AbstractNon-Responsive Multifactorial Shoulder Pain with Osteoarthritis and Rotator Cuff Tears Treated With Autologous Micro-Fragmented and Minimally Manipulated Adipose Tissue under Continuous Ultrasound Guidance

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ABSTRACT

Background: Chronic shoulder pain and rotator cuff abnormalities affect a large portion of the population and result in substantial impairments and loss of useful functions, thus affecting patient quality of life. These often include pain, loss of range of motion, stiffness, and gradual worsening over time. Current treatments present a challenging clinical picture with few options if non-operative care fails. Surgical repairs usually exhibit re-tears only in up to 60% of cases. In this context, the autologous adipose tissue has gained increasing interest as a source of orthobiologics. Fat is readily accessible and simple to harvest and can be used to provide volume and cushioning of soft tissues and structural defects, and to provide regenerative stimuli to damaged joints. Indeed, the adipose tissue has been shown to have an abundance of perivascular and mesenchymal stem cells (hMSCs) producing many bioactive elements.

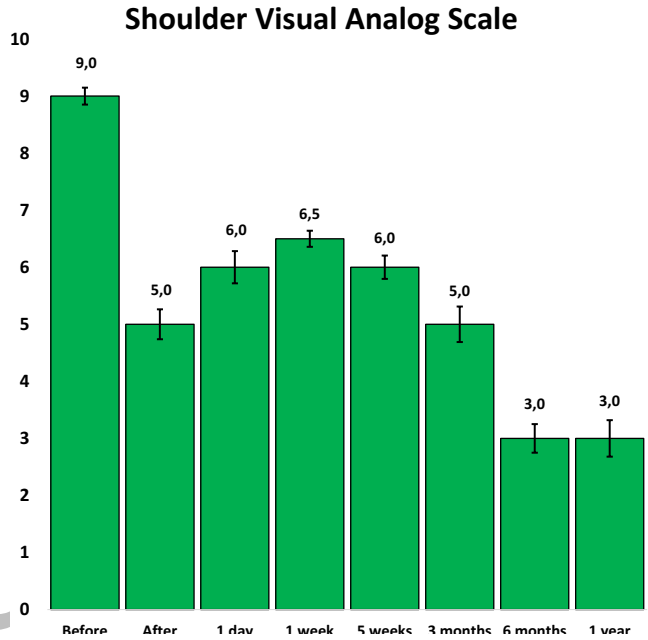
Objective: We initiated our evaluations on the potential benefits of using autologous, micro-fragmented, and minimally manipulated adipose tissue in cases of non-responsive multifactorial shoulder pain with osteoarthritis and rotator cuff tears.

Study description: These are the first 10 subjects reaching one-year follow-up, part of an ongoing study approved by IRCM IRB. Ages: 35 – 89, Kellgren-Lawrence OA average: 3.3. Tears (all confirmed on MRI and mapped with ultrasound imaging)**:** eight supraspinatus tendon, four full thickness, four partial thickness, one partial subscapularis tendon, two partial bicep tendon, six labrum. Atrophy 4 and fatty atrophy 2.

Material and Methods: The micro-fragmented fat was obtained using a minimal manipulation technology in a closed system, Lipogems®, without the addition of enzymes or other additives. Lipogems® was injected in 1cc aliquots under ultrasound guidance, confirming the lipofilling of joint and hypoechoic soft tissue defects. Clinical outcomes (VAS, ROM, strength, ASES) were measured at baseline, 1 day, 1-3-5 weeks, 3-6 and 12 months follow-up.

