

# Is Bone Marrow Concentrate a Shoulder Rotator Cuff Fixer?

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This week a Mayo Clinic registry-based study came out suggesting that bone marrow concentrate injections **reduced** shoulder rotator cuff surgery retear rates. Let's look at that data in the context of what else has been published and investigate what we know about this treatment in shoulders. Let's dig in.

## What Is Bone Marrow Concentrate? Can't It Be Injected without Surgery?

Bone marrow concentrate or BMC is what's we use every day. The doctor takes a bone marrow aspirate from the back of the hip. In our world of surgical avoidance, that's used to help patients avoid surgery by injecting it into rotator cuff tears that meet certain criteria. In fact, there are two recently published studies on the use of BMC to help patients avoid shoulder surgery. One was a registry study similar to the highlighted Mayo study and the other was [the halfway analysis of a randomized controlled trial on complete non-retracted tears](#) (1,2). That clinical trial is now complete and will be soon submitted for full publication with similar findings to those found on mid-term analysis.

Others have published on injection-based shoulder treatment as well. For example, Kim et al published on the treatment of rotator cuff tears in a small study of 24 patients (3). Don

Buford has a similar but as of yet unpublished study on partial rotator cuff tears. In an email exchange, he states, *"We treated 25 patients. All patients received a single injection intra-tendinous and into the subacromial space. 2-year follow-up revealed a statistically significant decrease in pain score from 6.3 to 1.8, a SANE score increase from 61 (3 months) to 84 (ASES score that went from 50 pre to 80)."*

## **The Problem of Retears and Rotator Cuff Surgery**

A re-tear is when a rotator cuff tear is sewn back together surgically and never fully heals and it tears again at some later date. Here's what we know:

- Despite the surgery, the re-tear rate is 21% (4)
- 1/3 of repaired rotator cuffs in patients over age 60 fail by 1 year with an 8% complication rate (5)

Hence, any treatment that you can add to rotator cuff surgery to reduce the re-tear rate is a big deal.

## **Past Research on BMC Use in Surgery and Reducing Retear Rates**

One way to use BMC would be through an guided injection to help avoid surgery. Another way would be to try an enhance surgical results by using it with surgery. For example, Hernigou et al published several years ago on rotator cuff repairs that had been augmented with BMC injection (6). He followed these patients with MRIs up to 10 years after the surgery and matched them to other patients who didn't have the surgery (90 patients total in a "case-control" design). He found that the addition of the BMC injections to surgery reduced the re-tear rate by 1/2.

## **The New Mayo Study**

The new study was performed by the Mayo Clinic and looked at 114 patients who opted for bone marrow concentrate injections. These patients were compared to matched controls (just like the prior Centeno and Hernigou studies, this was registry data). There was a 3X reduction in re-tear rates!

So, bone marrow concentrate stem cell injections use by themselves for appropriate shoulders, or used in conjunction with shoulder surgery show significant improvements in healing the shoulder and in reducing re-tear rates.