



Gut-Joint Axis: Gastroenteritis Within 3-Months of Primary TKA Increases the Odds of Developing PJI

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BACKGROUND

- Periprosthetic joint infection (PJI) remains one of the most serious complications following total knee arthroplasty (TKA), often requiring prolonged antibiotic therapy, additional surgery, and substantial healthcare utilization. Increasing evidence has suggested that gut microbiome dysbiosis may influence systemic immune function and susceptibility to musculoskeletal infection, giving rise to interest in a potential “gut-joint axis.”
- Infectious gastroenteritis can produce acute disruption of the intestinal microbiome and mucosal barrier; however, whether a recent gastrointestinal infection translates into an increased risk of PJI following arthroplasty has not previously been established.
- **Purpose:** To determine whether infectious gastroenteritis before primary TKA is associated with increased odds of postoperative PJI and other early complications.

METHODS

- Patients undergoing primary TKA were identified using a national database.
- Patients with infectious gastroenteritis within 2 years before TKA were identified
- Those with a history of *Clostridium difficile* infection were excluded.
- Patients with gastroenteritis (n=3,447) were propensity-score matched to controls without gastroenteritis (n=17,201) using:
 - Demographics
 - Elixhauser Comorbidity Index
 - Individual Elixhauser comorbidities.
- Medical and surgical complications were compared between groups using odds ratios (OR).

RESULTS

- A total of 20,648 matched patients were included
- Patients with infectious gastroenteritis within 3 months before TKA demonstrated:

90-Day Outcomes	Odds Ratio (95% CI)	P-value
Periprosthetic Joint Infection	1.93 (1.1 – 3.3)	0.013
Emergency Department Visit	1.40 (1.1 – 1.8)	<0.001
Urinary Tract Infection	1.28 (1.1 – 1.5)	<0.001

- Gastroenteritis occurring at other preoperative time points was not associated with increased PJI risk (all p>0.05).

CONCLUSION

- Patients who experienced infectious gastroenteritis within 3 months before primary TKA had nearly twice the odds of developing PJI compared with propensity-matched controls. In contrast, gastroenteritis occurring at more remote preoperative time points was not associated with increased PJI risk, suggesting that the relationship may be temporally dependent.
- Recent gastroenteritis was also associated with increased 90-day emergency department utilization and UTI, further suggesting that patients recovering from a recent gastrointestinal infection may represent a higher-risk perioperative population.
- These findings support consideration of recent infectious gastroenteritis as a potentially relevant factor during preoperative risk assessment for TKA and provide additional clinical evidence supporting a possible relationship between gastrointestinal health and subsequent joint infection.

