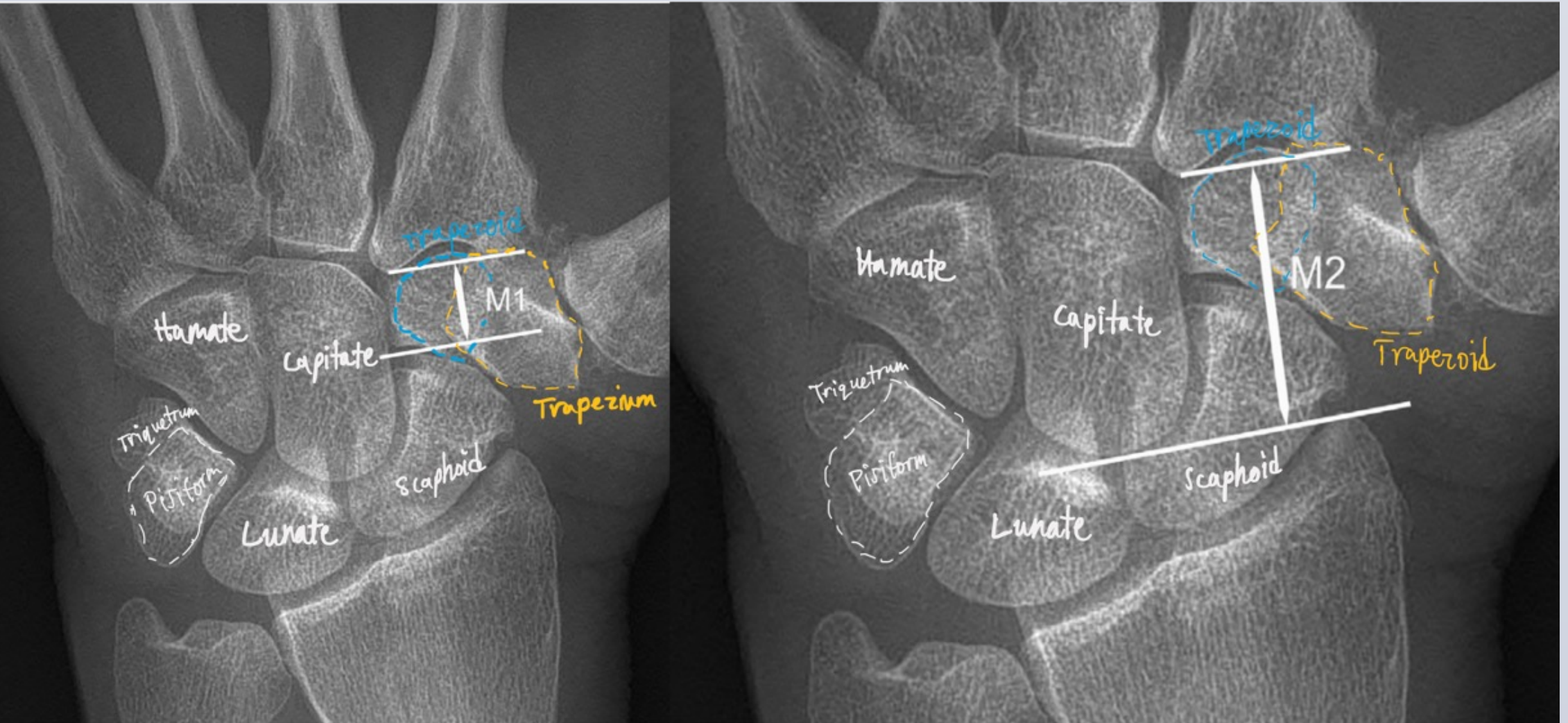


Background

Trapeziectomy with partial trapezoid excision is a common surgical approach for scapho-trapezio-trapezoidal osteoarthritis (STT OA). While some studies show similar outcomes between trapeziectomy with partial trapezoidectomy, versus trapeziectomy alone, others have reported symptomatic contact between the remaining distal portion of the trapezoid and the scaphoid after trapeziectomy and partial trapezoidectomy, bringing into question the long-term results of partial trapezoid excision. This study seeks to determine the efficacy of performing partial trapezoidectomy in the treatment of STT OA.

