

**Double Row Rotator Cuff Repair
using Novel 'Inverted Mattress'
OPUS® Technique**

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INTRODUCTION

Effectiveness of arthroscopic repair of rotator cuff tears have been demonstrated in multiple reliable studies. Recently, attempts to improve technique have led to various modifications, including augmentation of the ‘single row’ repair with a second row of implants. The technique presented creates a double row rotator cuff repair by placing an articular margin implant stitch in an inverted fashion and locking it with an OPUS Magnum implant, and two lateral stitches utilizing standard OPUS technique with Magnum implants. Typically, the first row is placed adjacent to the articular surface, the second is placed far lateral in the footprint on the tuberosity. Theoretical benefits include, increased fixation strength due to the increased number of implants, decreased failure of suture, decreased pullout due to distribution of forces over increased number of suture strands, and potential increased healing rates from increased area of contact pressure on the greater tuberosity footprint.

PREPARATION

This new technique takes advantage of the OPUS SmartStitch® device used in a novel fashion to accomplish a ‘double row’ repair. (Familiarity and proficiency with standard OPUS technique is mandatory before progressing to this technique).

After satisfactory intra-scalene block anesthesia is administered in the OR holding area, the patient is placed in the ‘Captain’s Chair’ and IV sedation is administered. Routine EUA is performed, ROM and stability are recorded.

Standard posterior GH portal is developed 2cm posterior and 2cm medial to the posterolateral corner of the acromion. An anterior GH operating portal is developed in the rotator interval using the inside-out technique. Fifteen point examination of the gleno-humeral joint is accomplished and intra-articular pathology is addressed.

The supraspinatus tear is identified. Frayed edges on the articular side of the torn supraspinatus tendon are debrided to a stable base with a full radius resector. The footprint of the supraspinatus on the greater tuberosity is debrided of all soft tissue to bare bone to allow rotator cuff healing to the footprint. Debridement should begin on the footprint immediately adjacent to the articular cartilage and continue as far lateral as exposure will allow. No decortication should occur near the implant sites.

The arthroscope is then redirected into the subacromial space. A lateral subacromial operating portal is developed just anterior to the ‘mid-acromial line’ and an appropriate subacromial decompression is accomplished, and extensive bursectomy completed to allow completion of the repair without soft tissue obscuring visualization.

Using the lateral portal, standard soft tissue releases are accomplished, including coraco-humeral ligament release as indicated. A spinal needle is then used to develop an anterolateral operating portal. The spinal needle should identify a portal that allows easy access to the anterior and posterior aspects of the tear. If this location is not the standard lateral portal, a new location is developed and the original lateral portal is closed with a nylon suture. Pump pressure should be lowered to 30mm as hemostasis allows.

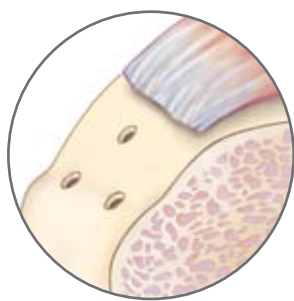


fig. 1

An 8.2mm Atlantech® Caps-Lock™ cannula is then placed to sustain the portal. Appropriate implant locations are then identified on the footprint and marked with an awl. These locations will create a triangle or ‘Delta’ formation (fig. 1).

Two lateral implant locations are identified first:

The first in the antero-lateral footprint, approximately 5mm medial to the lateral edge of the footprint and 5mm posterior to the anterior edge of the torn tendon. Mark location with a dimple in the footprint developed with an awl.

The second in the postero-lateral footprint, approximately 5mm medial to the lateral edge of the footprint and 5mm anterior to the posterior edge of the torn tendon. Mark location with a dimple in the footprint developed with an awl.

The third implant location is adjacent to the articular surface in the center of the tear in the A-P plane. Mark location with a dimple in the footprint developed with an awl.

Three sutures are placed with the OPUS SmartStitch suturing device through the cannula.

The first Incline Mattress® stitch is placed in the posterior third of the torn tendon in the standard fashion. This suture is then retrieved through the anterior portal (without a cannula) and held in this ‘waiting room’ until implanted. The next stitch is placed in the anterior third of the torn tendon using standard technique.

