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Technical Note

Complete Repair of Massive, Retracted, and "Non-Repairable" Tears of the Rotator Cuff: The Anatomic Vector Repair

Graeme P. Whyte, M.D., M.Sc., F.R.C.S.C.

Abstract: Massive and retracted tears of the supraspinatus and infraspinatus tendons of the rotator cuff are associated with great pain and disability and may be considered "non-repairable," depending on the extent of injury and the experience of the treating clinician. The technique of anatomic vector repair of the rotator cuff is a surgical treatment method that enables the surgeon to accurately characterize the injury pattern and successfully repair many of these debilitating injuries anatomically in a stepwise manner, often in cases that would have otherwise been treated with a less preferable surgical procedure that does not restore native anatomy.

Massive tears of the rotator cuff involving the supraspinatus and infraspinatus tendons are associated with great disability and often intense pain. When an irreparable massive rotator cuff tear is recognized, patients may be treated with techniques such as reverse total shoulder arthroplasty (rTSA), which has a high complication rate in younger patients,¹ or the newer technique of superior capsular reconstruction (SCR). SCR involves use of dermal allograft or fascia lata autograft to treat irreparable tears and does not restore native anatomy. Additionally, there is a lack of long-term clinical outcome data for this procedure.²

Importantly, the determination that a massive rotator cuff tear is not repairable is often made when the treating surgeon has not been exposed to technical methods of treatment that are capable of complete, or near-complete, surgical repair of chronic massive and

retracted tears of the supraspinatus and infraspinatus tendons. Presented in this Technical Note is a technique to completely repair chronic massive and retracted tears of the supraspinatus and infraspinatus tendons of the rotator cuff, termed anatomic vector repair. This method may be used in a stepwise manner to simplify the repair of massive tears, thereby avoiding other less preferable treatment methods that do not restore native anatomy.

Surgical Technique

Principles of Anatomic Vector Repair of the Rotator Cuff

Restoration of rotator cuff tendon anatomy is a critical aspect of repair and ensures that the tissue is repaired under appropriate anatomic tension. Massive and retracted tears of the supraspinatus and infraspinatus tendons cannot be repaired anatomically without knowledge of the displacement patterns and use of a repair technique that methodically restores the anatomic position of the displaced tissue.

Spatial vectors can be used to plan the repair sequence of massive and retracted supraspinatus and infraspinatus rotator cuff tissue, to enable complete repair of the torn tendons to the bony footprint, under appropriate tension. A vector has both magnitude and direction. Spatial vectors may be represented by a "directed line segment" that has an initial point and a terminal point (Figure 1A). The critical first step in repairing massive and retracted tears of the supraspinatus and infraspinatus is to recognize the tear pattern and accurately assess the

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<https://doi.org/10.1016/j.ats.2019.11.011>

Cortisone Injections. Cortisone injections can be incredibly helpful at limiting the acute inflammation of a rotator cuff tear and allowing the patient to begin therapy. It is important to participate in the therapy and exercises even if the shoulder feels better after an injection. While the cortisone can help settle the shoulder inflammation .


Rotator Cuff Tears: You can get back to normal even with a full Rotator .

ROTATOR CUFF TEARS

SYMPTOMS



- > Pain with overhead activity that intensify over time
- > Inability or difficulties to Raise arm above shoulder height
- > Inability or difficulties to Reach behind the head
- > Difficulties with dressing , combing hair , shaving



Enter BPC-157 for My Rotator Cuff and Tennis Elbow. After doing some research, I decided to try using BPC-157 and Thymosin beta 4 (TB-500) to help heal my injury. I purchased both peptides from a reputable supplier, found the best starter BPC-157/TB-500 dosage and got started.

Mayo Clinic Q and A: Treating rotator cuff tears



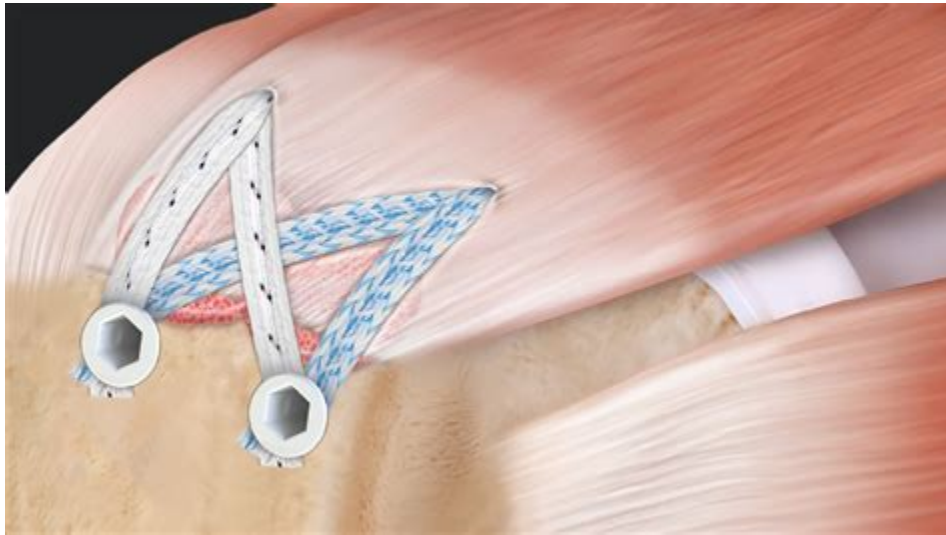
1 Introduction The rotator cuff is a complex of the supraspinatus, teres minor, infraspinatus, and subscapularis muscles and their tendons. They form a cuff-like structure around the humerus head and coordinate to complete complex shoulder movements (Craig et al. , 2017).

