

## Patient Case Studies

### 1. Large Rotator Cuff Repair with Bioinductive Implant

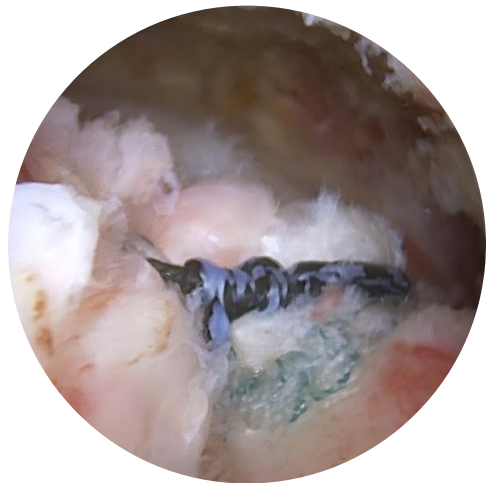
*This is an example of a more complex, larger rotator cuff tear that involves repairing the rotator cuff as well as the additional step of using a bioinductive implant, a newer technique to strengthen the repair and a promising new direction in treatment of complex rotator cuff tears.*

John (name changed), a retired 67-year-old male who spends his leisure time playing tennis, struggled with persistent pain in his left shoulder for over a year. The pain radiated through his shoulder and made it difficult to raise his arm, affecting both his daily life and favorite hobby. After an MRI, he was found to have a full-thickness rotator cuff tear. After diagnosis, John tried treating his left shoulder with 7 months of physical therapy and a cortisone injection. However, when his pain was not improving, he decided to have surgery. He underwent minimally invasive arthroscopic surgery to repair the rotator cuff tear which included repairing the rotator cuff and inserting a bioinductive implant which strengthens and augments the repair, creating a stronger tendon-like structure to help move and lift the arm.

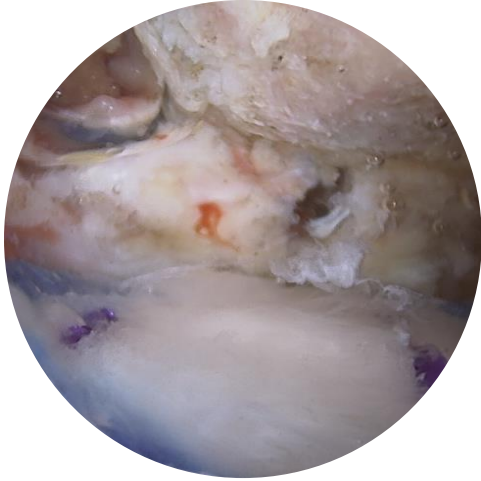
6 weeks after surgery, John's pain had dropped from 8/10 to 3/10, and he could lift his arm up to shoulder height. By 3 months, his range of motion had significantly improved, and he regained better rotation on his shoulder compared to before surgery. By 6 months, John had a completely normal range of motion and only mild pain at 2/10. Today, John is back to playing tennis moderately twice a week and enjoys his daily activities without difficulty.



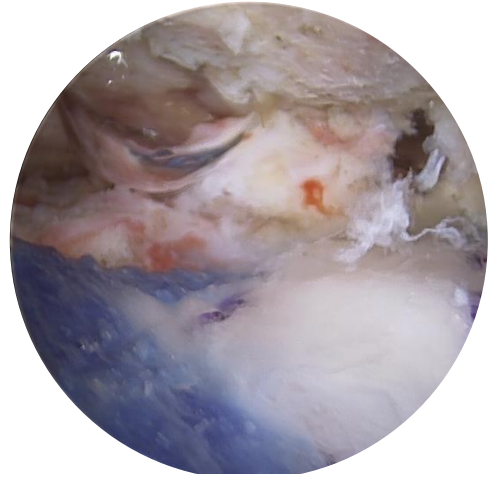
*Figure 1: top view showing large defect in rotator cuff. Notice top of the humerus and biceps tendon which normally cannot be visualized with an intact rotator cuff*



*Figure 2: provisional repair of rotator cuff has been done. Notice the humerus and biceps tendon are no longer visible*



*Figure 3: bioinductive implant (blue and white layer) has been placed on top of the repaired rotator cuff in order to provide additional structural support and strength to rotator cuff*



*Figure 4: this additional layer will grow into rotator cuff tissue over 3-6 months*

