14 Traumatic Cuff Tears: The Relevance of Timing

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14.1 Epidemiology

An annual incidence of acute full-thickness rotator cuff tears (FTRCTs) is estimated to be 25 per 100,000 population aged 40–75 years old [1]. Furthermore, acute FTRCTs are common in the male population following simple falls [1]. While the overall average of FTRCTs is around the 60s, acute cuff tears due to a traumatic event can occur in younger ages, finding its mean age around 34 (Fig. 14.1) [2]. It is also suspected that there is a high risk of missed diagnosis, which could alter data collected until now. Most frequent injury pattern is a direct trauma, such as fall, often onto an outstretched arm [3].

14.2 Clinical Features

Patients with no signs of fractures or dislocations are often discharged from the emergency department with no further investigation. Only much later, the patient will be referred to a specialist if the disability and pain continue. Usually previously asymptomatic patients identify a traumatic incident leading to a sudden onset of symptoms such as severe pain, immediate loss of strength, and functional impairment of the shoulder. Missed diagnosis is also common because small lesions tend to be more painful than FTRCTs and pain seems to be related more to the degree of bursitis than to the degree of tearing [4].

14.3 Physical Examination

Traumatic lesions of the rotator cuff may often be missed on the first clinical examination because of minor physical findings dominated by pain. A detailed history and a proper clinical examination improve the early diagnosis of traumatic rotator cuff tears [5]. The clinical examination includes the assessment of passive and active range of motion, strength of the rotator cuff muscles, ability or inability to hold the arm in desired position (lag sign), and additional assessment of the subacromial impingement, acromioclavicular joint, and biceps tendon (Table 14.1). Additionally, since the pain following a traumatic event could influence the test performing, a subacromial injection of anesthetic (10 mL of 1% lidocaine) could be administrated to discriminate true positive lag signs from false positives due to sorrow.

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N. Sampaio Gomes et al. (eds.), *Massive and Irreparable Rotator Cuff Tears*,
https://doi.org/10.1007/978-3-662-61162-3_14

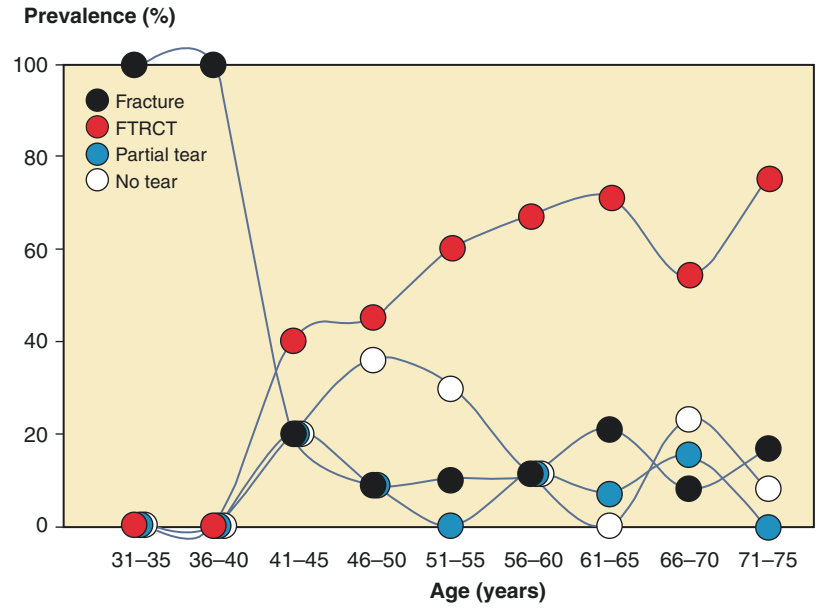

Fig. 14.1 Prevalence of MRI-verified lesions related to patient age

Table 14.1 Most accurate clinical test performed in a patient with full-thickness rotator cuff tear

