Clinical Outcomes Among Conversion TKA Types with a Primary TKA Matched Cohort

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INTRODUCTION: Conversion total knee arthroplasty (TKA) is defined as a TKA performed on a knee with prior surgical intervention. Surgeries preceding TKA vary in indications and complexity. Prior surgeries might include arthroscopic debridement, cruciate ligament reconstruction, ORIF, or osteotomy. The study aims to assess the relationship between post-conversion TKA outcomes and the complexity of prior procedures by proposing three cohorts of conversion TKAs based on prior procedure complexity. Utilizing these proposed cohorts could benefit surgeons and patients by providing insights into realistic outcomes, recovery, and cost implications.

METHODS: Patients who underwent conversion TKA from one of five senior surgeons between 2015 and 2020 were retrospectively identified and categorized based on the presence of prior knee implants. X-ray review of preexisting implants was performed. Of 262 experimental patients, 98 had no implant (e.g., meniscus debridement), 96 underwent prior soft tissue reconstruction with ligamentous reconstruction implants (e.g., ACL screws, suture buttons, staples), and 68 had more complex ORIF style implants (e.g., plate-screw construct). Additionally, a matched cohort of 306 primary TKA patients was assessed to serve as a control group. Patients were matched based on age, sex, BMI, and surgeon. A chart review was conducted on each patient, including demographics, patient-reported outcome scores, prior surgical history, vitals, operative details, and recovery data. An ANOVA or Chi-Square Test was performed on data to determine statistical significance.

RESULTS SECTION: Primary TKA and conversion TKA without implant patients were statistically older than soft tissue and complex implant patients ($P < .0001$). During surgery, the complex implant group sustained more blood loss ($P = .0080$), and complex and soft tissue necessitated computer navigation at similarly elevated rates compared to no implant or the control group ($P < .0001$). The complex implant group stayed in the hospital ($P = .0404$), readmitted to the hospital ($P = .0212$), and underwent follow-up surgery ($P < .0001$) disproportionately higher than the other groups and control. Lastly, complex implants were more likely to be billed for a 22-modifier ($P < .0001$).

DISCUSSION: Our proposed conversion TKA cohorts demonstrate significant variance in several clinical and financial outcomes. These differences have clinical and financial implications for all parties involved. Making this simple distinction prior to surgery may be useful to a surgeon planning a conversion TKA. By quantifying the perceived differences among types of conversion TKA, patient expectations and outcomes can be best managed.

SIGNIFICANCE/CLINICAL RELEVANCE: These significant differences in outcomes discovered among novel cohorts within our conversion TKA patient population may be helpful for surgical planning and execution in conversion TKA. Surgeons may use these findings to provide patients with more accurate expectations of treatment courses.

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IMAGES AND TABLES:

Table 1. Demographics and Perioperative Data by Cohort.

Variables	Matched Primary TKA Control n=306	No Implant n=98	Soft Tissue Implant n=96	Complex Implant n=68	*P* Value
Age	62.61 ± 7.69	62.93 ± 8.97	57.99 ± 8.20	61 ± 11.56	**< .0001**
Male	145 (47.39%)	56 (57.14%)	59 (61.46%)	32 (47.06%)	.0534
Female	161 (52.64%)	42 (42.86%)	37 (38.54%)	36 (52.94%)	.0534
BMI	30.64 ± 5.54	30.88 ± 5.00	29.91 ± 5.85	31.38 ± 6.18	.3734
KOOS, JR. PreOp	46.04 ± 13.33 (n=137)	44.47 ± 18.32 (n=51)	48.10 ± 13.61 (n=61)	47.72 ± 16.07 (n=22)	.5664
EBL (mL)	75.00 ± 45.71 (n=284)	71.65 ± 37.01 (n=91)	77.45 ± 50.68 (n=92)	95.41 ± 69.09 (n=61)	**.0080**
Computer Navigation	4/295 (1.36%)	7/94 (7.45%)	5/24 (20.83%)	6/29 (20.69%)	**< .0001**
MOD22 Rate	19/287 (6.62%)	9 (9.18%)	18 (18.75%)	16/52 (30.77%)	**< .0001**
Length of Stay (days)	1.23 ±0.80 (n=197)	1.20 ± 0.57 (n=74)	1.40 ± 1.51 (n=60)	1.62 ± 1.41 (n=42)	**.0404**
Readmit within 90D	10/296 (3.38%)	2/97 (2.06%)	2/23 (8.70%)	4/29 (13.79%)	**.0212**
Average Follow-Up Surgeries	0.08 ± 0.32 (n=306)	0.05 ± 0.22 (n=97)	0.12 ± 0.33 (n=25)	0.45 ± 1.09 (n=29)	**< .0001**
KOOS, JR. 1 YR PostOp	76.05 ± 16.18 (n=35)	75.11 ± 16.18 (n=22)	73.74 ± 19.83 (n=25)	82.22 ± 12.87 (n=9)	.5759