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Title: Radiological Healing of The Rotator Cuff On MRI Does Not Correlate With Functional Outcomes After Arthroscopic Rotator Cuff Repair

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Objectives

- To study association between functional outcome scores and Sugaya grading in post-operative cases of rotator cuff repair.
- To establish an association between the duration of symptoms, fatty degeneration and structural integrity of cuff tendons.

- Study Design: prospective observational study
- Inclusion
  - full thickness MRI proved rotator cuff tears.
- Exclusion
  - Patients with age more than 65 years,
  - history of dislocations or fractures around shoulder or
  - history of steroid injections or
  - previous rotator cuff surgeries or rheumatological disorders,
  - patients with the stiff shoulder (more than 50 percent of the range of motion restriction) or with gleno-humeral arthrosis.
  - Fatty degeneration more than grade 3 in Fuch’s grading system

Methods

- Procedure: Arthroscopy-assisted mini-open repair
- Pre-operative and post-operative functional scores, range of motion and abduction strengths were assessed.
- Radiological changes were compared with functional outcome scores
- Repeat, MRI and clinical and functional outcome scores were obtained at 6 months follow up. Healing of rotator cuff was classified according to Sugaya classification
- PROMs: Constant-Murley score, University of California at Los Angeles (UCLA) score, Disabilities of Arm Shoulder Hand (DASH) score, American Shoulder and Elbow Surgeons (ASES) scores and Visual Analog Scale (1-10 scale) for pain assessment
- .

Results

- A total of 38 patients were included in the study (18 females and 20 males).
- The mean age was 50.58 years (range 34-65 years, standard deviation: 10.9)
- The mean duration of symptoms was 6.05 months (range 2 weeks -24 months, standard deviation: 6.2, 95%CI).
- It was related to preoperative fatty degeneration grading (Fuchs grading), postoperative MRI grading (Sugaya grading), functional score improvement.
- Higher sugaya grades and fatty degeneration grades were found to be associating with longer duration of symptoms

Results

- All the patients had significant improvement in range of motion and clinical signs were found to be negative in follow up visits.
- Active range of abduction and external rotation improved significantly with a mean of 45 degrees (0-125 degrees, SD: 39.8, p: <0.001) and 23.42 degrees (0-60 degrees, SD: 20.9) respectively.
- There was a significant improvement in postoperative shoulder abduction strength (Mean: 8.58 lbs, SD: 2.36, p: <0.001).

Results

- Postoperative MRI evaluation revealed 12 patients having Sugaya grade-1, 20 patients having grade-2, six patients having grade-3 findings
- Despite having significant improvement in all of the functional scores, there was no association between the post-operative structural integrity of repaired tendon (Sugaya grading) with any of the functional score improvements (Table 2).

Conclusion

- Our study suggests there is no significant association between the postoperative structural integrity and the functional outcome of the patients undergoing rotator cuff repair.

Table 1 Distribution of tears among age groups

	Degenerative tears	Traumatic tears
30–39	0	6
40–49	5	7
50–59	8	2
60–65	9	1

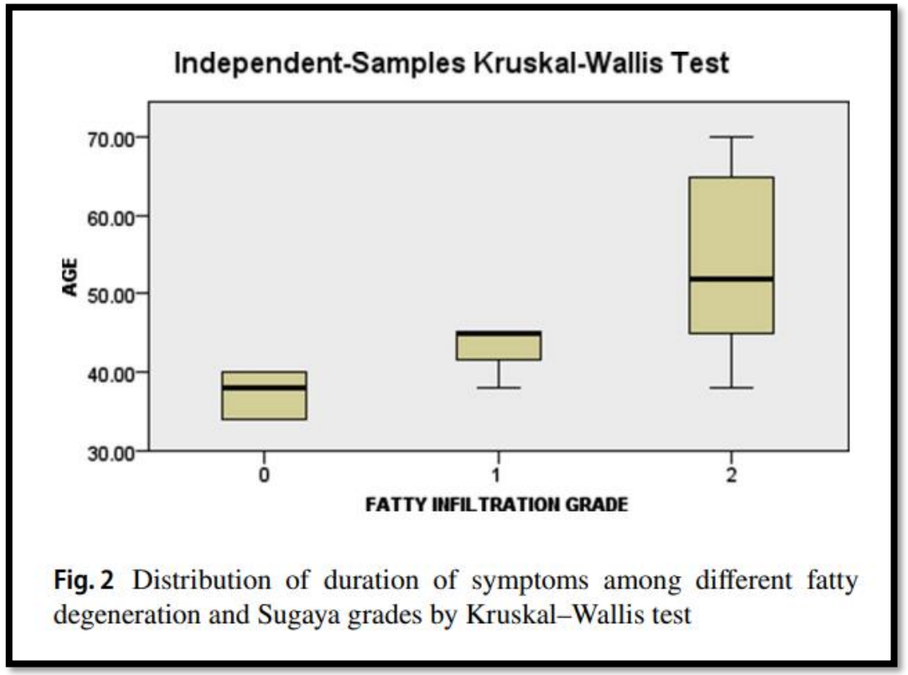

Fig. 2 Distribution of duration of symptoms among different fatty degeneration and Sugaya grades by Kruskal–Wallis test

Table showing tear characteristics

Tear characteristics	Numbers
SS, IS, SC tears	38, 17, 2
Fatty degeneration (Fuchs grade)	Grade0–10, Grade1–16, Grade2–9, Grade3–3
Size of tears (Bateman grading)	Grade I-5, Grade II-16, Grade III-15, Grade IV-2
Postoperative structural integrity (Sugaya grading)	Grade1–12, Grade2–19, Grade3–4, Grade4–3

Table 4 Table showing improvement in functional outcome scores before and after surgery

Scores	Mean improvement	Standard deviation	Significance
VAS score	5.58	1.12	<0.001
Constant murley score	39.37	12.69	<0.001
DASH score	51.1	11.85	<0.001
UCLA score	17.79	3.67	<0.001
ASES score	50.83	11.29	<0.001

Table 5 Association between functional score improvement with Sugaya grades

Scores	Test statistic (T)	Significance (p)
VAS score	63.0	0.45
Constant Murley score	38.0	0.21
DASH score	52.0	0.87
UCLA score	56.0	0.87
ASES score	65.0	0.39

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