Passive and active range of movement	Abduction in the scapular plane Forward flexion Internal and external rotation at 0° and 90° of abduction
Strength tests	Jobe test Test of external–internal rotation Lift off test
Lag signs	External rotation lag sign Infraspinatus drop test Drop-arm test Internal rotation lag sign
Impingement signs	Neer test Hawkins Painful arc
Tests of the acromioclavicular joint	Tenderness of the joint Cross-body test
Biceps tendon tests	Yergason and speed

14.4 Imaging

Magnetic resonance imaging has previously been considered the most precise diagnostic tool for chronic cases of FTRCTs, but during the last decade due to further improvements in equipment and technique, similar results have been shown with sonography, with sensitivity and specificity ranging from 80 to 100% for both modalities [6]. Fatty infiltration and muscle atrophy are the most used patterns to evaluate prognosis, and clinical reports suggest that fatty degeneration and muscle atrophy seen with delayed surgery are related to lower postoperative scores, both UCLA and Constant score [7]. Acute FTRCTs often occur on a pre-injured tendon. The presence of fatty infiltration within the muscles of rotator cuff classified according to Goutallier gives us precious information about the type and chronicity of the injury (acute event on a pre-injury tendon versus acute event on a healthy tendon) and thus the long-term prognosis (Fig. 14.2).

14.5 Treatment Options

14.5.1 Nonoperative Treatement

There is support in the literature for the nonoperative management of rotator cuff tears. Bokor et al. reported that patients presenting for nonoperative treatment within 3 months of their injury had satisfactory outcomes [8]. Successful nonoperative management has been associated with the presence of satisfactory motion and strength at the initiation of treatment. Unfortunately, Itoi and Tabata have demonstrated that the outcome of nonoperative management deteriorates over time,

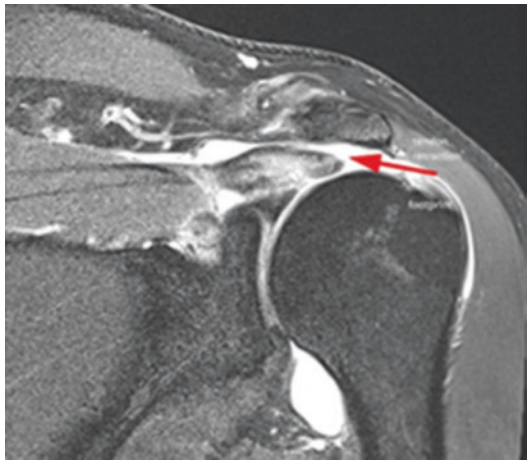

Fig. 14.2 MRI imaging of an acute FTRCT

and Goldberg et al. concluded that the overall response of shoulder function to nonoperative intervention was poor [9, 10].

14.5.2 Operative Treatement

It is well known how frictional attrition of the torn rotator cuff and musculotendinous tissues retraction are minimal immediately after injury [1]. Also scarring about the shoulder is not present, making early repair easier and more secure. Operative treatment is considered to be the first line of treatment in these types of lesions nowadays (Fig. 14.3). There is a trend suggesting that earlier time to surgery may be linked to better