BPC 157 for tendon and ligament injury healing | Dr Geier



Introduction. Rotator cuff injury is a common cause of chronic shoulder pain; Milgrom et al. 1 conducted an epidemiological survey on adults aged 30 to 99 years with ultrasound, and found that rotator cuff tear significantly increased in patients over the age of 50, with over 50% of rotator cuff tears at the age of 70 and up to 80% at the age of 80. The above data indicate that rotator cuff .

Frontiers | Hydrogel Development for Rotator Cuff Repair



Rotator Cuff Tears - Understanding the Anatomy of this injury Approximately 1% of the adult population will have shoulder pain at some point in their lives. While it is estimated that 65-70% of all shoulder pain involves the rotator cuff tendon, it has been estimated that 5 to 40 % of people without shoulder pain have full-thickness tears of the rotator cuff The rotator cuff is made up of 4 .

BPC-157 / shoulder tear healing / rotator cuff / how-to guide with vids .



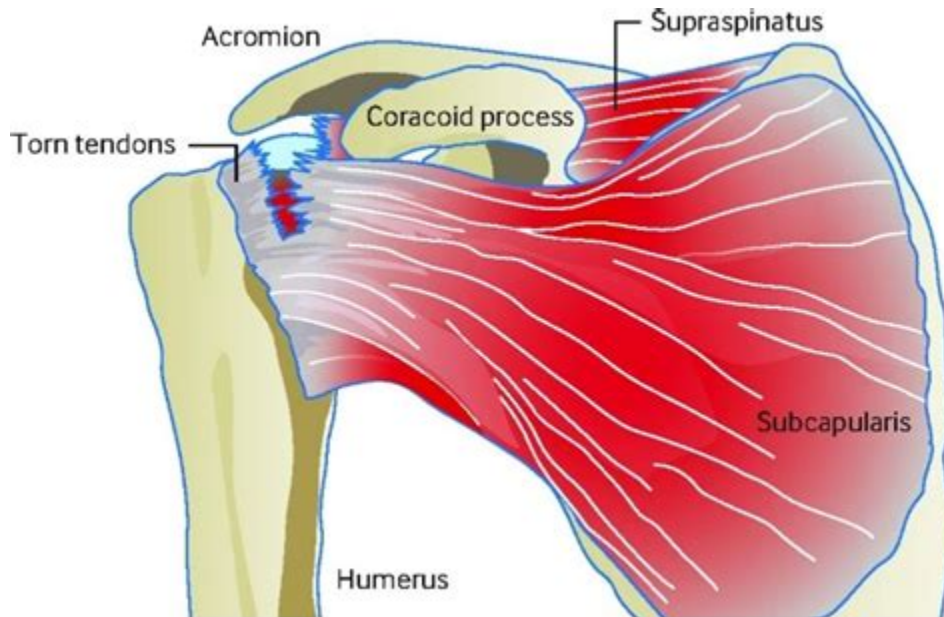
The rotator cuff is a collection of four muscles (the supraspinatus, infraspinatus, teres minor, and subscapularis) and their tendons. Each of these muscles plays a unique role in shoulder movement, but together, they provide strength and stability to the joint during motion.

