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Title:

Effectiveness of Microfragmented Adipose
Tissue Injection in the Treatment of
Rotator Cuff Tendinopathy:
01-Year Follow-Up

Authors:

Ronald Bispo Barreto, MD, PhD

Ricardo Euzebio Ribeiro Silva Junior, MD

Juliana Maria Lira, MD

João Marcos Santos, MD

Bernard Barbosa, MD





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Disclosures:

We declare that in this presentation we have no financial, personal or professional conflicts of interest that could affect the results or conclusions of the presented study.



INTRODUCTION

- Rotator Cuff Tendinopathy (RCT) is an inflammatory and multifactorial degenerative disease.
- Its manifestation reduces the quality of life of patients.
- Treatment begins clinically aiming for symptom relief. However, the literature shows that up to 67% of cases remain unsuccessful and may evolve with the need for surgical intervention.
- In this scenario, the injection of Microfragmented Adipose Tissue is considered an emerging regenerative treatment option.



OBJECTIVE

- To analyze the efficacy of autologous microfragmented adipose tissue injection in pain and functional performance in patients with rotator cuff tendinopathy.



MATERIALS AND METHODS

- **Samples**
 - patients with rotator cuff tendinopathy treated at the orthopedic outpatient clinic of the University Hospital
 - aged between 40 and 75 years, with confirmed rotator cuff tendinopathy, partial rupture and/or transfixing injury
- **Obtaining mesenchymal stem cells**
 - Abdominal lipoaspirate under local anesthesia
 - Decantation and pre-emulsification fat collect
 - Fat micro-emulsification process until 394 micrometers filtration



MATERIALS AND METHODS

- **Ultrasound-guided procedures**
 - Injections were performed thru antero-lateral access
 - All guided by ultrasound with a linear transducer
 - Local anesthetic blockade with 2 ml of 2% lidocaine
 - Injection targets: subacromial – subdeltoid bursa space and intra tendinous



MATERIALS AND METHODS

- **Clinical evaluation**
 - UCLA Functional Assessment Scale
 - SPADI (Shoulder Pain and Disability Index) questionnaire
 - CSS (Constant Shoulder Score)
 - Strength Assessment
 - a digital manual dynamometer (Lafayette Manual Muscle Test System) was used
 - Patients were evaluated before the procedure, after 7 days, after 01, 03, 06 and 12 months after injection



MATERIALS AND METHODS

- **Data analysis**
 - Categorical variables were described using absolute and relative percentage frequencies.
 - Continuous variables were described as mean, standard deviation, median and interquartile range.
 - The hypothesis of independence between categorical variables was tested using the Chi-Square test.
 - The hypothesis of equality of means was tested by means of ANOVA.
 - Multiple comparisons were tested using the Tukey test.
 - The significance level adopted was 5%
 - Software used was the R Core Team 2021.



RESULTS

- Population characteristics
 - 12 different patients were included
 - 14 shoulders affected (7 shoulders from each side)

	N (%)	Mean (SD)	Median (IQR)
Sex			
Female	7 (58.3)		
Male	5 (41.7)		
Age		50 (8.8)	47 (45-53)
Weight		75.1 (16.3)	69 (65.4-90.8)
Height		163.2 (10.2)	160.5 (157.5-167.8)
BMI		28.1 (5.2)	27.5 (24.6-31.4)

Legends: N – sample size; % – relative frequency distribution; SD – Standard deviation; IQR – Interquartile range.



RESULTS

- Clinical evaluation at one-year follow-up

	UCLA	SPADI	CSS
	Mean (SD)	Mean (SD)	Mean (SD)
Follow-up appointment			
Pre-Operative	16.9 (5.6)	58.0 (26.7)	60.1 (19.4)
7 days	22.0 (7.4)	56.2 (24.8)	57.0 (14.8)
1 month	28.1 (4.8)	31.5 (23.5)	72.1 (7.4)
3 months	27.5 (7.1)	22.4 (21.6)	67.6 (13.7)
6 months	28.8 (6.4)	28.7 (28.0)	70.9 (12.6)
1 year	30.4 (5.4)	13.9 (17.1)	71.8 (9.7)
p-value	<0.001	<0.001	0.023

Legends: SD – Standard deviation; IQR - Interquartile range; ANOVA – Analysis of Variance.

CONCLUSIONS

- Microfragmented Adipose Tissue Injections (MATI) improve functional outcome and pain in patients with rotator cuff tendinopathy.
- MATI was effective in the long-term rotator cuff tendinopathy treatment.
- These findings indicate therapeutic efficacy and create new possibilities for the approach of degenerative osteotendinous pathologies, restoring function and reducing morbidity, allowing these patients to return to socioeconomic activities.



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