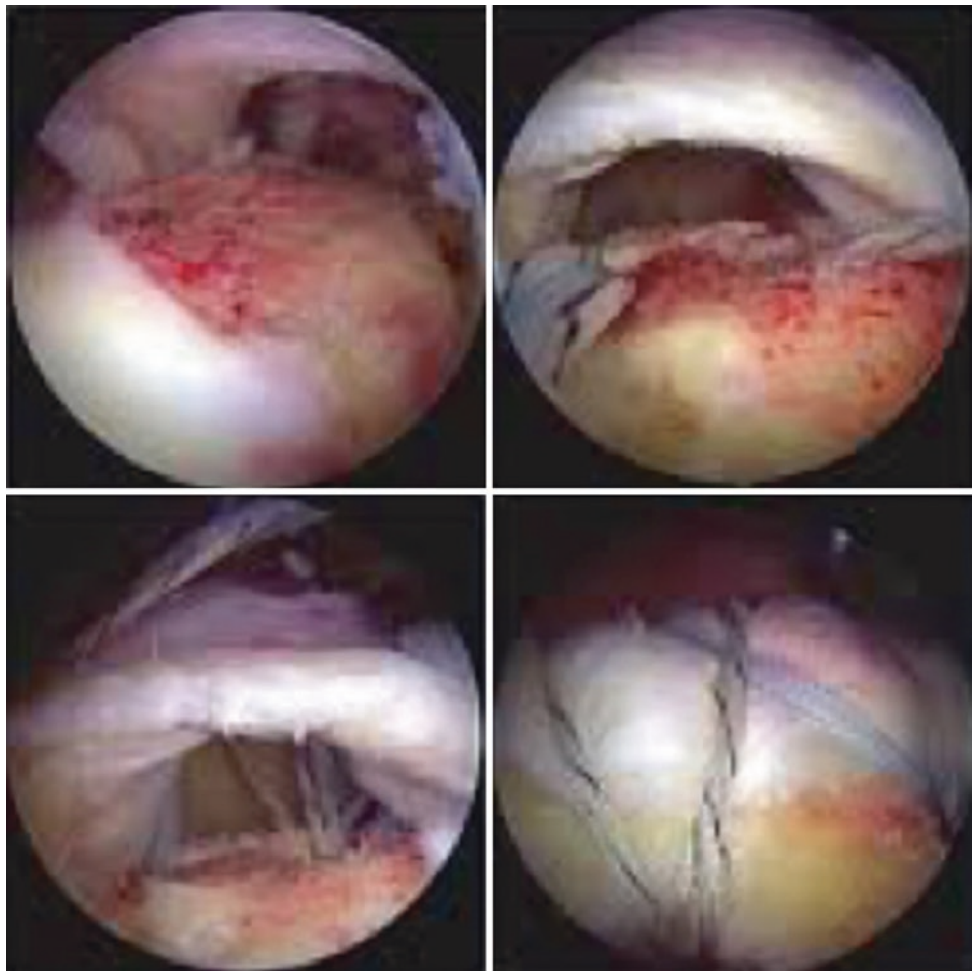

Fig. 14.3 Arthroscopic images of an acute FTRCT double row repair

clinical results regarding Constant scores and range of motion [11]. While an agreement on precise timing for surgery has not been outlined yet, several studies support this theory [11–14].

Gerber et al. reported higher improvement in outcomes in the 13 patients who underwent surgery within 20 months of injury than the 3 patients whose surgeries were delayed more than 36 months after the injury [14]. A study by Petersen and Murphy noted that when compared with those performed longer than 16 weeks after injury, repairs performed prior to 16 weeks from injury were associated with significantly improved active elevation (140° vs. 100°), ASES score (81 vs. 65), and UCLA score [15]. The most comprehensive study, comparing outcomes between early and delayed repair, was conducted by Bassett and Cofield who determined that tendons repaired within 3 weeks had significantly better forward elevation and showed a trend toward better strength in both abduction and external rotation than those repaired after 3 weeks [12]. Additional support for this results has been published by Hantes et al., who reported significantly higher mean postoperative Constant (82) and UCLA (31) scores in the acute repair group (<3 weeks) than in the delayed repair group (70 and 26, respectively) [13]. Even if the precise guidelines for the timing of surgical treatment have not been defined yet, there are some clear data as to how delayed surgery could affect subjective and objective patient's outcomes. Following this, it is undeniable that timely surgery is strictly recommended.

14.6 Summary

An agreement on relevance of timing on successful rotator cuff repair has not been completely defined yet; however, several studies suggest that earlier time to surgery may be linked to better clinical results. Immediately after traumatic tear, rotator cuff tendon retraction is minimal. Additionally, scarring about the shoulder is not present, making early repair easier and more secure. Important prognostic factors for the surgical treatment of these injuries are fatty degeneration and muscle atrophy of the relevant muscles as well. Clinical reports suggest that these changes seen with delayed surgery are related to lower postoperative scores. It is unlikely to see important grade of fatty degeneration and muscle atrophy after the injury. These changes might occur on a pre-injured tendon, thus giving us precious information about the type and chronicity of the injury like acute event on a pre-injury tendon. This observation is therefore important for the long-term prognosis.

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