cuff tears, arthrography and subacromial bursography have been gradually replaced by ultrasonography and MRI in the last decade. We have adopted these specific modalities since around 1995. Our current status with ultrasonographic diagnosis for partial tears is sensitivity 63% and specificity 79%. The use of T2WI with SPIR sequences, by suppressing the subacromial and subdeltoid fat

plane, clearly delineates minute changes on the bursal-side of the tendon. Thus the criteria of bursal-side tear are a high intensity area on the bursal-side of the tendon, and irregularity on the bursal surface. The criteria of the intratendinous tear are a high intensity within the tendon or slightly less higher intensity within the tendon and irregularity on the bursal surface. The criterion of the joint-side tear is a high intensity area on the joint-side of the tendon. The diagnostic problem today is that elusive subtype, the pure intratendinous tear.

Treatment

As for treatment, we start with conservative modalities, in the hope that we could control the secondary subacromial bursitis. Our operative procedure for the partial tears of any subtype consists of diagnostic arthroscopy, open anterior acromioplasty, resection of the involved portion of the tendon in a triangular shape, followed by tenorrhaphy. The follow-up ranged from 1 month to 18 years, with an average of 34 months. The results was assessed by Neer's criteria. Satisfactory results were obtained in 93% in 92 shoulders with follow-up of more than 6 months, and 94% in 74 shoulders with follow-up of more than 1 year. The rationale of these combined procedures is: 1. the problem is almost always localized in the supraspinatus tendon, 2. hidden lesions can be uncovered by inspection, palpation, mobilization, "color test", tendon exploration etc., 3. spontaneous healing is unlikely, 4. subacromial decompression is made certain by treating both "roof" and "floor", thus 5. the progression of tearing can be prevented, and 6. the procedure can be done within the same exposure.

Summary

1. Partial cuff tears are common and incapacitate active people in the 5th to 6th decades.
2. The pathogenesis appears multifactorial.
3. The pain is proportional to the degree of concomitant subacromial bursitis, not to the size of the cuff tear.
4. The diagnosis is made by several imagings, arthroscopy and/or trial tenotomy.
5. The spontaneous healing is unlikely and progression to complete tears is frequent.
6. The intratendinous extension poses therapeutic problem but satisfactory results are obtained by open surgery in approximately 90% of cases.