

# The Knee Pain Decreases After Total Hip Arthroplasty

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**INTRODUCTION:** Patients awaiting total hip arthroplasty (THA) often report knee pain. This study aimed to evaluate changes in knee pain before and after THA and identify factors influencing these changes.

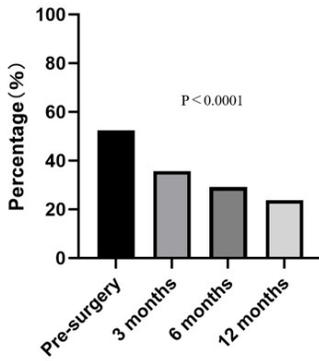
**METHODS:** The study involved 185 hips (183 patients) undergoing THA for primary osteoarthritis, secondary osteoarthritis due to developmental dysplasia of the hip, or osteonecrosis of the femoral head. Knee pain on the same side was assessed using the visual analog scale (VAS) preoperatively and at 3 months, 6 months, and 1 year postoperatively. Influencing factors, including leg length discrepancy (LLD), hip-knee-ankle angle (HKAA), knee's Kellgren-Lawrence (KL) grade, were analyzed using simple and multiple linear regression analysis.

**RESULTS SECTION:** 52.4% (97 hips) of patients experienced knee pain before surgery. After THA, the proportion of patients with knee pain significantly decreased (3 months post-op: 35.7%, 6 months post-op: 29.2%, 1-year post-op: 23.8%,  $p < 0.0001$ , Fig. 1a). The severity of knee pain (knee VAS score) also significantly decreased over time (pre-surgery: 2.2; 3 months post-surgery: 1.1; 6 months post-surgery: 0.79; 1-year post-surgery: 0.6, with p-values of 0.0019,  $< 0.0001$ , and  $< 0.0001$ , respectively, Fig. 1b). The preoperative hip VAS score was the most influential factor on preoperative knee VAS scores ( $t=3.3$ ,  $p=0.0014$ , Table 1), while the preoperative knee VAS score ( $t=5.6$ ,  $p < 0.0001$ ) and knee's KL grade ( $t=3.8$ ,  $p=0.0002$ ) was the most influential factor on knee VAS scores at 12 months post-op (Table 2).

**DISCUSSION:** About half of the patients experienced knee pain before THA, but this proportion was halved after surgery. The severity of knee pain also significantly improved postoperatively. However, patients with preoperative severe knee pain and high knee KL grade tended to have persistent knee pain after surgery.

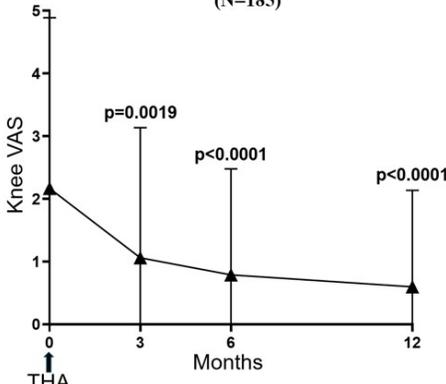
**SIGNIFICANCE/CLINICAL RELEVANCE:** Knee pain is common before THA, however, patients, particularly those with a low knee KL grade, may experience improvement in knee pain following THA.

**Fig. 1a**  
The frequency of knee pain before and after THA (N=185)



P value was analyzed by chi-square test

**Fig. 1b**  
Changes in knee VAS scores before and after THA (N=185)



P values were analyzed by Friedman test post hoc Dunn's multiple comparison test, compared with pre-surgery VAS

**Table 1. Simple & multiple linear regression analysis for preoperative knee VAS score**

	Unadjusted				Adjusted			
	Coefficient	SE	t	p	Coefficient	SE	t	p
Preoperative LLD (mm)	0.013 (-0.023 to 0.049)	0.018	0.72	0.47	0.067 (-0.020 to 0.052)	0.018	0.88	0.38
Preoperative HKAA (°)	-0.054 (-0.15 to 0.047)	0.051	-1.05	0.30	-0.10 (-0.18 to 0.033)	0.053	-1.3	0.18
Preoperative HKAA (valgus=0, varus=1)	0.34 (-0.53 to 1.2)	0.44	0.77	0.44	0.075	-0.46 to 1.3	0.96	0.075
<b>Preoperative ipsilateral hip VAS score</b>	<b>0.25 (0.097 to 0.40)</b>	<b>0.076</b>	<b>3.3</b>	<b>0.0014</b>	<b>0.27 (0.13 to 0.44)</b>	<b>0.078</b>	<b>3.7</b>	<b>0.0003</b>
KL grade of the ipsilateral knee	-0.20 (-0.64 to 0.24)	0.22	-0.90	0.37	-0.025 (-0.58 to 0.43)	0.26	-0.30	0.76

Adjustment was made for the effect of Covariables: age, sex, BMI and indication.

**Table 2. Simple & multiple linear regression analysis for postoperative knee VAS score**

	Unadjusted				Adjusted			
	Coefficient	SE	t	p	Coefficient	SE	t	p
Preoperative HKAA (°)	-0.040 (-0.097 to 0.017)	0.029	-1.4	0.17	-0.045 (-0.10 to 0.015)	0.03	-1.5	0.14
<b>Preoperative HKAA (valgus=0, varus=1)</b>	<b>0.57 (0.019 to 1.12)</b>	<b>0.28</b>	<b>2.0</b>	<b>0.043</b>	<b>0.40 (-0.12 to 0.92)</b>	<b>0.26</b>	<b>1.5</b>	<b>0.13</b>
Type of stem (cement=0, cementless=1)	0.081 (-0.55 to 0.71)	0.32	0.25	0.80	0.26 (-0.52 to 1.0)	0.39	0.65	0.51
<b>KL grade</b>	<b>0.36 (0.12 to 0.60)</b>	<b>0.12</b>	<b>2.95</b>	<b>0.0036</b>	<b>0.45 (0.17 to 0.73)</b>	<b>0.14</b>	<b>3.2</b>	<b>0.0017</b>
Postoperative LLD (cm)	0.014 (-0.022 to 0.050)	0.018	0.77	0.44	0.015 (-0.022 to 0.052)	0.019	0.81	0.42
Postoperative HKAA (°)	-0.077 (-0.14 to -0.013)	0.032	-2.38	0.018	-0.084 (-0.15 to -0.020)	0.033	-2.6	0.011
<b>Postoperative HKAA (valgus=0, varus=1)</b>	<b>0.57 (0.019 to 1.1)</b>	<b>0.28</b>	<b>2.0</b>	<b>0.043</b>	<b>0.67 (0.099 to 1.3)</b>	<b>0.29</b>	<b>2.3</b>	<b>0.022</b>
Postoperative ipsilateral hip VAS score	0.023 (-0.17 to 0.21)	0.096	0.24	0.80	0.017 (-0.17 to 0.21)	0.097	0.18	0.86
Delta LLD (Post - Pre)	-0.0053 (-0.029 to 0.018)	0.012	-0.44	0.66	-0.0068 (-0.031 to 0.017)	0.012	-0.56	0.58
Delta HKA (Post - Pre)	-0.057 (-0.15 to 0.037)	0.048	-1.2	0.23	-0.069 (-0.17 to 0.031)	0.051	-1.4	0.17

Adjustment was made for the effect of Covariables: age, sex, BMI and indication.