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Elution characteristics of the Stanmore silver coated prosthesis: a preliminary study

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Introduction: Deep infection is a significant complication after endoprosthetic replacements for bone and soft tissue tumours. Silver coating of the prosthetic surface has been shown to reduce the risk of infection. Questions remain with regards to the Stanmore silver coated prosthesis; how much of the silver elutes into the joint cavity and how much silver remains after a certain period.

Methods: 40 samples of joint fluid from around silver coated endoprosthetic replacements of 21 patients were analysed for silver ion levels and correlated with time and volume of joint fluid.

Results: An average of 22ug of silver was eluted 90 hours after implantation of the silver coated prosthesis achieving levels of up to 170ppb at 96 hours.

Assuming a linear trend, a prosthesis with the maximum 6mg inventory of silver coating would exhaust this in 28 months. Joint fluid silver ion levels were extrapolated to be below 10ppb by 18 months from initial implantation. No symptoms of silver toxicity were documented in the patients analysed.

Conclusions: Analysis of joint fluid from around Stanmore silver coated prostheses has shown levels of silver ions up to 18 months from initial implantation.