BPC-157 Rotator Cuff Healing Experience — Jeff Armstrong



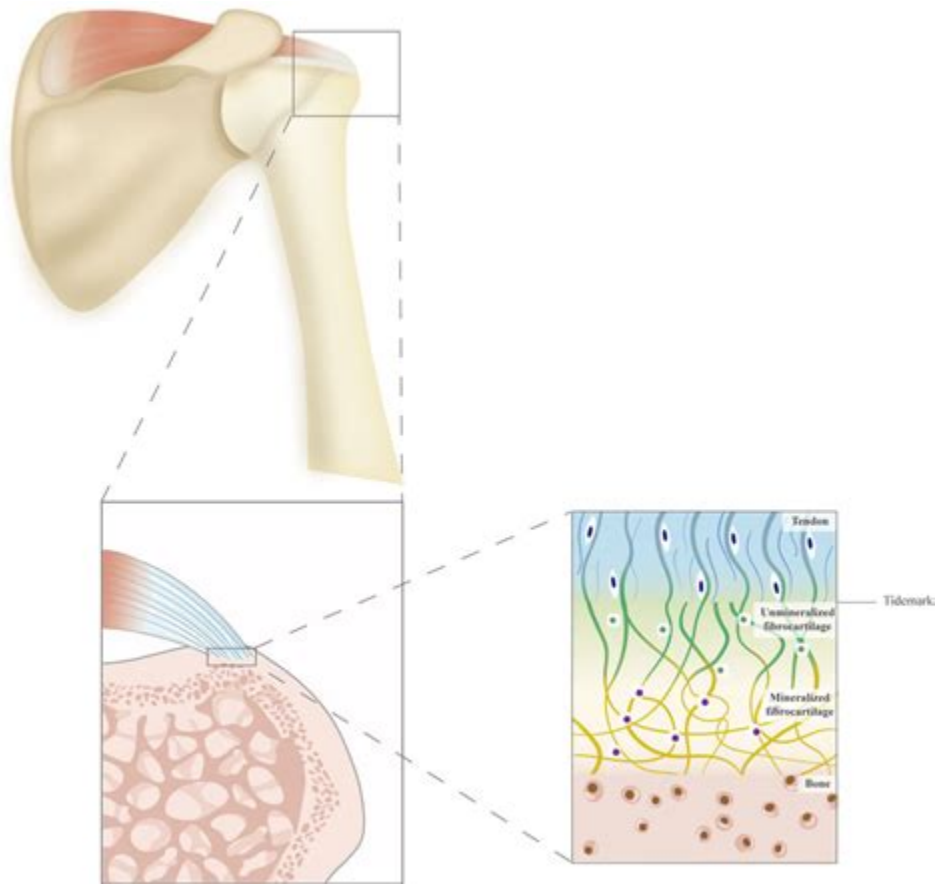
Rotator cuff injury affects both the tendons and the associated muscles. Full thickness tears may result in muscle and tendon retraction, leading to a change in the angulation of muscle fibers and subsequent fatty infiltration (FI) [1]. FI was first observed by computed tomography (CT), which led to the five-stage classification system that is based upon fat-to-muscle ratio, one of the most .

Biological strategies to enhance rotator cuff healing - PubMed



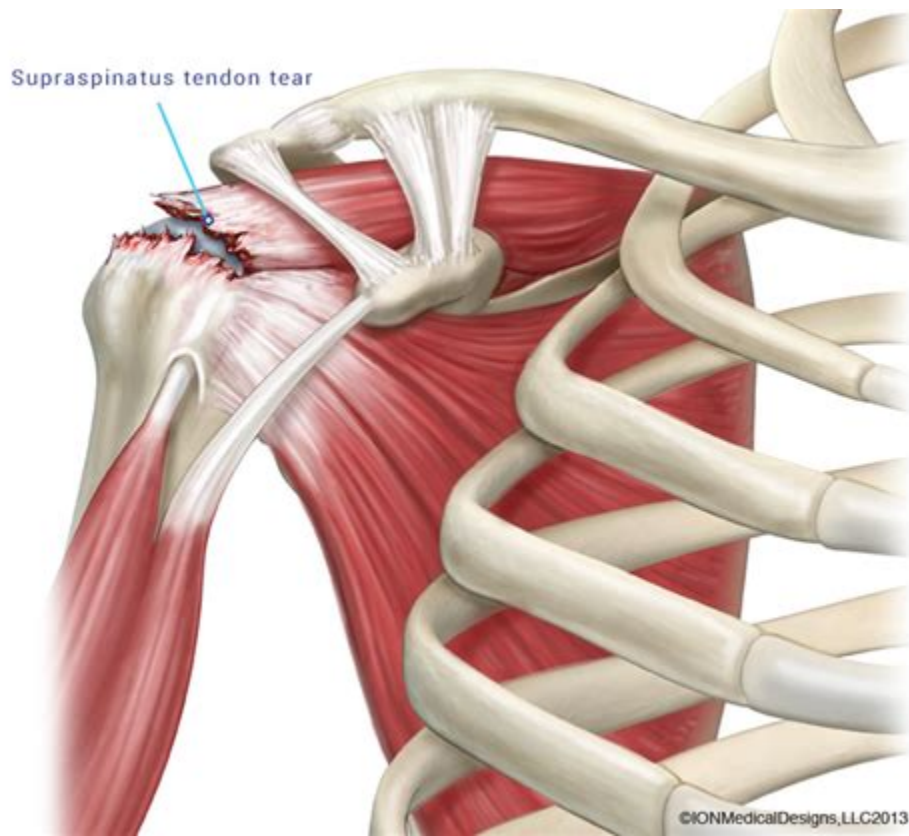
Many different types of surgeries are available for rotator cuff injuries, including: Arthroscopic tendon repair. In this procedure, surgeons insert a tiny camera (arthroscope) and tools through small incisions to reattach the torn tendon to the bone. Open tendon repair. In some situations, an open tendon repair may be a better option.

Advances in Stem Cell Therapies for Rotator Cuff Injuries



This Mayo Clinic research, published in *Biomaterials*, documented that purified exosome product — also known as PEP — promoted repair of rotator cuff injuries faster and more effectively than surgery alone. The rotator cuff is a group of muscles and tendons that surround the shoulder, protecting the socket and guiding mobility.

The association between retraction of the torn rotator cuff and .



