

# IN THE Loop

## Arthroscopic Rotator Cuff Repair Suture Strategies

The weak link in rotator cuff repair is the suture-tendon interface. In light of these concerns, a novel suture configuration has been developed by John MacGillivray, M.D., of New York NY, assisting to increase the strength of the arthroscopically-placed sutures. The MaC stitch consists of a horizontal loop and a vertical loop that are tied separately. This stitch is commonly used for larger rotator cuff tears. The MaC stitch is also helpful in reinforcing simple tears where the added horizontal suture adds security to the suture construct.

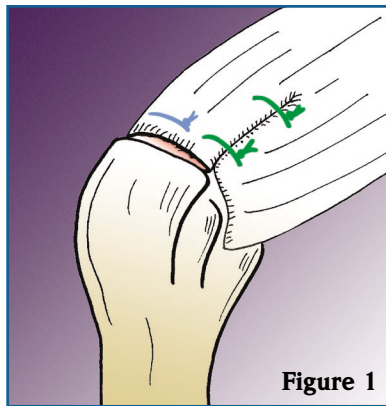


Figure 1

After preparing the rotator cuff tear for repair, margin convergence utilizing the SutureLassos with FiberStick or BirdBeaks with FiberWire is performed to reduce strain and prevent tear propagation (green). The margin convergence sutures are tied first.

After the leading edge of the tendon is advanced laterally, an optional horizontal loop (blue) can be placed at the remaining leading edge for the larger rotator cuff tears.

Bio-Corkscrew Suture Anchors are placed over the decorticated greater tuberosity. The suture from the suture anchors are placed medial to the previous horizontal loops (red) with the use of the Viper, BirdBeak or NeedlePunch.

The anchor sutures are then tied over the tendon as a simple loop (Figure 1).

The horizontal loop acts as a check rein improving pull-out of anchor sutures from the tendon.

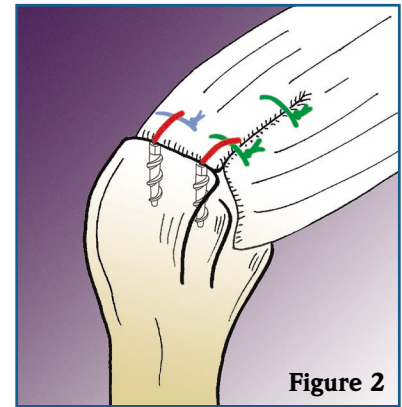


Figure 2

## Biomechanical Testing

Dr. MacGillivray's sheep testing model found the following results between the MaC and the modified Mason-Allen stitch using #2 FiberWire. Four stitch configurations (simple, horizontal, the MaC, and modified Mason-Allen stitch) were randomized and tested per paired sheep infraspinatus tendons. Cyclic loading (5-30N at 0.25Hz for 20 cycles) and load to failure (1mm/sec) testing were performed. Elongation with cyclic loading was measured and stiffness and ultimate load were calculated.

- The MaC stitch and the modified Mason-Allen stitch have significantly higher ultimate load than the simple and horizontal sutures (Figure 2).
- There was no significant difference in ultimate load between the MaC and the modified Mason-Allen stitch (233±40 vs 246±40N).
- There was no significant difference in stiffness between the four sutures.
- All simple and horizontal failures occurred as suture pull-outs. Failures of the MaC and modified Mason-Allen sutures occurred as a mix of pull-outs and suture breakage.
- There is also no significant difference between the four sutures in elongation during cyclic loading.

