

Simple Techniques for Reducing and Dislocating a Reverse Total Shoulder Arthroplasty During Trialing

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ABSTRACT

Quick, simple, and safe techniques for locating and dislocating a reverse total shoulder arthroplasty during trialing are presented.

Implant trialing is an integral part of implanting a reverse total shoulder arthroplasty (RTSA). As dislocation is a serious complication, stability must be ensured, so the prosthesis must be located under tension to the point at which there is “shuck” of less than 1 mm between the humeral cup and the glenosphere.¹ A gentle but appreciable “clunk” should be experienced. If the shoulder reduces too easily, there is not enough tension, and a spacer one size larger should be tried.² As tension increases, however, it becomes more difficult to locate and dislocate the trial humeral component from the already implanted glenosphere, potentially stressing the fixation of the glenosphere.

After significant tension is established, distal traction may not be enough to translate the humerus inferiorly enough to locate it. Excessive traction applied to the arm of a well-secured patient may torque the patient’s neck, as the head is often taped to the table. If the patient is not tightly secured, he or she may be dragged off the table, which can be extremely dangerous. After the humeral head is located under tension, dislocation of the trial implant may be equally problematic. Bone hooks may be used to pull laterally on the prosthesis, but when pulled forcefully these can slip and potentially injure members of the surgical team.

In this article, we describe simple techniques for locating and dislocating a trial RTSA even when tension is considerable.

TECHNIQUE

Before preparation and draping, the patient should be stabilized with a second “belt” around the chest to resist traction applied to the arm. Otherwise, distal arm traction may pull the upper torso off the table and thereby strain the neck and possibly cause injury. The RTSA should be performed with full muscle paralysis to decrease the amount of traction force needed. In addition, use of good technique may allow component reduction and dislocation without significant traction.

The proximal humeral dish can usually be reduced to the glenosphere using distal traction. However, after significant soft-tissue tension makes it difficult to translate the humeral dish distal enough to locate, the “tire-iron” technique may be used. A stout hemostat, not a “mosquito,” is placed in the central screw hole of the glenosphere. The hemostat is then used to lever distally on the humeral dish to allow it to be located (Figure 1). If the shoulder is still not reducible, then there is too much soft-tissue tension, and a smaller spacer should be used. The surgeon should also ensure that the patient is fully paralyzed and that there is no soft-tissue entrapment. Occasionally, not enough proximal humerus has been milled with the metaphyseal reamer, though appropriate attention to detail during humeral preparation should make this a rare occurrence.² The tire-iron technique may also be used to reduce the permanent humeral component.

After the arthroplasty is reduced and trialed, dislocation is necessary. Before significant soft-tissue tension develops, simple distal traction and lateral translation of the humerus allow reduction. Once there is significant soft-tissue tension, however, dislocation may be difficult. To allow for easy dislocation of the trial implants, the loop of a lap tape is simply placed around the humeral neck before joint reduction. To dislocate the joint after trial reduction, the elbow is stabilized, and the lap tape is simply pulled laterally, dislocating the joint (Figure 2).

DISCUSSION

These very simple techniques are useful for reducing and dislocating RTSA components and use equipment that is ubiquitous in the operating suite. The tire-iron technique allows for RTSA reduction without the need for excessive distal traction. Once trialing is complete, using the loop of a lap tape for RTSA dislocation has no potential for injuring operating room personnel, as might occur with pulling bone hooks, which can

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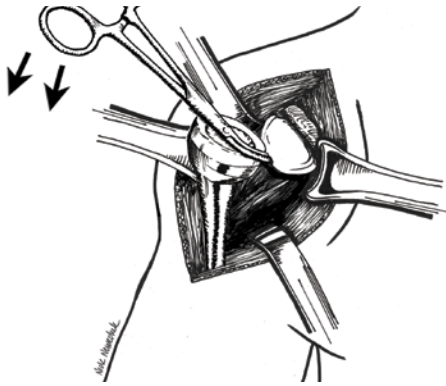


Figure 1. The “tire-iron” technique of reverse total shoulder arthroplasty relocation. After final insertion of the glenosphere, a stout hemostat is placed into its central screw hole. The hemostat is then used to lever distally on the proximal humerus to allow it to be located. Illustration copyright 2008, Nicholas Nemechek.

potentially slip. Reduction and dislocation are quick and simple and, in our experience, produce minimal torque on the fixed glenoid implant.

Potential drawbacks to the procedure are few. During reduction, care should be taken to keep the tip of the hemostat in the central screw hole of the glenosphere to avoid scratching the permanent implant. During dislocation, the loop of the lap tape should be placed around the humeral neck, not the reamed (and thin) metaphyseal rim, which might fracture when pulled. In addition, the loop of the lap tape can tear on sharp bony edges, potentially leaving foreign material in the wound.

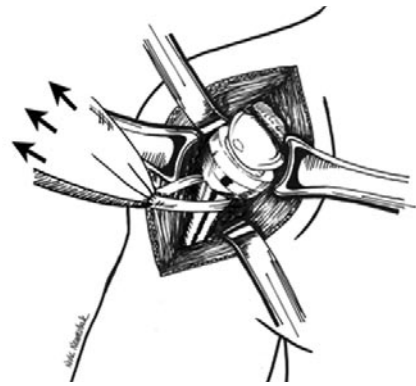


Figure 2. The loop of the lap tape was placed around the humeral head before arthroplasty location. The lap tape is pulled laterally to dislocate the prosthesis. The elbow is stabilized by an assistant. Illustration copyright 2008, Nicholas Nemechek.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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