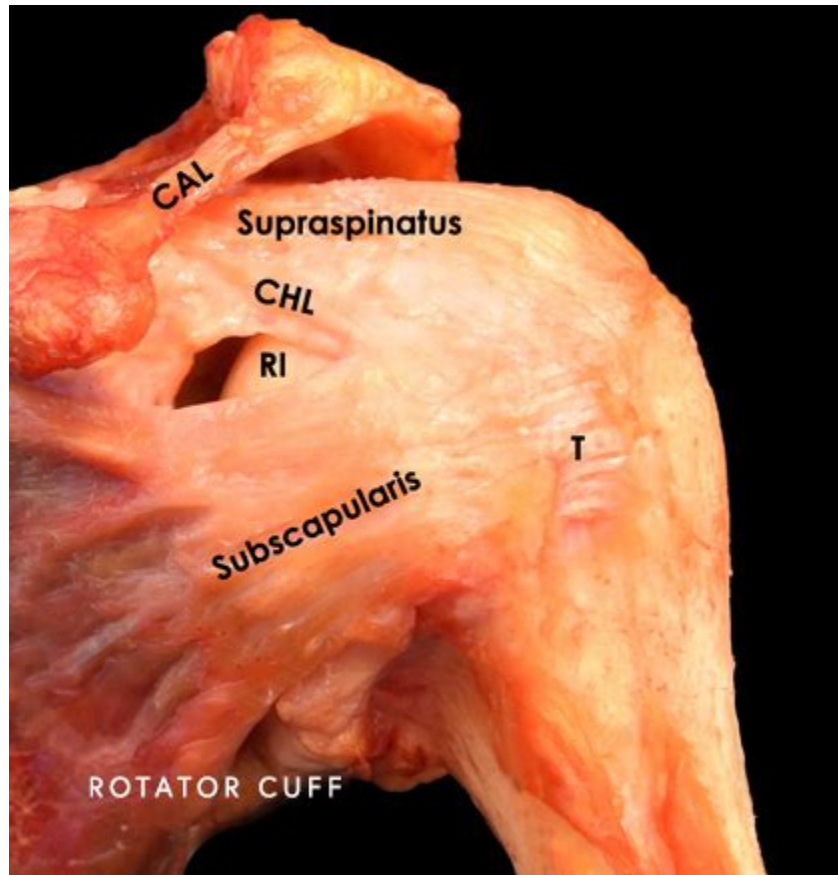
Background: The lack of healing at the repaired tendon-bone interface is an important cause of failure after rotator cuff repair. While augmentation with growth factors (GFs) has demonstrated promise, the ideal combination must target all 3 tissue types at the tendon-bone interface. Hypothesis: The GF combination of transforming growth factor .

Pharmacologic Enhancement of Rotator Cuff Repair: A Narrative Review



#1 Hi folks! Injured my shoulder 3 weeks ago. Internet guided self test points to a rotator cuff - supraspinatus tear. EOD I do a one hour rehab -and stretch routine that I'll post here. I have BPC-157 on hand and will start using it on Monday with a full documentation of how to use it correctly and the end results.

Collagen I: a kingpin for rotator cuff tendon pathology - PMC



Rotator cuff tendinopathy (RCT) is the most common tendon disorder of the shoulder which causes pain and dysfunction. Even though the multifactorial etiology of RCT is being studied, the biochemical and molecular events behind the pathogenesis remain unclear [2].

Novel Growth Factor Combination for Improving Rotator Cuff Repair: A .

Rotator Cuff Strain Rehabilitation Exercises



Isometric shoulder external rotation



Isometric shoulder internal rotation



Wand exercise: Flexion



Wand exercise: Extension



Wand exercise: External rotation



Wand exercise: Shoulder abduction and adduction



1 Introduction. The rotator cuff is a complex of the supraspinatus, teres minor, infraspinatus, and subscapularis muscles and their tendons. They form a cuff-like structure around the humerus head and coordinate to complete complex shoulder movements (Craig et al. , 2017). Rotator cuff injury and especially tear tends to occur with extrinsic factors such as age, trauma and strain, as well as .

