Subacromial injections of hydrolyzed collagen for the treatment of rotator cuff tendinopathy

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INTRODUCTION

Partial or complete rotator cuff tendon ruptures (RCTs) are among the most common conditions causing shoulder pain and functional deficits (Thankam et al. 2018, Oliva et al. 2015). To date, physical therapy, nonsteroidal anti-inflammatory drugs (NSAIDs), intra-articular injections of hyaluronic acid (HA) and/or corticosteroids, platelet-rich plasma injections, and local microwave diathermy are among the most commonly used conservative treatments for rotator cuff tendinopathy (Oliva et al. 2015). However, these types of treatments are not always effective and it would be useful to identify new devices or therapies with different mechanisms of action. Recently, a low-molecular-weight collagen hydrolysate (LWCH) of bovine origin (CHondroGrid®, Bioteck SpA) has been launched on the market for infiltrative use, for the treatment of pain symptoms and the functional recovery of joints, muscle-tendon and ligamentous structures. To date, at the knowledge of the authors, no clinical evidence is available in the literature on its efficacy in the treatment of rotator cuff injuries.

AIM OF THE STUDY

The objective of this study is to evaluate the effectiveness of LWCH in reducing pain and functional recovery in patients with symptomatic rotator cuff tendinopathy using specific scores. Secondary objective will be to verify the possible occurrence of side effects.

Figure 1. Commercial format of the LWCH under study, named CHondroGrid®. It contains 4 mg of freeze-dried low molecular weight (< 3.3 kDa) collagen peptides in a sterile double pack

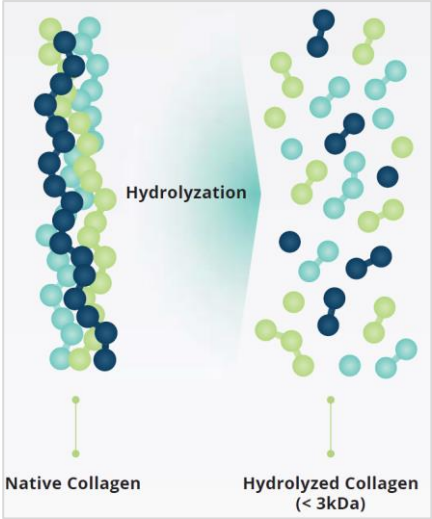
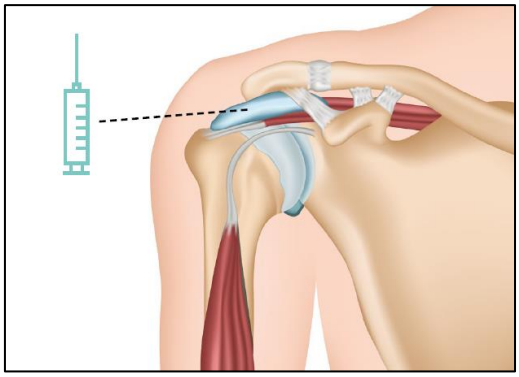


Figure 2. LWCH is produced from connective tissue of bovine origin, macerated and treated in a controlled manner with specific enzymes to obtain a pool of collagen peptides with a low molecular weight, capable of diffusing rapidly into the structures involved. Collagen peptides act by mechanically reinforcing the damaged extracellular matrix.

METHODS: Plan of treatment



Number of injections: 2, 15 days apart

Injection site: Peri-articular, Subacromial Boursa

Approach: lateral or posterior

Outcome: pain at rest, during movement and during the night (Visual Analog Scale, VAS), Constant Score and Simple Shoulder Test.

Follow-up: time 0 (first injection), 15 days (second injection), 45 days (1 month follow-up), 190 days (6 months follow-up)

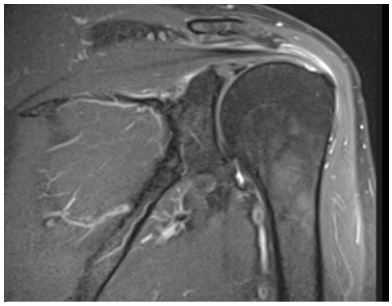
METHODS: Patient's demography

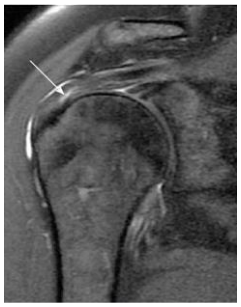
Number of patients	Age (mean ± std deviation)	Gender(%)	Right shoulder(%)	Dominant arm(%)	BMI (mean ± std deviation)
70	53.2 ± 11.9 years	63.6 % M	65 %	57 %	24.8 ± 4.0

