



To sling or not to sling the shoulder after rotator cuff repair: which side are you on?

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“Science is the father of knowledge, but opinion breeds ignorance.”
—Hippocrates (Law, Bk IV, circa 395 B.C.). The above quote tells us that evidence-based investigation can provide scientific truth, whereas opinions alone will not. Physicians, however, may at times be influenced by opinions rather than by scientific evidence in their practice of medicine.

Rehabilitation following rotator cuff repair is probably one of the most critical aspects of achieving successful outcomes. The general principle of rehabilitation is to provide a sufficient period of immobilization to achieve reliable tendon healing while promoting a passive range of motion exercises to prevent shoulder stiffness. The paradox, of providing enough time for the repaired tendon to heal while encouraging early mobilization to avoid postoperative stiffness, is crucial, as they seem to be contradictory (1,2). In the past decade, there have been improvements in the standard of research that have helped eliminate unsupported opinions and provide scientific answers to many questions.

Many of my patients with rotator cuff tears have questions regarding the surgical procedure, perioperative management, post-operative rehabilitation, and ability to work after rotator cuff repair. Most patients become defensive when informed that post-operative rehabilitation requires restricted mobilization. Moreover, no consensus has been reached regarding the restriction of mobilization (3). Basically, the rehabilitation protocol should not put the surgical repair at risk nor should it provoke new problems.

Patients are often advised to wear a sling or brace for the

first 4–6 weeks after rotator cuff repair surgery to prevent them from performing any physical activities involving the affected shoulder (3). However, there are advantages and disadvantages regarding early mobilization after rotator cuff repair. A well-designed prospective randomized controlled trial (Level 1 Evidenced Based) compared clinical and radiographic outcomes for up to 6 months following rotator cuff repair with and without post-operative sling immobilization in 80 consecutive patients with an isolated full-thickness superior small- to medium-sized rotator cuff tear (4). Rehabilitation in both groups consisted of passive mobilization for 4 weeks, followed by progressive active mobilization. Patients with and without slings were instructed to avoid active abduction-elevation for 4 weeks. Patients and surgeons were aware of their allocation to groups without and without slings. Patients were clinically evaluated by a blinded physician at four intervals for up to 6 months. At 6 months, all patients underwent ultrasonography and were evaluated by an experienced radiologist.

This study found that the absence of a sling was associated with better outcomes, including earlier mobility and better functional scores, than sling immobilization. Visual Analogue Scale (VAS) pain scores 10 days after rotator cuff repair were similar in the two groups. After 1.5 months, patients in the no-sling group showed better external rotation (8.2°) and active elevation (13.9°). At three months, patients in the no-sling group showed better active elevation (13.2°) and a higher percentage were able

to reach up the back to T12 or above. At 6 months, Single Assessment Numeric Evaluation (SANE) scores were higher (85.8 *vs.* 79.4) and pain scores lower (0.8 *vs.* 1.5) in the non-sling group, suggesting that slings may not be required for patients treated for a small- to medium-sized tear. Although these findings suggest “a win from the patient side”, we should not jump to conclusions.

Although these findings seem to be scientifically sound, they should be interpreted cautiously. “*If you want to converse with me, first define your terms.*” —Voltaire. It is necessary to clarify the terms of discussion to reach a valid conclusion. The above-cited study did not mention details of post-operative rehabilitation using the sling. Although this study had statistically adequate power to detect minimally important clinical differences in American Shoulder and Elbow Society (ASES) scores, the number of included patients was small. This may explain inconsistencies in range of motion, with the between group difference being statistically significant at 3 months but not at 6 months. Although sample size was estimated based on ASES scores, these scores were not evaluated at the final 6-month follow-up. Postoperative rotator cuff integrity was determined by Sugaya classification on ultrasonography. However, this evaluation may be subject to observer bias or variation. Rotator cuff integrity may be difficult to observe by ultrasonography, with no re-tear observed in the sling group and only one patient (2.5%) in the non-sling group having an unhealed tendon. This may have been due to the relatively short 6-month follow-up time, although most re-tears occur during the first 6 months after surgery. The primary concern following shoulder surgery remains long-term improvement and this is likely best achieved through rotator cuff healing. A recent systematic review and meta-analysis reported that conservative and operative approaches yielded similar short-term improvements (5).

As said by Hippocrates, “*To know is science, and to believe one knows is ignorance*”. Rehabilitation protocols tend to be based on surgeon opinion and experience rather than on scientific rationale (6). Previous studies have inspired further investigations that will bring science closer to current practice. These studies are valuable for questioning important routine aspects of treatment that are accepted deductively, as readers are able to learn scientifically rather than having opinions with less supporting evidence. Although the data provided here may not warrant changes in current general practice, follow-up studies on long-term outcomes are eagerly awaited!

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Footnote

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