



Centro R.I.T.M.O. Ricerca e Innovazione in Traumatologia, chirurgia della Mano e Ortopedia «Giorgio Brunelli»



Footprint Preservation Enhances

unctional and Structural Outcome After Rotator Cuff Repair

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Background

Ficklscherer A, Loitsch T, Serr M, et al.

Does footprint preparation influence tendon-to-bone healing after rotator cuff repair in an animal model? *Arthroscopy. 2014 Feb;30(2):188-94.* Arthroscopy

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Nakagawa H, Morihara T, Fujiwara H, et al.

Effect of footprint preparation on tendon-to-bone healing: A histologic and biomechanical study in a rat rotator cuff repair model. *Arthroscopy. 2017 Aug;33(8):1482-1492.*

Sun W, Li X, Zhao S, et al.

Native enthesis preservation versus removal in rotator cuff repair in a rabbit model. *Arthroscopy. 2018 Jul;34(7):2054-2062.*

Sun Y, Kwak JM, Qi C, Kholinne E, et al. Remnant tendon preservation enhances rotator cuff healing: remnant preserving versus removal in a rabbit model *Arthroscopy. 2020 Jul;36(7):1834-1842.*





To evaluate the clinical effectiveness of biologic enhancement of

tendon bone-healing in rotator cuff repair through

Footprint preservation

Nanofractures of the greater tuberosity





Study design: retrospective study

Participants

• Patients who underwent an arthroscopic rotator cuff repair by preserving

tendon footprint + nanofractures on the greater tuberosity

- Postop MRI: 6 months
- Follow-up > 24 months







Surgical technique



Assessment of tear size and reducibility





Rotator cuff repair Footprint preservation (No cortical abrasion)



Surgical technique



Nanofractures of the greater tuberosity





Final result

Methods

Outcome measures

Primary: ASES score

Secondary

- Quick-DASH
- WORC
- Tendon integrity (MRI) at 6 months
 - dichotomized Sugaya (I-II: healed; III-V: re-tear)





Results

- 29 patients (M:F= 15:14)
- Mean follow-up: 46.68 ± 3.92 months

	Baseline	Follow-up	p value
QuickDASH	55.39 ± 18.42	16.53±21.90	<0.0001
WORC	32.93 ±21.38	74.24±27.22	<0.0001
ASES	43.73 ±21.32	85.23±20.54	<0.0001





• Functional outcomes according to tendon size

	Medium (SS)	Large (SS+½IS)	Massive (SS+IS)	p value
QuickDASH FU	0.6 ± 1.2	9.8 ± 10.1	27.6 ± 27.6	0.03
WORC FU	93.3 ± 7	81 ± 22	62.2 ± 30.8	0.07
ASES FU	97.1 ± 3.9	87.4 ± 15.5	15.5 ± 26	0.31

QuickDASH- Subgroup analysys		p value
Medium	Large	0.008
Medium	Massive	0.04
Large	Massive	0.35





• Structural integrity according to tendon size

	Medium (SS)	Large (SS+½IS)	Massive (SS+IS)	p value
Healed	4 (100%)	9 (75%)	8 (61.5%)	0.31
Retears	0 (0%)	3(25%)	5 (38.5%)	

• 71.4% healed (Sugaya I-II) at 6 months





Conclusions

Preservation of tendon remnant combined with nanofractures in the repair of

medium-to-massive full-thickness rotator cuff tears provided significant clinical

improvements with a very good healing rate as assessed on postoperative MRI

LIMITATIONS:

Retrospective study

➢No control group



References

- Ficklscherer A, Loitsch T, Serr M, Gülecyüz MF, Niethammer TR, Müller HH, Milz S, Pietschmann MF, Müller PE. Does footprint preparation influence tendon-to-bone healing after rotator cuff repair in an animal model? Arthroscopy. 2014 Feb;30(2):188-94.
- 2. Nakagawa H, Morihara T, Fujiwara H, et al. Effect of footprint preparation on tendon-to-bone healing: A histologic and biomechanical study in a rat rotator cuff repair model. Arthroscopy. 2017 Aug;33(8):1482-1492.
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