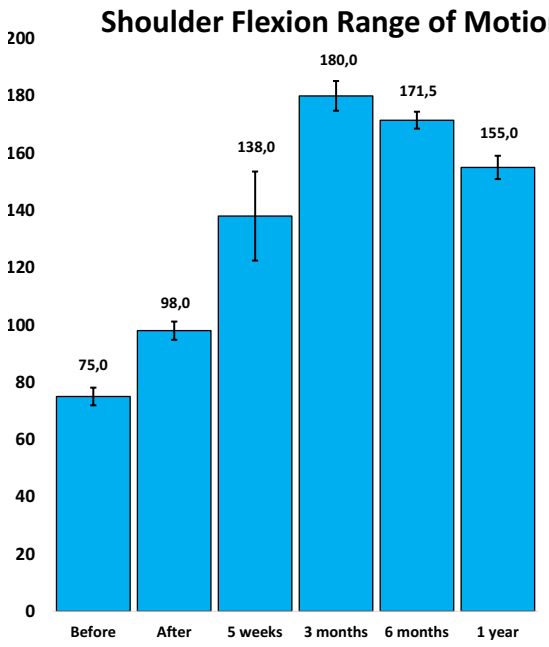
Results:

The improvement of the symptoms occurred few days after treatment and all the measured scores significantly increased steadily throughout the whole period, until one-year follow-up (Figures 1-7).