Methods

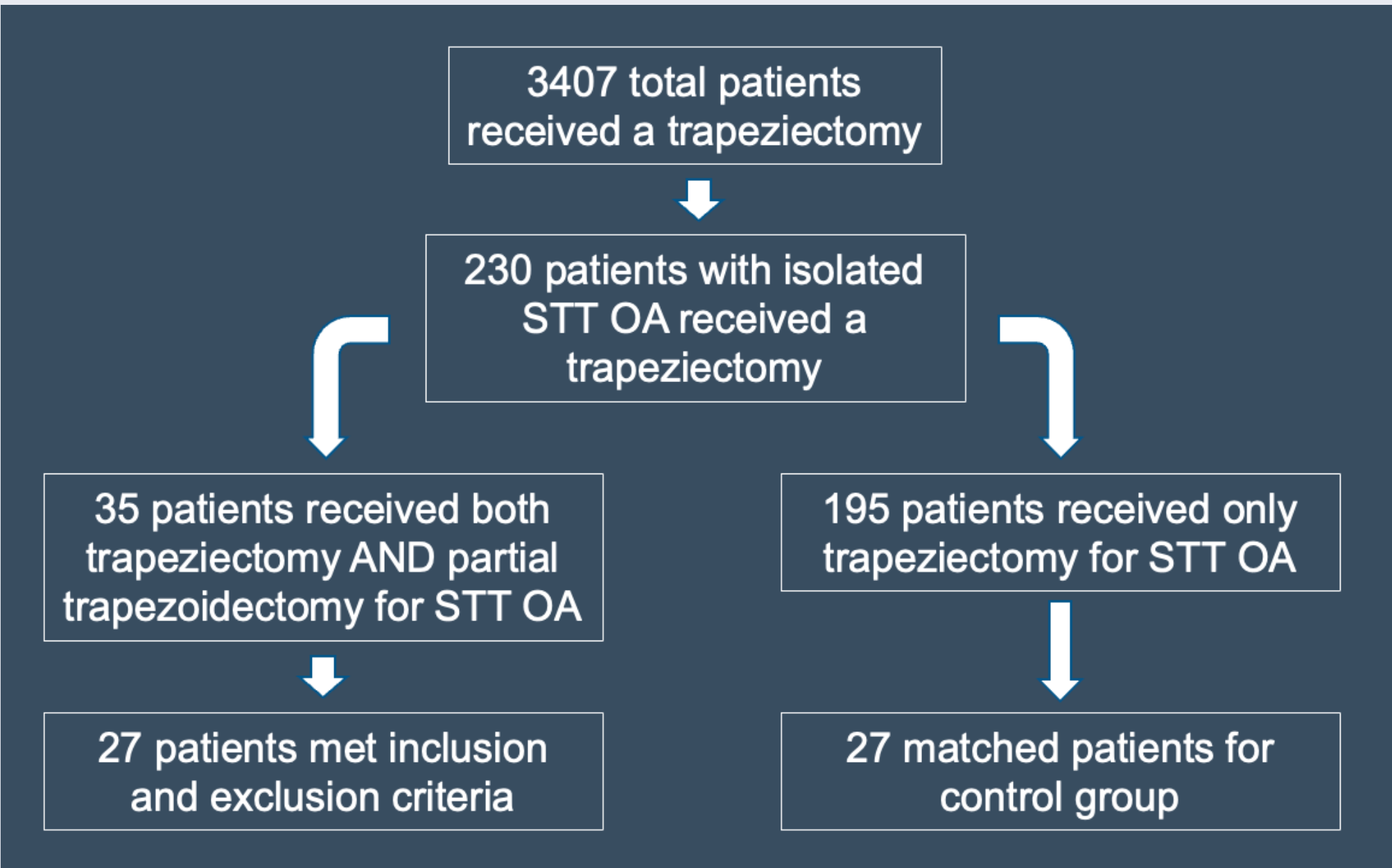
All patients within a single healthcare system who received a trapeziectomy with or without partial trapezoidectomy for isolated STT OA between 2003 and 2022 were reviewed. Demographic information, pain scores, and physical findings were recorded. Radiographic imaging was analyzed to measure second metacarpal subsidence, calculated as a ratio of the change in scaphotrapezoid space (distance between the base of the second metacarpal to the distal pole of the scaphoid) preoperatively and postoperatively over the preoperative scaphotrapezoid space. Differences in subsidence and correlation between subsidence and pain scores were assessed between the two groups.



