

Blood Transfusions in Revision Surgery for Prosthetic Hip and Knee Infection

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INTRODUCTION

- Operative treatment of prosthetic joint infection (PJI) has increased risk for the need of allogenic blood transfusion (ABT)
- ABT is associated with higher rates of morbidity and death in revision total joint arthroplasty (TJA), particularly in the treatment of PJI
- It is unknown how ABT rates differ among the various surgical treatments of PJI
- The purpose of this study was to identify the difference in ABT requirements between these procedures in the setting of a multimodal blood management protocol

METHOD

- Retrospective review of 165 operative cases of hip and knee PJI involving 102 patients at a single institution between 2016 and 2018
- Procedures were categorized as:
 1. Irrigation and debridement (I&D) with modular component exchange ("modular component exchange")
 2. Explantation, I&D, with placement of antibiotic spacer ("explantation")
 3. Antibiotic spacer exchange with I&D ("spacer exchange")
 4. Antibiotic spacer removal and prosthetic reimplantation ("reimplantation")
- Procedure types were assessed for differences in ABT rates, as well as rates of ABT involving multiple units transfused
- Factors associated with ABT were assessed with a multilevel mixed-effects regression model

RESULTS & DISCUSSION

- 77 (54%) of the 143 eligible cases received ABT
 - The highest rates of ABT occurred during explantations (74%) and spacer exchanges (72%), followed by reimplantations (36%) and modular component exchanges (33%)
- Lower preoperative hemoglobin level was associated with higher odds of ABT (OR 1.9, 1.5-2.5 CI)
- Compared with modular component exchanges, explantations, reimplantations, and spacer exchanges were associated with greater odds of ABT (**Table 1**)
- Explantations, reimplantations, and chronic kidney disease were associated with greater odds of multiple unit transfusions

Variable	Odds Ratio (95% CI)	P-value
Explant*	14 (4.0 - 50)	<0.001
Reimplant*	4.3 (1.1 - 16)	0.031
Antibiotic spacer exchange*	5.6 (1.1 - 28)	0.037
Current tobacco use	9.0 (1.4 - 58)	0.021
Chronic kidney disease	6.8 (1.6 - 29)	0.009
Preoperative hemoglobin level†	1.9 (1.5 - 2.5)	<0.001
Knee revision vs. Hip revision	0.48 (0.20 - 1.2)	0.112

Table 1: Odds of ABT in 143 cases of operative treatment of PJI

*Referent is I&D with modular component exchange

†Per 1 g/dL decrease in preoperative hemoglobin level

CONCLUSION

- In a TJA practice that utilizes a multimodal blood conservation protocol, ABT rates were high during surgical treatment of PJI
- Explantation procedures had high rates of multiple unit transfusions, and crossmatching additional units should be considered
- Before Re-implantation and when possible for explantation, anemia should be addressed
- Further refinement of blood management strategies in PJI is necessary

REFERENCES

References:

1. Hines JT, Hernandez NM, Amundson AW, Pagnano MW, Sierra RJ, Abdel MP: Intravenous tranexamic acid safely and effectively reduces transfusion rates in revision total hip arthroplasty. Bone Joint J 101-B:104-9, 2019