Technical and Histologic Analysis of a Retrieved Carbon Fiber - Reinforced Poly-Ether-Ether-Ketone Composite Alumina Bearing Liner 28 Months After Implantation


THIS STUDY analyzes a CFR-PEEK composite alumina acetabular bearing liner retrieved from a patient presenting with post-trauma infection 28 months after implantation.

Methods:
Visual inspection, wear depth assessment; interpretation of immune response to CFR-PEEK particles was complicated by patient trauma and chronic infection.

Results and Discussion:
The CFR-PEEK composite cup showed a smooth worn region covering two thirds of the surface area and a rougher, relatively unworn region where machining marks were still evident. A wear depth of 0.130mm was noted in the retrieved cup at 28 months post implant; this was attributed to creep deformation rather than wear. A low number of carbon fiber, polymeric and metallic wear particles were found in periprosthetic tissue; patient trauma and chronic infection complicated immune response interpretation.

Conclusions:
The low number of particles from the insert detected in the patients' periprosthetic tissue is noted as the most important observation.
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