

# The Utility of Preoperative Inflammatory Marker Collection in Avoiding Unnecessary Postoperative Infection Workup



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## Introduction

- Increased annual rates of total knee arthroplasty (TKA) have resulted in a higher incidence of periprosthetic joint infection (PJI).<sup>1</sup>
- Postoperative inflammatory marker levels, including C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), can be indicative of PJI, but have inconsistent specificities and sensitivities.<sup>2</sup>
- Establishing preoperative inflammatory marker values may allow surgeons to discern normal patient baseline levels from actual infection.
- The objective of this study is to provide evidence for the utility of collecting preoperative patient ESR and CRP laboratory values to avoid unnecessary infection workup.
- We hypothesize that elevated postoperative inflammatory markers will have a direct positive correlation with elevated preoperative inflammatory markers.

## Methods

- Retrospective study included 337 patients who underwent total knee arthroplasty (TKA) from 2016 through 2022.
- Patients who underwent contralateral TKA were excluded from this analysis to avoid overlap with routine preoperative TKA laboratory collection for the second TKA.
- Pre- and postoperative (within 6 months) ESR and CRP in patients who underwent TKA were analyzed.
- Elevated ESR and CRP values were defined using criteria as being above 36 mm/hr and 8.2 mg/L, respectively.

## References

- Aggarwal, V. K., Rasouli, M. R. & Parvizi, J. Periprosthetic joint infection: Current concept. *Indian J. Orthop.* 47, 10–17 (2013).
- Sigmund, I. K., Puchner, S. E. & Windhager, R. Serum Inflammatory Biomarkers in the Diagnosis of Periprosthetic Joint Infections. *Biomedicines* 9, 1128 (2021).

## Data

Figure 1: Relative Frequency of CRP in Patients Undergoing TKA

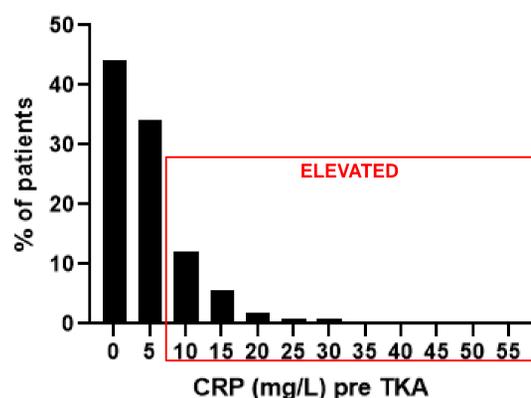


Table 1: Patients with Pre/Post TKA CRP Values

CRP Pre-TKA Frequency Column %	CRP Post-TKA	
	Elevated	Normal
Elevated	5 21.74	7 38.89
Normal	18 78.26	11 61.11
Total n, (%)	23 (56.10)	18 (43.90)

Figure 2: Relative Frequency of ESR in Patients Undergoing TKA

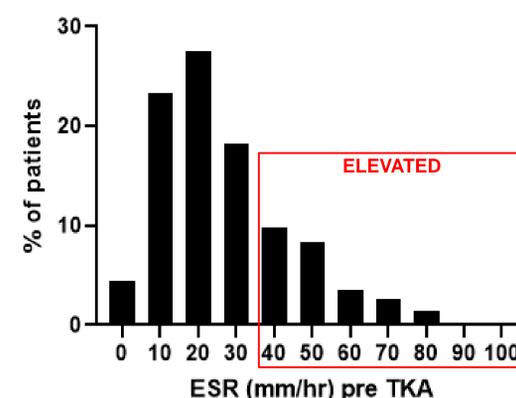


Table 2: Patients with Pre/Post TKA ESR Values

ESR Pre-TKA Frequency Column %	ESR Post-TKA	
	Elevated	Normal
Elevated	8 38.10	1 6.67
Normal	13 61.90	14 93.33
Total n, (%)	21 (58.33)	15 (41.67)

## Results

- Twenty-three patients (56%, 23/41) had elevated CRP values, of which 5 (22%, 5/23) had elevated CRP values prior to surgery with the remaining 18 (78%, 18/23) within normal ranges preoperatively.
- Twenty-one patients (58%, 21/36) had postoperatively elevated ESR, of which 8 (38%, 8/21) had elevated ESR values prior to surgery with the remaining 13 (62%, 13/21) within normal ranges preoperatively.

## Conclusion

- Approximately one third of the patients with elevated postoperative labs also had elevated labs prior to surgery, indicating that risk factors other than periprosthetic joint infection might be the cause.
- Collecting preoperative inflammatory marker values may ultimately minimize risks of unnecessary infection workup and decrease healthcare costs by allowing surgeons to distinguish between infection and normal patient baselines.