A different color suture is then used for the central stitch. This will be the Inverted Mattress stitch. The SmartStitch will be used in the upside-down position to place a suture with the ‘mattress’ on the bursal surface of the torn tendon. The SmartStitch needles should penetrate the articular surface of the torn tendon 8-10mm from the lateral edge of the torn tendon. This is average distance between the medial and lateral row. In cases of chronic rotator cuff tears, the edge of the tendon may be too thick to use the inverted OPUS SmartStitch. In these cases, an Inverted Mattress stitch may be placed using the OPUS PerfectPasser™ or alternate means.

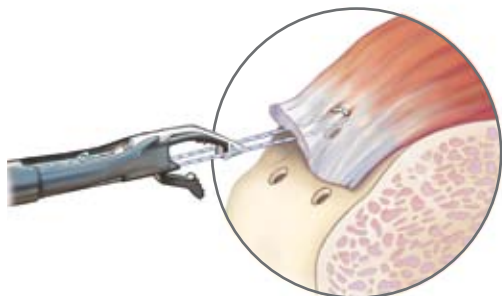


fig. 2

A spinal needle is then used to identify an ‘implant placement portal’. Immediately off the lateral edge of the acromion, a 4mm portal should be developed that allows easy access to the previously marked implant positions.

Through this portal, the OPUS Magnum® drill guide and blunt tipped obturator are inserted to the central implant position. After removing the obturator, the central stitch ends are retrieved through the drill guide with a suture hook or retriever. The two free ends of the stitch are held here, outside the slotted drill guide. The implant location is then drilled to the appropriate depth and the PathFinder inserted. The free ends of the suture are loaded into the OPUS Magnum² implant in the standard fashion and reeled in with the ratchet knobs. The implant-suture assembly is then inserted into the drill guide with the arrows on the implant shaft and the slot on the drill guide facing the stitch in the cuff. The implant is inserted into the hole once there is verification that the stitch is not split or twisted around the implant. When the white plastic sleeve is fully seated against the bone, the Magnum² implant is deployed with one pull on the handle and appropriate fixation confirmed with axial traction on the assembly.

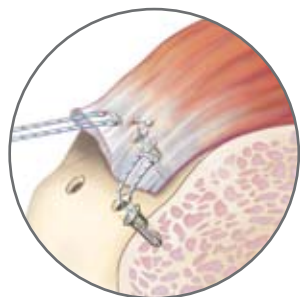


fig. 3

REPAIR

The suture is then 'reeled in'. The free edge of the torn tendon should be reflected up the Magnum² assembly shaft as the inverted mattress suture is approximated to the articular margin of the footprint. The suture is then locked in the standard fashion and excess suture cut.

The anterior stitch ends are then retrieved through the drill guide. Antero-lateral implant location is then drilled and the PathFinder[®] is inserted. Standard technique is used to load the free ends of the suture into the implant. The implant is inserted, deployed, reeled in, locked and excess sutures cut. This will approximate the lateral edge of the torn tendon to the lateral aspect of the footprint.

The posterior stitch ends are retrieved from the 'waiting room' portal and implanted to the postero-lateral location in standard fashion.

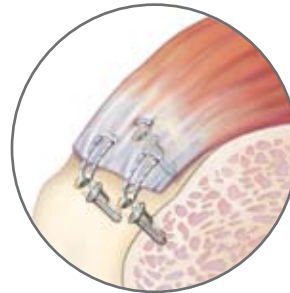


fig. 4

If desired, 'marrow vents' should be made in the tuberosity lateral to the repaired tendon. Soft tissue hemostasis is obtained, cannulas drained and removed. Portals closed and dressed. The arm is placed in a shoulder immobilizer. A cold therapy sleeve is applied (use for 72 hours). Pre-emptive oral analgesics are administered before discharge from the ambulatory surgery facility.

ROUTINE POST-OP REHABILITATION

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- POD #1:** PROM/pendulum and scapular posture initiated, also elbow/wrist/hand AROM.
- 3 weeks:** AAROM initiated, continue scapular, elbow/wrist/hand AROM.
- 6 weeks:** AROM initiated and immobilizer discontinued. Progress to light resistance rehab.
- 12 weeks:** Advance strengthening as appropriate.



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