

Knee Arthroplasty for Spontaneous Osteonecrosis of the Knee: A Matched Analysis Comparing Total and Unicompartmental

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INTRODUCTION:

The surgical management of spontaneous osteonecrosis of the knee (SONK) in its advanced stages typically involves joint replacement procedures such as unicompartmental knee arthroplasty (UKA) and total knee arthroplasty (TKA). This study aims to compare the risk of complications, revisions, and costs between patients undergoing TKA and UKA for SONK.

METHODS:

This study is a retrospective review of the PearlDiver Mariner Database. The patients with a diagnosis of SONK undergoing surgical management were divided into 2 groups: patients with TKA, and patients with UKA. The two groups were matched based on age, gender, the Charlson comorbidity index (CCI), and obesity.

RESULTS:

There was a higher rate of transfusions at 30 days (<10 vs 0%, p=0.04) and 90 days (<10 vs 0%, p=0.02) in the TKA group. In addition, there was a higher rate of stiffness and manipulation under anesthesia (MUA) in the TKA group at 1 year (3.2% vs <10, p=0.01; and 4.1% vs <10, p<.001 respectively), 2 years (3.6% vs <10, p=0.01; and 4.5% vs <10, p<.001 respectively), and 3 years (3.8% vs <10, p=0.003; and 4.7% vs <10, p<.001 respectively). Furthermore, the TKA group had higher costs at 3 years compared to the UKA group (35269 ± 61459 vs 25141 ± 25185, p=0.001).

DISCUSSION AND CONCLUSION:

This study highlights the increased risks of transfusion, stiffness, MUA, and higher costs after TKA compared to patients with UKA for SONK. Our study shows that UKA seems to be a safer and less expensive option for patients with SONK.

Variables	Not matched			Matched		
	TKA n	UKA n	p-value	TKA n	UKA n	p-value
Age (mean ± SD)	62.1 ± 10.4	62.9 ± 10.5	0.45	62.9 ± 9.4	62.9 ± 9.4	1
Gender (male/female)	167 (57%)	280 (24)	<0.001	197 (26)	197 (26)	1
Charlson	2.1 ± 2.4	1.1 ± 1.5	<0.001	1.6 ± 1.2	1.6 ± 1.2	1
Obesity (n/%)	2134 (52.8%)	216 (45.0%)	0.001	213 (48.1%)	213 (48.1%)	1

Table 1: Demographic and baseline characteristics of the matched and non-matched cohorts.

Variables	Timepoint	TKA	UKA	p-value
Cardiac arrest n (%)	30 days	0	0	1.00
	90 days	0	<10	1.00
Deep vein thrombosis n (%)	30 days	<10	0	0.48
	90 days	<10	0	0.48
Pulmonary embolism n (%)	30 days	<10	<10	1.00
	90 days	<10	<10	1.00
Pneumonia n (%)	30 days	<10	<10	1.00
	90 days	<10	<10	1.00
Transfusion n (%)	30 days	<10	0	0.04
	90 days	<10	0	0.02
Urinary tract infection n (%)	30 days	<10	<10	0.58
	90 days	<10	14 (3.2%)	0.53

Table 2: Medical complications in TKA not UKA

Variables	Timepoint	TKA	UKA	p-value
Mechanical loosening n (%)	1 year	<10	<10	1.00
	2 years	<10	<10	1.00
	3 years	<10	<10	0.77
Prosthetic dislocation n (%)	1 year	<10	<10	1.00
	2 years	<10	<10	1.00
	3 years	<10	<10	1.00
Periprosthetic Fractures n (%)	1 year	<10	0	0.48
	2 years	<10	<10	1.00
	3 years	<10	<10	1.00
Prosthetic joint infection n (%)	1 year	<10	<10	1.00
	2 years	<10	<10	0.79
	3 years	<10	<10	1.00
Superficial surgical site infection n (%)	1 year	<10	<10	1.00
	2 years	<10	<10	1.00
	3 years	<10	<10	1.00
Deep surgical site infection n (%)	1 year	<10	<10	0.61
	2 years	14 (3.2%)	<10	0.01
	3 years	16 (3.8%)	<10	0.01
Stiffness n (%)	1 year	17 (3.8%)	<10	0.001
	2 years	0	0	1.00
	3 years	0	0	1.00
Lysis of adhesion (%)	1 year	0	0	1.00
	2 years	0	0	1.00
	3 years	0	0	1.00
Manipulation under anesthesia n (%)	1 year	18 (4.1%)	<10	<0.001
	2 years	20 (4.5%)	<10	<0.001
	3 years	21 (4.7%)	<10	<0.001
Revision n (%)	1 year	<10	<10	0.79
	2 years	14 (3.2%)	14 (3.2%)	0.84
	3 years	13 (2.9%)	16 (3.6%)	0.71
Costs (mean ± SD)	3 years	35269 ± 61459	25141 ± 25185	0.001