

# Patient-Reported Outcomes and Complications After Suture Button Suspensionplasty Versus Ligament Reconstruction and Tendon Interposition

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INTRODUCTION:

Approximately 40,000 thumb carpometacarpal (CMC) joint arthroplasties are performed annually, representing the most common surgical management of thumb basal joint arthritis. There is limited data comparing two of the most common suspensionplasty techniques—ligament reconstruction and tendon interposition (LRTI) and suture-button suspensionplasty—with previous studies including fewer than 70 patients per treatment group. Additionally, the relationship between outcomes and hand therapy utilization is poorly characterized. This study aims to compare radiographic, clinical, and patient-reported outcomes based on surgical technique.

## METHODS:

A retrospective review was conducted on patients undergoing LRTI versus single or double suture button suspensionplasty (SSBS, DSBS) at a single academic institution between January 2015 and February 2023. Patient demographics, operative characteristics, and outcomes were documented. Patient-Reported Outcomes Measurement Information System (PROMIS) scores were recorded at three time points: six weeks, three months, and six months, with a two-week buffer period to allow for variability in scheduling. Bivariate analysis was used to compare characteristics and functional outcomes between LRTI and SSBS/DSBS groups.

## RESULTS:

In total, 355 SSBS/DSBS and 56 LRTIs were performed. LRTI patients tended to have more postoperative clinic visits with their surgeon ( $p=0.001$ ), whereas therapy attendance was similar. LRTI patients also had less favorable Pain Interference, Physical Function, and Upper Extremity Function, alongside higher Depression scores, at six weeks (all  $p<0.05$ , Table 1). Reported percent functional recovery was also lower at this time point ( $p=0.012$ ). However, these differences equalized by 6 months. Postoperative loss of sensation was less frequent among LRTI patients ( $p=0.003$ ).

## DISCUSSION AND CONCLUSION:

LRTI and suture button suspensionplasty result in overall comparable clinical outcomes at six months based on PROMIS scores. Suture button suspensionplasty patients had statistically better PROMIS scores at 6 weeks, which equalized over time. However, these patients had a higher rate of postoperative numbness. Both LRTI and suture button suspensionplasty are effective management options for CMC arthritis.

Table 1.

Variable	SSBS, DSBS	LRTI	P-Value
<b>Six Week</b>			
Functional	62.6±20.5	52.1±18.3	<b>p=0.012</b>
PROMIS Depression	44.4±9.2	50.2±8.9	<b>p=0.006</b>
PROMIS Pain Interference	56.8±6.9	59.4±10.4	<b>p=0.012</b>
PROMIS Physical Function	41.4±8	35.6±9.6	<b>p&lt;0.001</b>
PROMIS Upper Extremity Function	35.2±7.7	32.4±11.1	<b>p=0.015</b>
Subjective Pain	2.5±6.3	2.2±2.4	p=0.495
<b>Three Month</b>			
Functional	74.2±23.7	80.8±12	p=0.592
PROMIS Depression	45.9±9.3	44.7±8.6	p=0.743
PROMIS Pain Interference	56.1±7.6	56.3±8	p=0.598
PROMIS Physical Function	44±7.8	41.9±10.4	p=0.496
PROMIS Upper Extremity Function	39.2±8.3	36.1±9.4	p=0.177
Subjective Pain	1.4±1.9	2.5±8.3	p=0.429
<b>Six Month</b>			
PROMIS Depression	46.3±10.3	45.2±13.7	p=0.953
PROMIS Pain Interference	58±7.7	56.2±4.1	p=0.398
PROMIS Physical Function	42.8±8.5	42.2±10.7	p=0.922
Subjective Pain	1.4±1.9	1.5±1.6	p=0.468
Collapse	21 (5.9%)	2 (3.6%)	p=0.506
Dysesthesia	113 (31.8%)	15 (26.8%)	p=0.499
Infection	6 (1.7%)	1 (1.8%)	p=0.936
Loss of Sensation	138 (38.9%)	10 (17.9%)	<b>p=0.003</b>
Revision	15 (4.2%)	2 (3.6%)	p=0.846
Stiffness	232 (65.4%)	40 (71.4%)	p=0.225
Subsidence	45 (12.7%)	9 (16.1%)	p=0.429