Regenerating the rotator cuff | Center for Regenerative Biotherapeutics

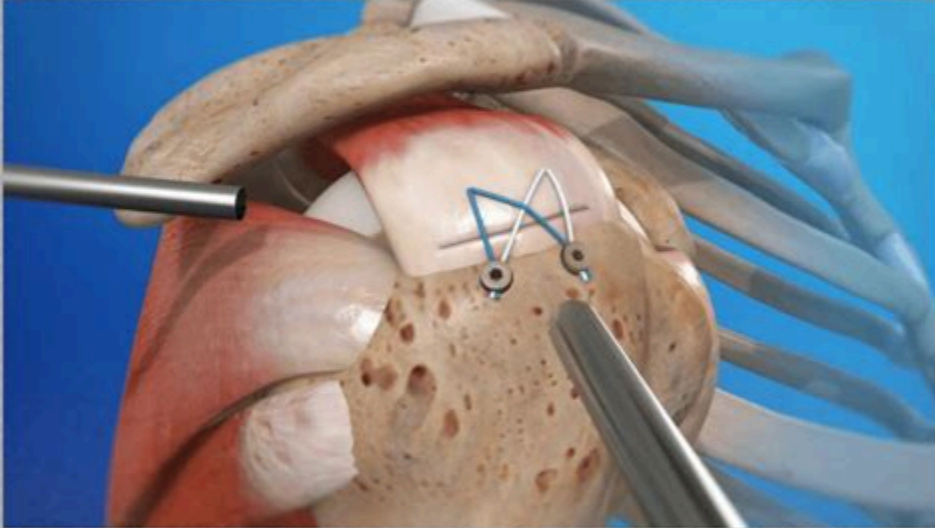


1 Introduction. Rotator cuff injury is one of the leading musculoskeletal diseases worldwide and the most common condition that leads to the complaint of shoulder pain (Picavet and Schouten, 2003). It is estimated that the prevalence of shoulder problems in primary care is 2.4% in the UK (Linsell et al., 2006), and 30%-70% of shoulder pain results from rotator cuff diseases (Mitchell et al.).

Upcoming rotator cuff repair. Peptides before, during, after?



Is Rotator cuff repair surgery effective?



40% of all repairs failed within 1 year!
The larger the tear size & the older the patient the
higher the risk of a re-tear.
(Carr et al 2017)

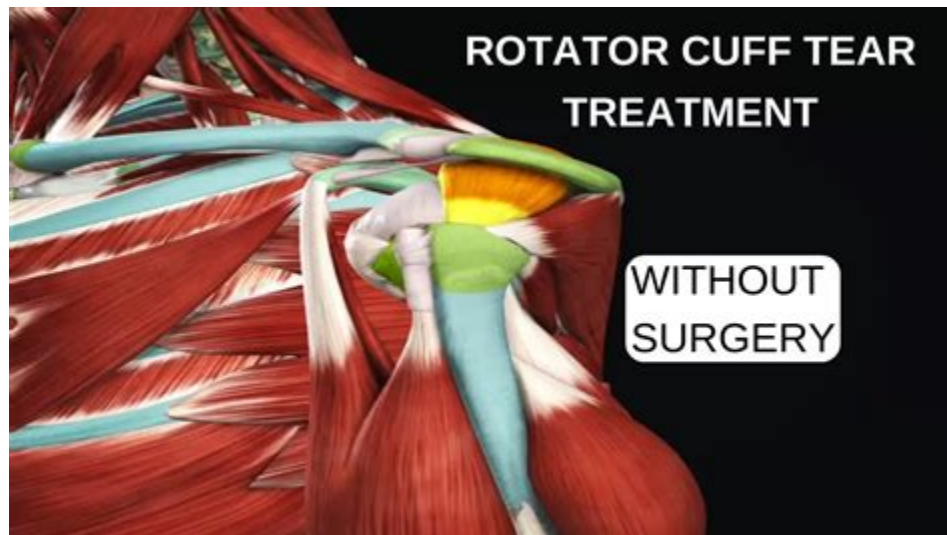
PMID: 24059330 DOI: 10. 2174/1574888x113086660065 Abstract Rotator cuff tear causes a high rate of morbidity. After surgical repair, the presence of a scar tissue reduces tendon biomechanical properties. Emerging strategies for enhancing tendon healing are growth factors, cytokines, gene therapy and tissue engineering.

A Physical Therapist Shares 4 Rotator Cuff Exercises for Better . - MSN



Thymosin Beta 4, MGF, IGF-1, and CJC-1295/Ipamorelin are all peptides that can help you get a jump on the injury and regeneration process. Thymosin Beta 4 promotes blood vessel, muscle cell, and skin cell regeneration and migration, resulting in more rapid and effective wound repair as well as faster recovery from injury.

