

Rotator Cuff Repair with a Bioinductive Bovine Collagen Implant Has a Low Incidence of Post-Operative Stiffness: Review of 345 Shoulders

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INTRODUCTION: Use of a bioinductive bovine collagen implant in repair of the rotator cuff has become more popular over the last few years. Recent studies have raised concerns about the incidence of post-operative stiffness in relation to the device, with one study reporting a 25% rate of significant stiffness and a 19% rate of re-operation for stiffness. The purpose of this study was to analyze the rate of stiffness in our own experience with the device. It was our hypothesis that the rate of stiffness seen over an extensive time period with long-term follow-up would be lower than the high rates recently reported.

METHODS: We conducted a retrospective review of all cases of rotator cuff repair performed in our practice between September 2014 and April 2022 in which a bioinductive bovine collagen implant was utilized and who had at least 6 weeks of postoperative follow-up. The primary outcome measure was postoperative range of motion, with significant stiffness defined as loss of passive range of motion in at least two planes with cutoffs of 120 degrees of forward elevation, 30 degrees of external rotation, and internal rotation to the buttock. The secondary outcome measure was revision surgery for stiffness, including both arthroscopic lysis of adhesions and/or manipulation under anesthesia. Demographic data and systemic risk factors were also recorded.

RESULTS:

A total of 345 cases (316 individual patients) were included in our analysis. There were 147 females and 159 males with an average age of 56.2 years (range 30.2-80.0). Average length of follow-up was 9.6 months (range 6 weeks to 7.4 years). There were only 11 cases (3.2%) of significant post-operative stiffness in 10 individual patients, and only 6 cases (1.7%) requiring additional operative intervention for stiffness – five cases of arthroscopic lysis of adhesions and one case of manipulation under anesthesia. Of the 10 patients with stiffness, 5 were smokers, 4 were diabetics, and one had thyroid disease. One patient (representing 2 of the 11 cases) had a post-operative stroke and fall that likely contributed to his post-operative stiffness, which did not resolve even after an arthroscopic lysis of adhesions with revision repair.

DISCUSSION AND CONCLUSION: Our study found a low incidence of significant post-operative stiffness in cases of rotator cuff repair associated with the use of a bioinductive bovine collagen implant. Very few patients required additional operative intervention for stiffness. A high percentage of patients with stiffness had known systemic risk factors for it. While further study across larger groups is needed, our experience with the bioinductive bovine collagen implant has not shown this complication to be a major problem.