

OsteoRemedies®: Controlling Bioburden in PJI Revisions — The Advantage of Premolded Antibiotic Cement Spacers

A Discussion With Dr. Leonard Buller, M.D.,
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Q: Does prefabricated PMMA with antibiotics block biofilm formation?

A: We answered this question in a lab study conducted at Indiana University comparing biofilm formation on discs constructed of CoCr, HMWPE, PMMA without antibiotic, and PMMA with Gent-Vanc (OsteoRemedies® spacer material). The OsteoRemedies® discs saw a 10⁶-fold reduction in biofilm formation from what grew on the other implant materials.

Q: Do the antibiotics impregnated in the premolded cement play a significant role in preventing biofilm growth?

A: That was the purpose of the PMMA without antibiotic control group. Essentially, we looked at two groups of premolded cement: one with antibiotics and one without. The antibiotic-loaded cement (OsteoRemedies spacer material) saw a drastic reduction in biofilm formation, from 10⁸ Colony Forming Units (CFU) to fewer than just 15 CFU.

Q: Why not just add antibiotics to the bone cement? Does the slow-release phase of antibiotic elution block biofilm formation?

A: We also looked at the difference in biofilm formation when incubating out to 14 days; long after any intraoperatively placed antibiotic is present but would still be actively eluting in a premolded antibiotic spacer. The results showed that the significant difference in biofilm formation remained, with between a 10⁸ and 10⁶-fold reduction of CFUs on the PMMA with Gent-Vanc (OsteoRemedies® spacer material) discs. Thus, this material has a meaningful impact on biofilm formation long after the spacer is placed.



Our study clearly shows that prefabricated PMMA with Gent-Vanc sustainably blocks biofilm formation. Knowing the immense challenge of PJI, my question is simply, *'Why risk clinical failure due to latent biofilm formation?'* A failed two-stage revision of PJI is a devastating outcome to our patients and we should do everything we can to reduce that risk.

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Reference

Higashihira, S. Greenfield E, Deckard E, Meneghini RM, Buller LT. *Preventing Biofilm, Efficacy of Prefabricated All-Cement Antibiotic-Impregnated Articulating versus polyethylene and Cobalt-Chromium Spacers*. 2022 IU Orthopaedic Garceau-Wray Lectureship. Friday, June 21, 2022, Indianapolis, IN (podium presentation of in-vitro data).