Non-Surgical Treatments for Rotator Cuff Tears - Verywell Health



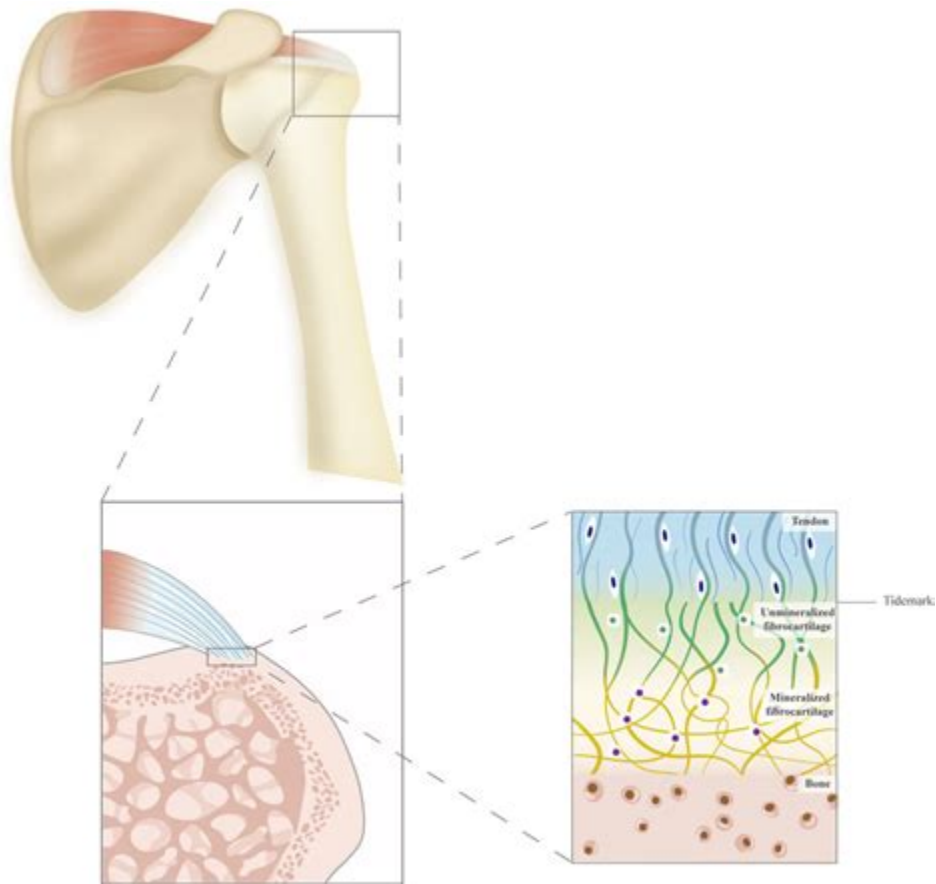
Upcoming rotator cuff repair. Peptides before, during, after? A buddy has turned me on to peptides. Bpc 157 specifically. . Had my right done last year. Should I use peptides as a prep, or wait until after the surgery? Also, as new here, are there any peptides that can be taken by mouth, or is that a waste of time? Locked post. New comments .

4 Best Peptides for Tissue Injury Repair and Recovery - Transform You



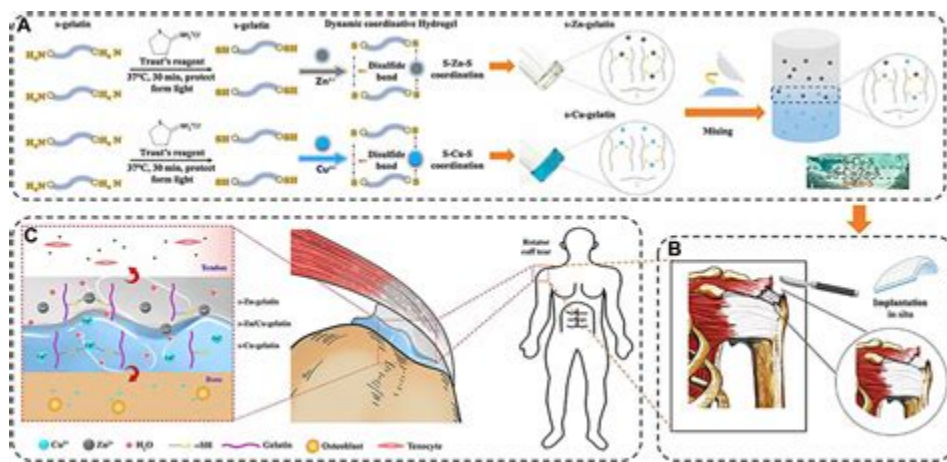
Rotator cuff injury is a common upper extremity musculoskeletal disease that may lead to persistent pain and functional impairment. Despite the clinical outcomes of the surgical procedures being satisfactory, the repair of the rotator cuff remains problematic, such as through failure of healing, adhesion formation, and fatty infiltration. Stem cells have high proliferation, strong paracrine .

Advances in Stem Cell Therapies for Rotator Cuff Injuries



Intercellular Signaling Peptides and Proteins Use of growth factors, stem cell therapy, and other tissue-engineering means serve to augment classical surgical rotator cuff repair procedures. The combination of stem cells and growth factors resulted in enhanced repair that emulated uninjured tissue, but the literature search reflected paucity of ...

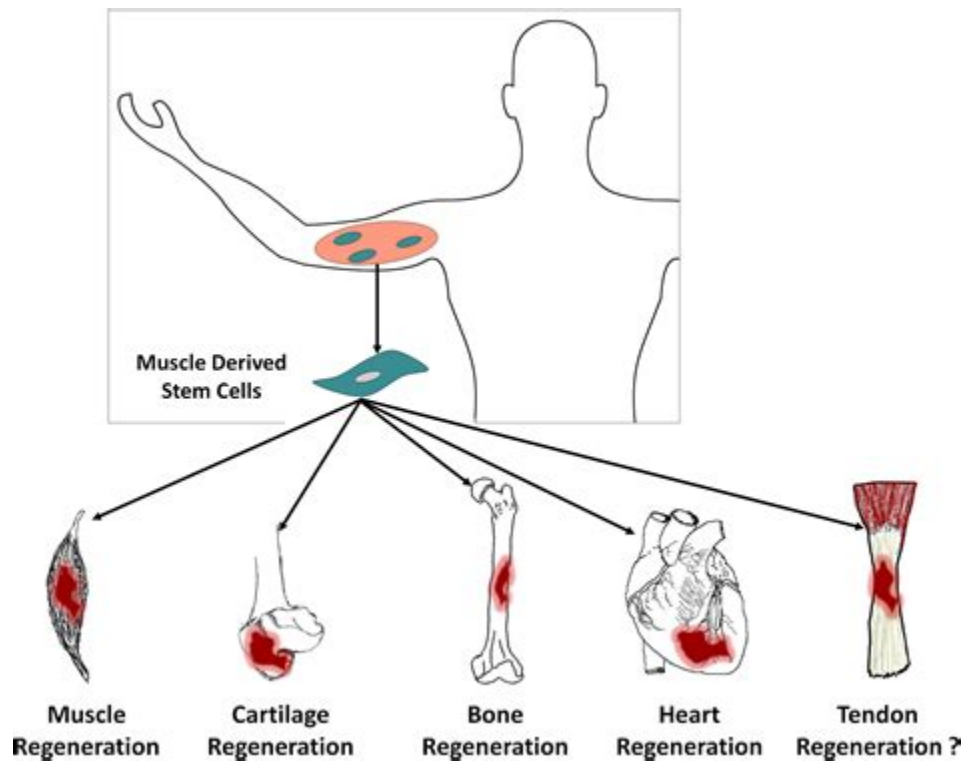
Hydrogel Development for Rotator Cuff Repair - PMC



