

# DIFFERENTIATING CONVERSION TOTAL KNEE ARTHROPLASTY FROM PRIMARY TOTAL KNEE ARTHROPLASTY

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# BACKGROUND

- **Previous knee surgery can** alter the technical complexity of total knee surgery<sup>1-3</sup>
  - Increased surgical time
  - Increased length of stay
  - 90-day readmission rate
  - Return to the OR
- A separate CPT code exists for **conversion THA** (CPT 27132)
  - More technically complex procedures
  - Increased resource utilization
- **Conversion TKA** does not have a unique CPT code
  - Categorized under CPT 27447



# PURPOSE

- To compare short-term outcomes and resource utilization between primary and conversion total knee arthroplasty



# METHODS

- Retrospective chart review of primary TKA done by a single surgeon between January 2011 and December 2017
- **Conversion** cohort = 130 patients
  - History of previous knee surgery
- **Primary** cohort = 130 patients
  - No previous knee surgery
- One-to-one, nearest-neighbor matching
  - Gender, American Society of Anesthesiologists score, age, body mass index



# DEMOGRAPHICS

Variable	Conversion (N=130)	Primary (N=130)	P-value
Age at Surgery	58.6(9) <sup>1</sup>	59.6(8.2) <sup>1</sup>	0.377 <sup>2</sup>
BMI	31.6(7.2) <sup>1</sup>	31.9(6.6) <sup>1</sup>	0.693 <sup>2</sup>
Gender			
Female	80(61.5%)	74(56.9%)	0.528 <sup>3</sup>
Male	50(38.5%)	56(43.1%)	.
Laterality			
Left	64(49.6%)	56(43.4%)	0.382 <sup>3</sup>
Right	65(50.4%)	73(56.6%)	.
ASA			
1	6(4.6%)	6(4.6%)	1.000 <sup>3</sup>
2	85(64.5%)	85(64.5%)	
3	39(30.0%)	39(30.0%)	

<sup>1</sup>mean(standard deviation)

<sup>2</sup>t-test

<sup>3</sup>Fisher's Exact test

# METHODS

- **Conversion group** were further stratified into
  - Previous fracture
  - Osteotomy
  - Ligament repair
  - Open arthrotomy
  - Extensor mechanism realignment or repair





# RESULTS

Variable	Conversion (N=130)	Primary (N=130)	P-value
Operative time (minutes)	96.1(20.5) <sup>1</sup>	90.8(17.1) <sup>1</sup>	0.022 <sup>2</sup>
Intraoperative complications	2(1.5%)	1(.8%)	0.571 <sup>2</sup>
Revision Components	20(15.4%)	4(3.1%)	0.003 <sup>2</sup>
Length of Hospital Stay (days)	2.5(.9) <sup>1</sup>	2.8(1.1) <sup>1</sup>	0.013 <sup>2</sup>
Estimated blood volume (mL)	5426.1(1085.3) <sup>1</sup>	5539.2(1146) <sup>1</sup>	0.151 <sup>2</sup>
Calculated blood loss (mL)	1440.8(497.9) <sup>1</sup>	1456.7(475.3) <sup>1</sup>	0.847 <sup>2</sup>
Discharge to Rehab	7(5.4%)	9(7%)	0.618 <sup>2</sup>
Blood transfusion	2(1.5%)	4(3.1%)	0.423 <sup>2</sup>
Readmission within 30 days	5(3.8%)	2(1.5%)	0.273 <sup>2</sup>
Readmission within 60 days	6(4.6%)	5(3.8%)	0.739 <sup>2</sup>
Readmission within 90 days	1(.8%)	2(1.5%)	0.571 <sup>2</sup>
Complications	19(14.6%)	12(9.2%)	0.183 <sup>2</sup>
Reoperation	2(1.5%)	3(2.3%)	0.571 <sup>2</sup>

# CONVERSION BREAKDOWN

Variable	Extensor Mechanism (N=13)	Prior Fracture (N=26)	Ligament Repair (N=43)	Open Arthrotomy (N=35)	Osteotomy (N=12)	P-value
Revision Components?	0(0%)	7(26.9%)	3(7%)	3(8.6%)	7(58.3%)	<0.001 <sup>3</sup>
Operative time (minutes)	90.9(18.7) <sup>1</sup>	111.2(27.7) <sup>1</sup>	92(14.6) <sup>1</sup>	90.7(17.4) <sup>1</sup>	98.3(17.3) <sup>1</sup>	0.001 <sup>2</sup>
Intraoperative complications	0(0%)	1(3.8%)	1(2.3%)	0(0%)	0(0%)	0.821 <sup>3</sup>
Length of Hospital Stay (days)	2(.8) <sup>1</sup>	2.8(.9) <sup>1</sup>	2.2(.8)	2.8(.8)	2.6(1.1)	0.010 <sup>2</sup>
Estimated blood volume (mL)	5236.4(1471.3) <sup>1</sup>	5213.1(839.9) <sup>1</sup>	5423.3(1057.7) <sup>1</sup>	5619.8(1122.5) <sup>1</sup>	5567(1175.2) <sup>1</sup>	0.736 <sup>2</sup>
Calculated blood loss (mL)	1325.3(778.4) <sup>1</sup>	1474.2(420.9) <sup>1</sup>	1367.1(433.3) <sup>1</sup>	1613.4(486.6) <sup>1</sup>	1247.8(468.8) <sup>1</sup>	0.167 <sup>2</sup>
Discharge to Rehab	0(0%)	2(7.7%)	1(2.3%)	4(11.4%)	0(0%)	0.429 <sup>3</sup>
Blood transfusion	0(0%)	1(3.8%)	0(0%)	1(2.9%)	0(0%)	0.687 <sup>3</sup>
Readmission within 30 days	0(0%)	5(19.2%)	0(0%)	0(0%)	0(0%)	0.003 <sup>3</sup>
Readmission within 60 days	1(7.7%)	2(7.7%)	2(4.7%)	1(2.9%)	0(0%)	0.784 <sup>3</sup>
Readmission within 90 days	0(0%)	0(0%)	0(0%)	0(0%)	1(8.3%)	0.100 <sup>3</sup>
Complications	1(7.7%)	8(30.8%)	4(9.3%)	5(14.3%)	1(8.3%)	0.244 <sup>3</sup>
Reoperation	0(0%)	1(3.8%)	0(0%)	0(0%)	1(8.3%)	0.088 <sup>3</sup>



# DISCUSSION

- Conversion TKA has been previously associated with:<sup>1-2</sup>
  - Increased operating time
  - Increased use of revision components
  - Increased 90-day readmission
  - Increased re-operation rate
- Conversion TKA for previous fracture<sup>3</sup>
  - Higher complication rate
  - Increased 90-day readmission rate



## DISCUSSION

- Overall, conversion TKA compared to primary TKA showed:
  - Increased operating time
  - Increased use of revision components
- Conversion for previous fracture or osteotomy:
  - Increased operative time
  - Increased use of revision components
  - Increased 30-day readmission (previous fracture)
- **Not all TKA are equal – not all conversion TKA are equal**



# THANK YOU



# REFERENCES

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