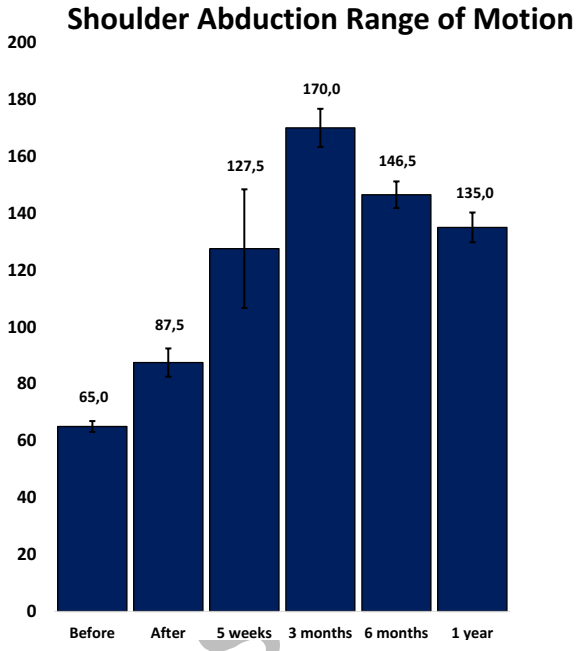
10 – Maximum pain; 0 – no pain

10 patients; 11 shoulder joints



180 degrees – Full Range of Motion

10 patients; 11 shoulder joints



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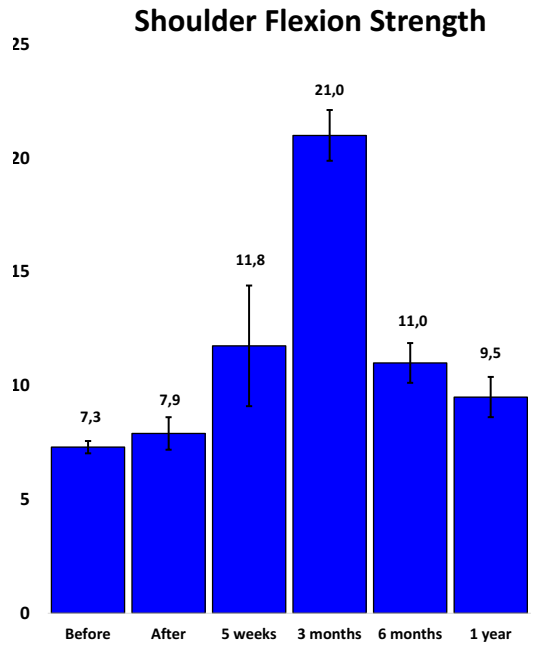
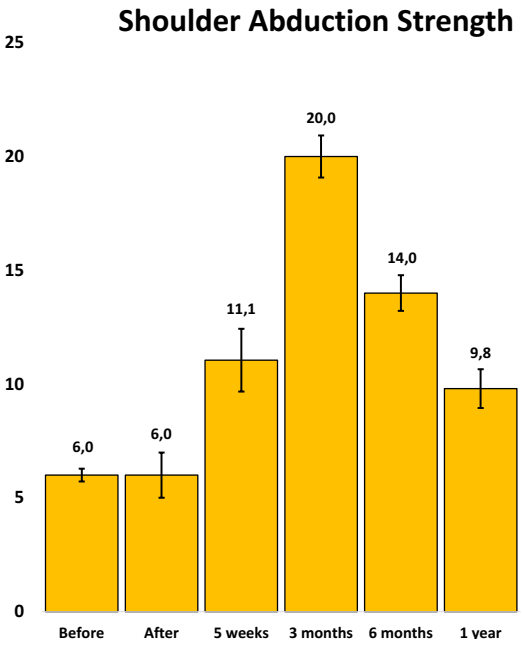
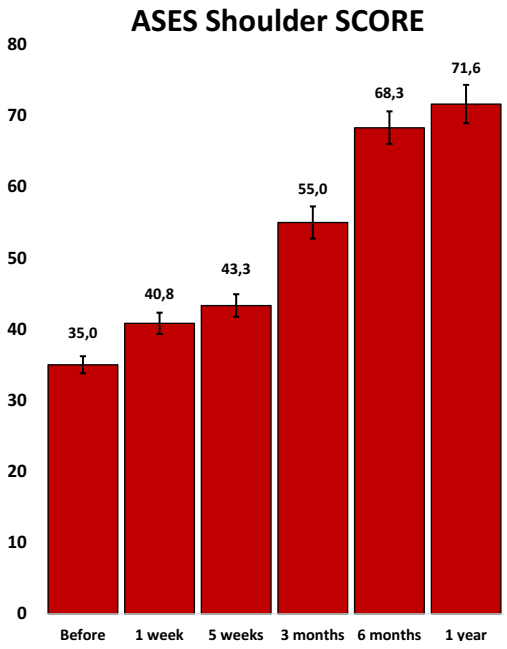


10 patients; 11 shoulder joints

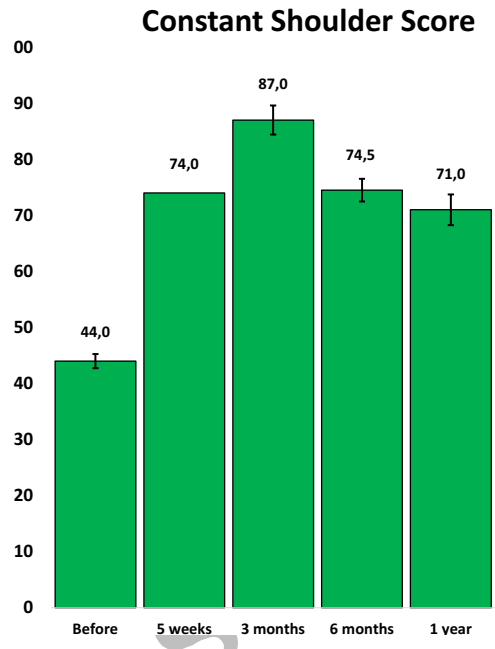


10 patients; 11 shoulder joints



100 – Full function

10 patients; 11 shoulder joints



100 – Full function

10 patients; 11 shoulder joints

Conclusion: Although more investigation is needed, the results are very promising. The injection of autologous, micro-fragmented, and minimally manipulated adipose tissue (Lipogems®) appears very effective in patients with mixed osteoarthritis and rotator cuff disease that failed conventional treatments.

Key words: Lipogems®, Rotator Cuff Tear, Shoulder Pain, Adipose Tissue, MSC Properties, Osteoarthritis.

Disclosure: The study was physician initiated and patient funded. Kits for the study were provide by Lipogems US.