## 2. Typical Rotator Cuff Repair

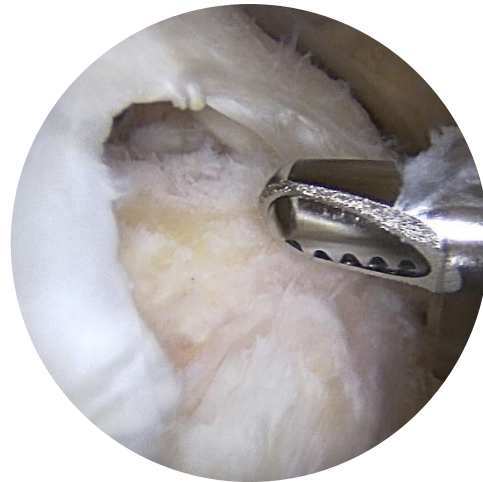
This is an example of a less complex, more common procedure that involves repairing a tear of the rotator cuff. This procedure involves surgically reattaching the torn rotator cuff tendons to the humerus bone, aiming to restore shoulder function and alleviate pain.

Mary (name changed), a retired 65-year-old female who spends her leisure time working out and playing racquet sports, was experiencing sharp, throbbing pain with any movement, when sleeping, reaching behind her back, and working out. She rated her pain at a 9/10 because it was highly affecting her daily and leisure activities. After undergoing diagnostic imaging, Mary was found to have a high-grade partial-thickness rotator cuff tear. After diagnosis, Mary did physical therapy for a few months and also received cortisone injections, however, as the pain was not improving, Mary decided to undergo arthroscopic surgery, a minimally invasive procedure where the rotator cuff muscles get repaired through 3 small stab incisions around the shoulder while the surgeon views the procedure through a camera.

In just 6 weeks after surgery, Mary's pain levels went from 9/10 to 6/10. By 3 months postoperative, Mary was able to reach behind her back and lift her arms with ease and reported pain levels up to 1/10. After a few months of recovery, Mary was able to go back to her activities with minimal discomfort. Today, Mary is able to enjoy playing racquet spots and do her daily activities with much better mobility than before and pain-free.



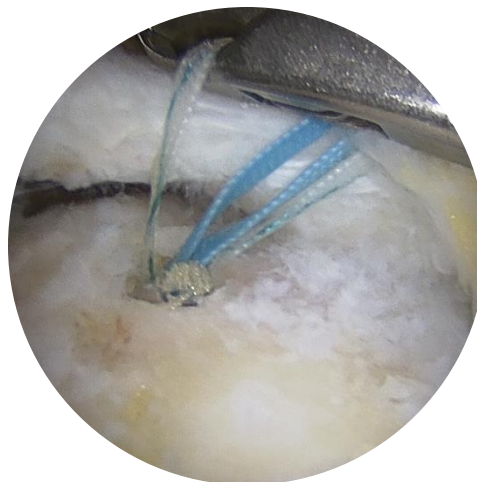
*Figure 5: rotator cuff tissue (left)*



*Figure 6: rotator cuff tissue (left) showing crescent shaped defect to be repaired. A shaver instrument cleans the bone surface prior to repair*



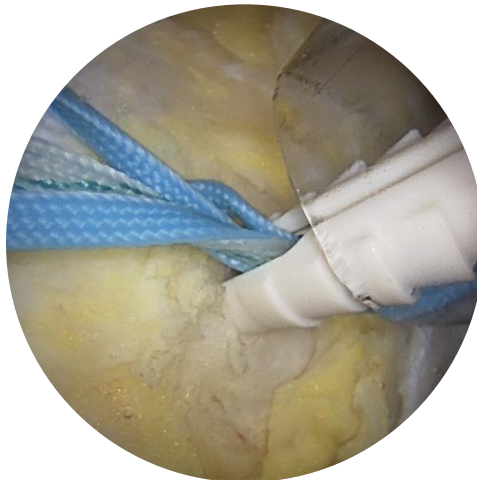
*Figure 7: suture anchor being inserted to attach tendon to bone*



*Figure 8: anchor inserted fully into bone, with visible sutures to be used for tendon repair*



*Figure 9: sutures passed through tendon during repair*



*Figure 10: lateral row anchor being inserted to complete double row repair*



*Figure 11: completed repair, notice crescent defect is no longer visible*



*Figure 12: additional view (front) of repaired tendon. Tendon tissue (upper white) repaired to bone (lower white)*