METHODS: Inclusion criteria

- Persistent shoulder pain for at least 3 months, unresponsive to conservative treatment
- Clinical diagnosis of rotator cuff tendinopathy or partial-thickness tear detected on MRI (high signal intensity of tendon that was anatomically totally or partially intact)
- No prior treatment with joint or subacromial steroid injections in the past 3 months

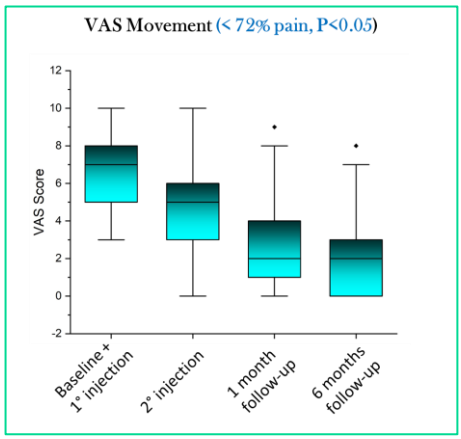
METHODS: Type of lesions treated: MRI imaging

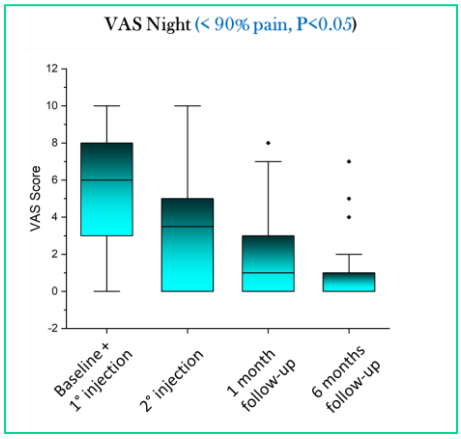


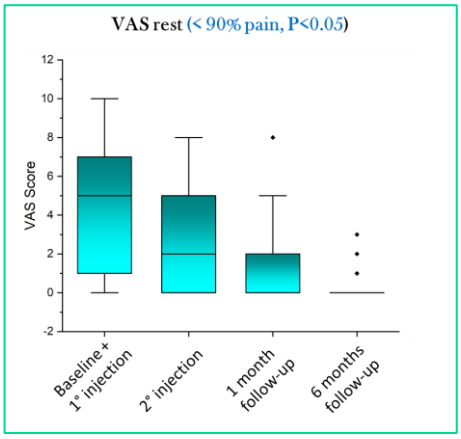


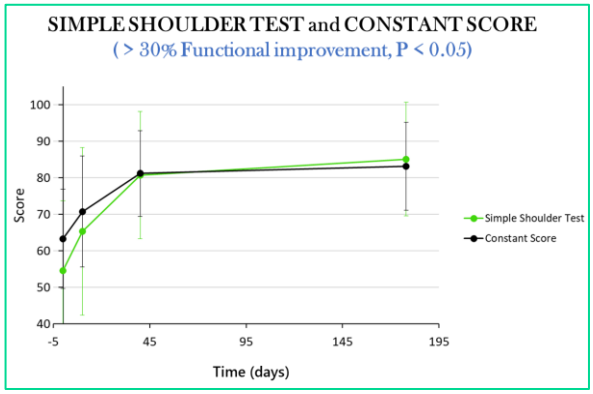
Illustrative images of magnetic resonance obtained with the STIR sequence of damaged rotator cuff tendons that were treated with LWCH.

RESULTS









CONCLUSIONS AND PERSPECTIVES

- Thus clinical study on 70 patients shows the efficacy and safety of the LWCH in the rotator cuff tendinopathies.
- LWCH treatment showed effective in pain reduction and functional recovery from the very first injection.
- The treatment effect increases progressively with the therapy and lasts even after 6 months from last injection.
- At 6 months FUP there a pain reduction > 70 % during movement and > 90% at rest e during the night.
- No adverse effects different from a temporary swelling at the injection site was observed from LWCH treatment.

The authors state that the results obtained in this study stimulate further studies to evaluate the effficacy of LWCH in tendinopathies affecting other anatomical districts and comparing the efficacy of LWCH with other available treatments on the market.