50 Years Ago in CORR

Ruptures of the Rotator Cuff

Julius Neviaser MD CORR 1954;3:92–98

“Although the entity, ‘Ruptures of the Rotator Cuff,’ has gained widespread acceptance since the publication of Codman’s text, *The Shoulder*, the diagnosis and the management remain beclouded with the aura of confusion, half truths and misunderstanding.” So began Julius Neviaser in 1954 [5], as he attempted to clarify the confusion. (Codman’s text was published in 1934 [1].) One fallacy he dismissed was that the supraspinatus tendon was required to initiate and maintain shoulder abduction: patients with torn tendons, he suggested, readily abducted their shoulder if injected with a local anesthetic to eliminate the pain reflex. He stated,

“Ruptures of one or more components of the rotator cuff

usually occur in one of three ways:

1. There may be a rupture following a history of injury without a dislocation or a fracture.
2. A rupture may occur following a dislocation of the shoulder.
3. Rupture of the cuff may follow a dislocation of the shoulder with a fracture of the greater tuberosity of the humerus.”

The first of these three occurred in the presence of degenerated tendon tissue, and therefore usually did not occur until the fourth or fifth decade of life. Neviaser states most of these partial and complete tears (Figs. 1–2) occur as a result of injury (“The patient will usually give a history of a fall, a strain or pushing of the arm, with resulting pain...”). He did not describe

spontaneous onset, although Codman in 1911 reported two patients in whom there was no apparent injury and rather the patients sensed giving way or something snapping while performing normal activities of daily living [2]. From a cadaveric study of 96 shoulders of individuals without any history of shoulder problems DePalma found 20–38% of the specimens had partial or complete tears of various tendons [3] (this article was reproduced as a Classic in CORR in 2008 [4]). This suggests that spontaneous tears not only are frequent, they may occur in small stages such that they remain asymptomatic or perhaps, as Codman’s two cases document, occur during the usual activities of daily living. Neviaser did note that “In the treatment of partial ruptures we can anticipate a

Fig. 1 Site of tear at the “critical area” near the insertion of the tendon. (Left) Normal shoulder. (Right) Recent complete tear. (Reprinted with permission and ©1954 Lippincott Williams and Wilkins, from Neviaser JS. Ruptures of the rotator cuff. *Clin Orthop Relat Res.* 1954;3:92–98.)

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Fig. 2 Usual types of partial ruptures. (Left) Partial tear. (Right) Deep surface tear. (Reprinted with permission and ©1954 Lippincott Williams and Wilkins, from Neviaser JS. Ruptures of the rotator cuff. *Clin Orthop Relat Res.* 1954;3:92–98.)

very satisfactory result in most instances by conservative means.” This should not be surprising given DePalma’s findings of asymptomatic patients of partial and even complete ruptures. Nonetheless, Yamaguchi et al. showed that in patients with asymptomatic tears determined by sonography, just over half became symptomatic within 2.8 years [6]. (All of these patients had symptoms in the contralateral shoulder, and therefore may have been particularly prone to degeneration.)

Many patients, of course, do not do well with nonoperative treatment, and Neviaser describes his approach to repairs. While he does not state how often pain was relieved and function restored in his patients, he stated, “My own experience has shown that...massive ruptures with marked separation and retraction of the cuff do not do well

by operative repair.” Techniques, particularly those related to arthroscopy, have markedly improved our ability to repair partial and complete tears. To what degree we have altered the long-term natural history remains a matter of debate.

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