ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

Primary Followed by Revision Total Knee Arthroplasty at Non-Tertiary Centers Have Higher Risk of Complications.

Yunseo Linda Park BS, Matthew Como BS, Alexander Hoffman MD, Nico Aycardi BS, Logan Finger MD, Kenneth L. Urish MD PhD, Michael J. O'Malley MD, Brian A. Klatt MD, Johannes F. Plate MD PhD

UPMC LIFE CHANGING MEDICINE

Department of Orthopaedic Surgery

University of Pittsburgh

Disclosures

- I have no financial conflicts of interest to disclose

Introduction

- Increasing number of revision total knee arthroplasties (TKA) highlights the need for efficient resource allocation.

- “Centers of Excellence” are believed to improve outcomes for complex revision cases, as they are equipped with fellowship-trained arthroplasty surgeons and enhanced hospital resources.

Purpose

Study Aim:

- To compare postoperative complications and patient-reported outcomes (PROs) between patients who underwent primary and revision TKA at a tertiary center vs non-tertiary center.

Hypothesis:

- Patients receiving both primary and revision TKAs at a tertiary center will have superior outcomes.

Methods

- Retrospective review (custom data and analytics platform)

- **Inclusion criteria**:
    - Underwent revision TKA at UPMC, 2015-2024
- **Exclusion criteria:**
    - Unavailable postoperative outcome data

- Patients were stratified based on classification of their primary and revision surgery hospitals

Methods - Outcomes

- Complication rates: subsequent re-revision, death, mechanical, pulmonary embolism, sepsis, wound infection, surgical site infection

- PROs: Knee injury and osteoarthritis outcome score (KOOS), Patient-reported outcome measurement information system (PROMIS10)
    - Preoperative, 3-mo, 6-mo, 1-year follow-up

Results

- 963 patients included

- **Group 1: BT (n=389)**
    - Both primary and revision at tertiary centers
- **Group 2: PNRT (n=114))**
    - Primary at non-tertiary, revision at tertiary
- **Group 3: BN (n=433)**
    - Both primary and revision at non-tertiary
- **Group 4: PTRN (n=27)**
    - Primary at tertiary, revision at non-tertiary

Results – Demographics

	Group 1 (n=389)	Group 2 (n=114)	Group 3 (n=433)	Group 4 (n=27)	P value
Age at time of revision TKA (years)	67.7 ± 10.1	66.4 ± 8.8	66.3 ± 9.6	69.7 ± 9.0	0.06
Female sex, n (%)	228 (59)	62 (54)	260 (60)	19 (70)	0.45
BMI (kg/m^2) (n=934)	32.6 ± 8.6	33.7 ± 17.5	33.1 ± 6.7	32.1 ± 4.4	0.29
Race, n (%)					
White	338 (87)	106 (93)	398 (92)	23 (85)	
Black or African American	49 (13)	8 (7)	30 (7)	4 (15)	0.07
Other / Not specified	2 (1)	0 (0)	5 (1)	0 (0)	
Elixhauser score (n=888)	2.6 ± 1.9	2.8 ± 1.9	3.0 ± 1.8	2.0 ± 1.6	<0.01*

Results – Complication Rates

	BT (n=389)	PNRT (n=114)	BN (n=433)	PTRN (n=27)	P value
Wound infection rate	3%	2%	7%	0%	**0.03***
1-year KOOS	64.4 ± 16.9	72.0 ± 16.3	57.0 ± 17.6	66.0 ± 21.7	**0.04***
3-month PROMIS10 Physical	43.8 ± 6.8	42.8 ± 6.8	41.0 ± 7.6	53.2 ± 5.1	**0.02***

- *BN = both primary and revision TKAs done at non-tertiary center*
  - Highest wound infection rate, lowest KOOS and PROMIS10 scores
- All other complication rates, PROs, mortality rates, and readmit rates were similar between the four groups.

Conclusion

- Patients who underwent both primary and revision TKAs at a non-tertiary center had a higher rate of postoperative wound infection.
- Patients who had at least one of their surgeries at a tertiary center had better functional and pain related outcomes.
- While these patients had a higher comorbidity index at baseline, these results may inform decision making for patients requiring revision TKA.

References

1. Mehrotra, A., Liu, H., Adams, J. L., Wang, M. C., Lave, J. R., Thygeson, N. M., Solberg, L. I., & McGlynn, E. A. (2009). Comparing costs and quality of care at retail clinics with that of other medical settings for 3 common illnesses. *Annals of internal medicine*, *151*(5), 321–328. https://doi.org/10.7326/0003-4819-151-5-200909010-00006

2. Yates, A. J., Kerr, J. M., Froimson, M. I., Della Valle, C. J., & Huddleston, J. I. (2018). The Unintended Impact of the Removal of Total Knee Arthroplasty From the Center for Medicare and Medicaid Services Inpatient-Only List. *The Journal of arthroplasty*, *33*(12), 3602–3606. https://doi.org/10.1016/j.arth.2018.09.043

Thank you!

Department of Orthopaedic Surgery

University of Pittsburgh