



July 2025

Position Statement on Vancomycin Graft Presoaking in ACL Reconstruction

This position statement has been developed by the Executive of the Australian Knee Society (AKS), a subspecialist group within the Australian Orthopaedic Association (AOA).

Background

Septic arthritis is a rare but potentially devastating complication following anterior cruciate ligament reconstruction (ACLR), with infection rates reported between 0.5% and 1.7% (Naendrup et al., 2020; Hu et al., 2023). While perioperative intravenous antibiotics reduce infection risk, they may not eliminate graft contamination. Since its initial description (Vertullo et al., 2012), vancomycin presoaking of autografts, particularly hamstring tendons, has emerged as a simple, low-cost, and effective infection prevention strategy with widespread adoption in Australia and internationally.

Efficacy and Evidence Summary

Large meta-analyses show that vancomycin presoaking of ACL grafts dramatically reduces infection risk. Carrozzo et al. (2022) analyzed 29,659 ACL reconstructions and found a five-fold increased risk of septic arthritis without vancomycin (OR = 14.39, 95% CI [5.90–35.10]). Hu et al. (2023) reviewed over 31,000 cases, reporting infection rates of 0.09% with vancomycin vs. 0.74% without (OR = 0.17, 95% CI [0.10–0.30], $p < .00001$). Figueroa et al. (2022) found an efficacy of 99.9% with vancomycin presoaking. These results are consistent across patient populations and graft types.

Cost-Effectiveness and Safety

Vancomycin presoaking is highly cost-effective (Truong et al. 2022). A single dose can prevent costly and morbid postoperative infections. Biomechanical and histological studies show no adverse impact on graft strength or ligamentization (Naendrup et al., 2020). Clinical studies have not reported increases in graft failure, stiffness, or reoperation rates (Xiao et al., 2021; Charalambous et al., 2023).

Side Effects and Resistance Considerations

There is no evidence of systemic side effects or vancomycin resistance arising from topical presoaking protocols (Figueroa et al., 2022). The antibiotic is applied locally and absorbed systemically in negligible quantities. No reports have demonstrated clinical chondrotoxicity or promotion of resistant organisms in this setting.

Conclusion

The Australian Knee Society supports the decision of surgeons to use vancomycin presoaking of grafts during ACL reconstruction as an effective, safe, and economical infection prevention measure. This practice is consistent with best available evidence and may be considered a standard adjunct to perioperative prophylaxis.

Disclaimer

This statement is an expression of policy of the Australian Knee Society. It is not a comprehensive review of the subject, nor is it intended as medical advice for the treatment of individual patients.



References

- Vertullo CJ, Quick M, Jones A, Grayson JE. A surgical technique using presoaked vancomycin hamstring grafts to decrease the risk of infection after anterior cruciate ligament reconstruction. *Arthroscopy*. 2012 Mar;28(3):337-42. doi: 10.1016/j.arthro.2011.08.301. Epub 2011 Nov 23. PMID: 22112612.
- Carrozzo, A., Saithna, A., Ferreira, A., Guy, S., Chadli, L., Monaco, E., Pérez-Prieto, D., Bohu, Y., Vieira, T. D., & Sonnery-Cottet, B. (2022). Presoaking ACL grafts in vancomycin decreases the frequency of postoperative septic arthritis: A cohort study of 29,659 patients, systematic review, and meta-analysis. *Orthopaedic Journal of Sports Medicine*, 10*(2), 23259671211073928. <https://doi.org/10.1177/23259671211073928>
- Figueroa, F., Figueroa, D., Calvo, R., Vaisman, A., Nuñez, M., & Putnis, S. (2022). Vancomycin presoaking of the graft appears to prevent infection after anterior cruciate ligament reconstruction: A systematic review and meta-analysis. *HSS Journal*, 18*(1), 138–144. <https://doi.org/10.1177/15563316211011682>
- Hu, M., Zhang, Y., Shang, G., Guo, J., Xu, H., Ma, X., Yang, X., & Xiang, S. (2023). Vancomycin presoak reduces infection in anterior cruciate ligament reconstruction: A systematic review and meta-analysis. *BMC Musculoskeletal Disorders*, 24*, 267. <https://doi.org/10.1186/s12891-023-06331-y>
- Naendrup, J. H., Marche, B., de Sa, D., Koenen, P., Otchwemah, R., Wafaisade, A., & Pfeiffer, T. R. (2020). Vancomycin-soaking of the graft reduces the incidence of septic arthritis following ACL reconstruction: Results of a systematic review and meta-analysis. *Knee Surgery, Sports Traumatology, Arthroscopy*, 28*(4), 1005–1013. <https://doi.org/10.1007/s00167-019-05353-1>
- Truong AP, Pérez-Prieto D, Byrnes J, Monllau JC, Vertullo CJ. Vancomycin Soaking Is Highly Cost-Effective in Primary ACLR Infection Prevention: A Cost-Effectiveness Study. *Am J Sports Med*. 2022 Mar;50(4):922-931. doi: 10.1177/03635465211073338. Epub 2022 Feb 18. PMID: 35180008.
- Xiao, M., Sherman, S. L., Safran, M. R., & Abrams, G. D. (2021). Significantly lower infection risk for anterior cruciate ligament grafts presoaked in vancomycin compared with unsoaked grafts: A systematic review and meta-analysis. *Arthroscopy*, 37*(5), 1683–1690. <https://doi.org/10.1016/j.arthro.2020.12.212>
- Charalambous, C. P., Ahmed, E. M., Kayali, F., Nautiyal, H., Kuršumović, K., & Sutton, P. M. (2023). Vancomycin graft presoaking in anterior cruciate ligament reconstruction surgery is associated with