Start on your side, with the upper arm tucked into the rib cage. Bend the elbow to 90 degrees, holding

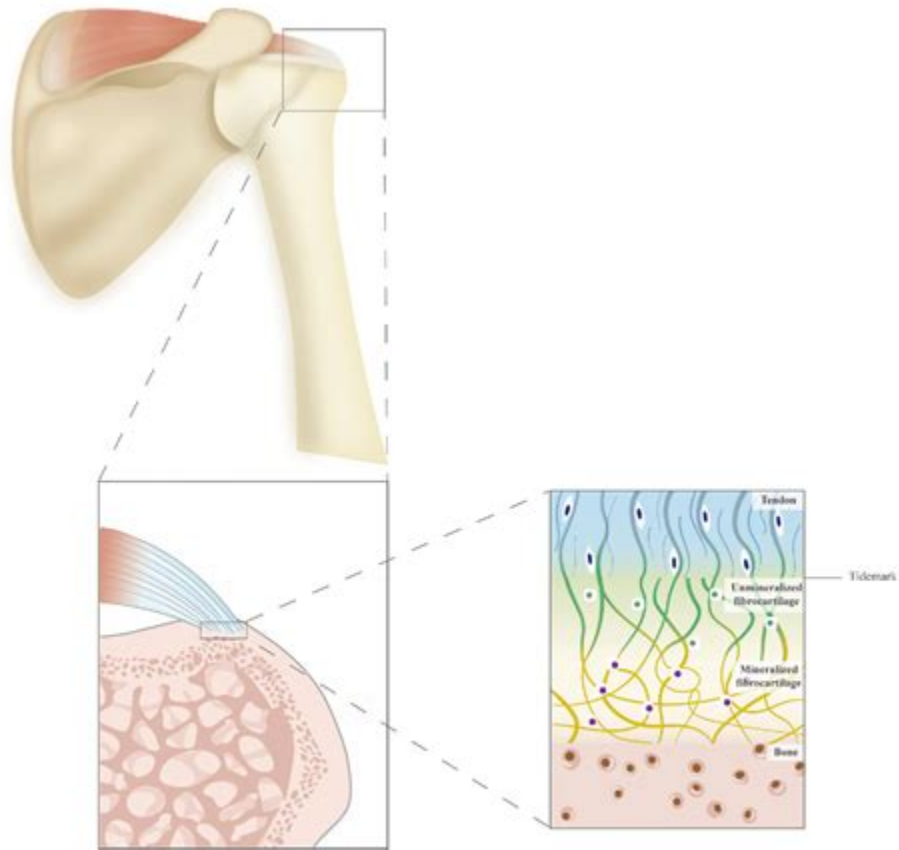
the dumbbell. Rotate by lifting the wrist up towards the ceiling, without allowing the elbow .

Biologic approaches to enhance rotator cuff healing after injury



Have you heard of BPC 157? In this video, I'm going to discuss this popular peptide, what it is, and its potential role in boosting the healing of tendon and ligament injuries so that you get back to sports and exercise quickly and safely. BPC 157 for tendon and ligament injury healing Watch on

Biologics and Stem Cell-Based Therapies for Rotator Cuff Repair



Each rotator cuff muscle performs a specific, important job that helps your shoulder joint work. Your rotator cuff: Stabilizes the head of the humerus in the shoulder joint. The supraspinatus, infraspinatus, teres minor, and subscapularis muscles all work together to keep the joint stable. Abducts (elevates) the shoulder joint out to the side.

Proteomic analysis reveals rotator cuff injury caused by oxidative .



Proteomic analysis reveals rotator cuff injury caused by oxidative stress

Tao Yuan¹, Hong Qian, Xin Yu, Jia Meng, Cheng-Teng Lai², Hui Jiang, Jian-Ning Zhao and Ni-Rong Bao

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Abstract

Background and aims: Rotator cuff tendinopathy is common and is related to pain and dysfunction. However, the pathological mechanism of rotator cuff injury and shoulder pain is unclear. Objective: to investigate the pathological mechanism of rotator cuff injury and shoulder pain, and screen out the marker proteins related to rotator cuff injury by proteomics.

