

Appendix

The patient who requested implant removal alone (Stryker T2 group) was young (forty-three years) and simply wanted to have the implant removed; there was no symptomatic or mechanical indication.

The patient with heterotopic ossification (Synthes EX group) was a large man (height, 6 ft 6 in [198 cm]; weight, 260 lb [118 kg]) who had sustained a proximal humeral fracture (as well as an ipsilateral trimalleolar ankle fracture-dislocation) after being struck by a car and being thrown 30 ft (9 m). It was unclear if he had sustained a head injury. The proximal humeral fracture was treated elsewhere with percutaneous pinning, but fixation was lost immediately after surgery. The pins were removed, and the fracture fixation was converted to intramedullary nailing five days after the injury after the patient was transferred to one of our facilities. The patient had development of heterotopic bone that was thought to be the cause of discomfort and stiffness. Removal of the heterotopic bone and release of subacromial adhesions led to improvement in terms of motion and subjective symptoms.

The patient who was managed with manipulation and implant exchange (Synthes EX group) complained of pain, stiffness, and a sensation of “catching” of the lateral deltoid with motion. At the time of surgery, subacromial adhesions and mechanical catching between the base of the blade and the deltoid were noted. The blade was exchanged to a shorter length and was seated more deeply to avoid catching between the base of the blade and the deltoid.

Finally, the patient who was managed with manipulation alone (Synthes EX group) noted improvement in terms of stiffness and function after the manipulation.

In the three patients in whom the subacromial space was exposed, the rotator cuff split was noted to be completely healed without signs of partial or full-thickness tear.



Fig. E-1A

Left: Illustration depicting the mechanism of achieving angular stability with use of the Synthes EX “spiral blade” proximal humeral nail. The locking end-cap is available in four lengths to achieve superior humeral head subcortical fixation. The blade is locked to the nail via the end-cap, creating angular-stable proximal fixation. It should be noted that, in the patients in the present study, the nail was inserted more medially than is shown in this figure in order to avoid damage to the rotator cuff insertion. (Reprinted, with permission, from: Synthes Inc., West Chester, Pennsylvania. Web site: www.synthes.com.) *Right:* Anteroposterior radiograph demonstrating a healed fracture and a more medial “articular” insertion of the nail, as was typically performed in the patients in this study.



Fig. E-1B

Illustrations depicting the mechanism of achieving proximal angular stability with use of the Stryker proximal humeral nail. The end-cap “locks” the most proximal screw. Threads and nylon bushing “fix and capture” all four proximal screws. (Reprinted, with permission, from Stryker Orthopaedics, Mahwah, New Jersey. Web site: www.stryker.com.)