Second metacarpal subsidence = $\frac{\text{postoperative scaphotrapezoid space} - \text{preoperative scaphotrapezoid space}}{\text{preoperative scaphotrapezoid space}}$

Results

There were 27 patients and 28 hands treated in both groups, adding up to a total of 56 trapeziectomies that were ultimately included in this study. There was no significant difference between the two groups in terms of dominant hands affected, sex, age at the time of surgery, length of follow-up, and number of postoperative radiographs per patient. Radiographic analysis of second metacarpal subsidence calculated using the M1 and M2 measurements showed that while patients from both groups underwent some amount of second metacarpal subsidence, the degree of subsidence was significantly greater for the patients who received a trapeziectomy with partial trapezoidectomy. Despite the increased subsidence seen in the trapezoidectomy group, the postoperative pain scores in this group was significantly lower than in the group that received just trapeziectomy. Statistical analysis using Pearson's test showed no significant correlation between the degree of second metacarpal subsidence and the various clinical outcome measures.



Schematic diagram of study population.

	Trapeziectomy + Trapezoidectomy	Trapeziectomy only	p-value
Patients	27	27	-
Procedures	28	28	-
Dominant hands affected (%)	26 (57%)	23 (39%)	0.22
Sex (% Female)	23 (85%)	20 (74%)	0.34
Age at surgery (median)	65 (54.5–70)	63 (55–70)	0.87
Follow-up time (median)	4.25 (3–9.38)	5 (3.38–6.75)	0.62
Average postoperative x-rays per patient	1.5 (1–3)	1 (1–1.75)	0.09

Demographics and follow-up information.

Clinical Outcome Measure	Trapeziectomy + Trapezoidectomy	Trapeziectomy only	p-value
Pain score (median)	0 (0–3.5), n=27	3 (0–7), n=27	0.012*
Grip strength (lbs)	34.5±14.6, n=13	41.9±16.2, n=3	0.26
Key pinch (lbs)	9±5.7, n=10	8.9±4.7, n=7	0.62
Tip pinch (lbs)	4.2±2.3, n=5	6±2.6, n=3	0.76
Palmar pinch (lbs)	7.2±4.4, n=10	8±4.4, n=6	0.81

Post-operative clinical outcome measures.

Clinical Outcome Measure	Correlation with Subsidence	p-value
Pain score (VASp)	r=0.13, n=56	0.33
Grip strength (lbs)	r=-0.24, n=16	0.65
Key pinch (lbs)	r=-0.03, n=17	0.95
Tip pinch (lbs)	r=-0.17, n=8	0.75
Palmar pinch (lbs)	r=-0.47, n=16	0.34

Correlation of subsidence with clinical outcome measures.

Radiographic Outcome Measure	Trapeziectomy + Trapezoidectomy	Trapeziectomy only	p-value
Median subsidence using M1	32.81 [16.56–52.07]	15.65 [4.75–26.19]	0.045*
Median subsidence using M2	7.05 [1.69–17.07]	3.47 [2.15–8]	0.129

Radiographic outcomes.



Preoperative and postoperative images of trapeziectomy with partial trapezoid excision for STT OA, with preserved scaphotrapezoid space and minimal second metacarpal subsidence.



Preoperative and postoperative images of trapeziectomy with partial trapezoid excision for STT OA with second metacarpal subsidence with impingement of the scaphoid and trapezoid and collapse of the scaphotrapezoid space.

Conclusion

While both procedures were effective in reducing pain, trapeziectomy with partial trapezoidectomy resulted in a more significant decrease in pain than in trapeziectomy alone. Additionally, in both treatment groups, subsidence was not found to be a significant indicator of postoperative pain and was not found to be correlated with any of the other hand function outcomes.