Methods: Subacromial synovium specimens were collected from patients undergoing shoulder arthroscopic surgery. The experimental group were patients with rotator cuff repair surgery, and the control group were patients with habitual dislocation of the shoulder joint. Pathological examination was performed, and then followed by non-labeled quantitative proteomic detection. Finally, from analysis of the biological information of the samples, specific proteins related to rotator cuff injury and shoulder pain were deduced by functional analysis of differential proteins.

Results: All the patients in experimental groups were representative. A large number of adipocytes and inflammatory cells were found in the pathological sections of the experimental group; the proteomics analysis screen identified 80 proteins with significant differences, and the analysis of protein function revealed that S100A11 [$p = 0.011$], PLIN4 [$p = 0.017$], HYOU1 [$p = 0.002$] and CLIC1 [$p = 0.007$] were closely related to oxidative stress and chronic inflammation.

Conclusion: Rotator cuff injury is closely related to oxidative stress and chronic inflammatory response, and the results suggest that the expression of S100A11, PLIN4, HYOU1 and CLIC1 in the synovium of rotator cuff injury provides a new marker for the study of its pathological mechanism.

Keywords: CLIC1, HYOU1, oxidative stress, PLIN4, rotator cuff injury, S100A11

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Introduction

Rotator cuff injury is a common cause of chronic shoulder pain; Milgrom *et al.*¹ conducted an epidemiological survey on adults aged 30 to 99 years with ultrasound, and found that rotator cuff tear significantly increased in patients over the age of 50, with over 50% of rotator cuff tears at the age of 70 and up to 80% at the age of 80. The above data indicate that rotator cuff injury increases with age. The clinical manifestations of rotator cuff injury include shoulder pain, dysfunction and muscle atrophy, which seriously affect limb function and quality of life. Early and effective

diagnosis and treatment are of great significance for relieving shoulder pain and recovering shoulder function, preventing and reducing disability.

The etiology of chronic rotator cuff tear is multifactorial, with extrinsic and intrinsic factors.²⁻⁴ However, the above theories only explained rotator cuff injury from the aspects of pathological pathology and etiology, instead of molecular mechanism, and the prevention and treatment of rotator cuff injury is still limited. Therefore, understanding the molecular mechanism of rotator cuff injury is a scientific problem that needs to

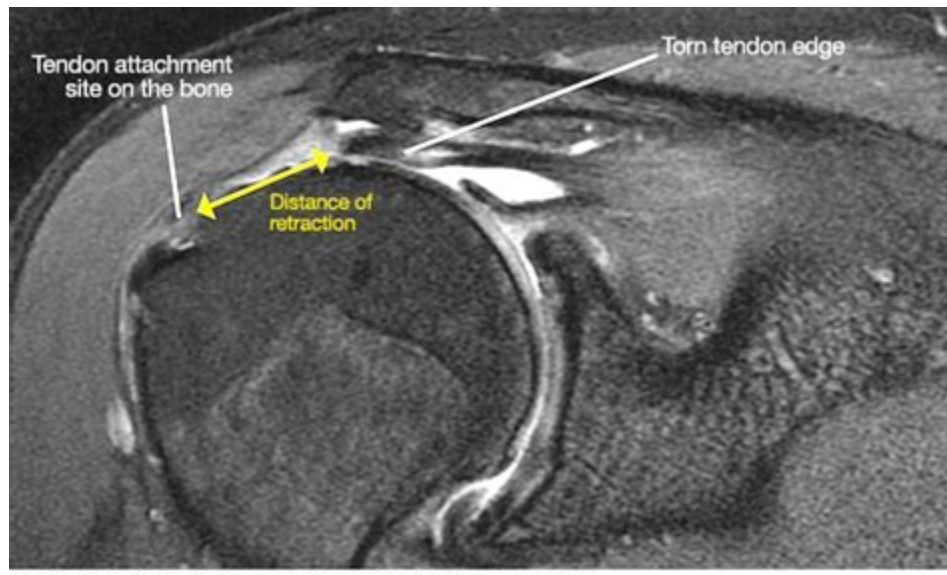
journals.sagepub.com/home/taj



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When a rotator cuff tear is minor, taking a break from activities; applying ice regularly; and taking a nonprescription anti-inflammatory medication, such as ibuprofen or naproxen sodium, may be all you need to relieve the discomfort. In many cases, physical therapy also may help.

Rotator cuff injury - Diagnosis and treatment - Mayo Clinic



As rotator cuff repairs (RCRs) are among the most common procedures in upper extremity orthopedics, healing augmentation using pharmacologic enhancement of the repaired rotator cuff muscle is of particular interest. Objective

- <https://groups.google.com/g/38hunk50/c/wQjqqUPZ3cE>
- <https://od.lk/f/NjBfMTIyMjg2NzE1Xw>
- <https://colab.research.google.com/drive/1zx7jbEp237ZgupF0cNFBsYVUuPNxev4G>