### **3. Anatomic Total Shoulder Replacement**

*This is an example of an anatomic total shoulder replacement; a surgical procedure being performed increasingly each year. Newer advancements in design and technique have made it a reliable option for restoring shoulder function and reducing pain. It replaces the humeral head and glenoid with prosthetic components that replicate the joint's natural anatomy. Dr. Goldberg is one of Florida's leading specialists in shoulder replacement.*

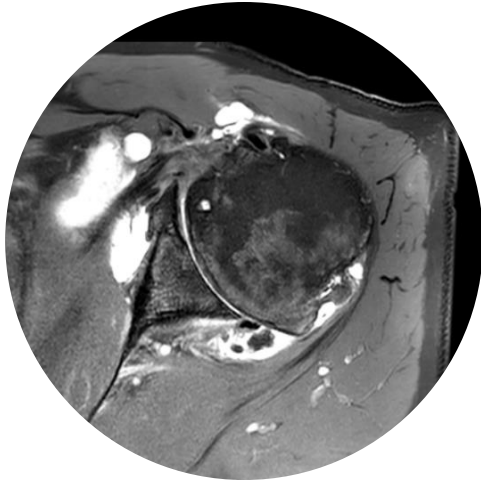
Michael (name changed), a retired 75-year-old male who enjoys outdoor sports. He had occasional shoulder pain for a few years but started experiencing sharp pain in his left shoulder that persisted for over 6 months. While he could still raise his arm normally, rotating it outward or reaching behind his back was nearly impossible, making everyday tasks challenging.

After radiographic assessments, Michael was diagnosed with glenohumeral arthritis, a condition where the cartilage in the shoulder joint wears away, leading to pain and stiffness. After discussing his options, Michael chose to have an anatomic total shoulder replacement surgery.

The surgery procedure took approximately 80 minutes, and he was home the same day. He took a shower that evening and was using his phone and eating with his arm the next day.

Following surgery, Michael's recovery progressed steadily. Six weeks after surgery, Michael reported minimal pain at 1/10. By three months, his shoulder mobility had dramatically improved with nearly normal motion when raising his arm and great improvement in his ability to rotate his shoulder inward. By six months, Michael had regained a full range of motion. By one year after surgery, his range of motion had surpassed his pre-surgery levels. Now, three years later, Michael is pain-free, his shoulder functions naturally, and follow-up x-rays show no signs of implant loosening. Thanks to the success of his shoulder replacement, Michael has returned to enjoying his favorite outdoor activities without any limitations.





*Figure 13: preoperative MRI of the shoulder from an axial (birds-eye) view showing loss of joint space indicating cartilage loss from arthritis*



*Figure 14: preoperative MRI of the shoulder from a coronal (front) view showing loss of joint space indicating arthritis*



*Figure 15: preoperative x-ray of the shoulder showing narrowing of the glenohumeral joint space, indicative of arthritis*



*Figure 16: postoperative x-ray of the shoulder showing positioning of the shoulder replacement implants*

#### 4. Reverse Total Shoulder Replacement

*This is an example of a reverse total shoulder replacement, a surgical procedure developed to treat complex shoulder conditions by reversing the ball-and-socket structure of the joint. This procedure is increasingly more popular because it can treat both arthritis and severe rotator cuff tears in one procedure. By addressing both issues in a single procedure, reverse shoulder replacement restores mobility and reduces pain.*

Henry (name changed), a retired 81-year-old male who enjoys jogging and playing golf, began experiencing persistent pain in his left shoulder that had lasted for over six months and reached a 7/10 on the pain scale. It was especially difficult for him to raise his arm. The pain made it increasingly difficult to maintain his active lifestyle and affected his essential daily tasks such as dressing, housework, and sleeping. After a thorough evaluation, he was diagnosed with moderate osteoarthritis and a full-thickness rotator cuff tear. Initially, Henry treated his pain with cortisone injections, however, after only limited improvement, he decided to undergo a reverse total shoulder arthroplasty.

Henry's surgery took approximately 75 minutes, and he spent one night in the hospital and went home the next morning.

Following surgery, Henry experienced significant improvement. At six weeks postoperative, his pain had dropped to just 1/10. By three months, Henry reported being completely pain-free with almost normal range of motion. At six months, while still working on improving his range of motion, Henry was fully back to his favorite activities, including jogging and playing golf, without any pain.



*Figure 17: preoperative x-ray of osteoarthritic shoulder (left) and postoperative x-ray after a reverse total shoulder arthroplasty procedure (right)*