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Abstract No.35754: DISPOSABLE ANTI-BACTERIAL COATING FOR PREVENTION OF IMPLANT-RELATED INFECTIONS IN ORTHOPAEDICS

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Presenter: ROMANO Carlo luca (ISTITUTO ORTOPEDICO IRCCS GALEAZZI)

Other Authors: DRAGO Lorenzo (ISTITUTO ORTOPEDICO IRCCS GALEAZZI), HAENSCH Maria (UNIVERSITAETSKLINIKUM HEIDELBERG), VAN MELLAERT Lieve (KATHOLIEKE UNIVERSITEIT), MALIZOS Konstantinos (Institute for Research and Technology Thessaly/CERETETH), FINI Milena (ISTITUTO ORTOPEDICO IRCCS RIZZOLI), MEANI Enzo (ISTITUTO ORTOPEDICO G. PINI)

Topic: Osteoarticular Infections - n/a

Introduction: Implant-related infection remains among the main reasons for failure of joint prosthesis with high associated social and economical costs. Here we report the results of a study performed under the European 7th Framework Programme (collaborative research project number 277988), concerning the efficacy in reducing bacterial colonization of an implant through a fully resorbable hydrogel antibacterial coating (Disposable Antibacterial Coating, DAC). The patented tested hydrogel, a co-polymer comprising hyaluronic acid and poly-lactic acid, can be mixed just before its use with various antibacterial agents. **Methods:** In vitro studies were conducted using DAC coating on different biomaterials, including titanium, chrome-cobalt and polyethylene discs. In vivo studies were performed on 35 rabbits divided in 7 groups. Animals were implanted with an intramedullary titanium rod in their femur, with a known inoculum of methicillin-resistant Staph. aureus. 2% and 5% vancomycin-loaded DAC was used and compared to controls. **Results:** In vitro studies showed the ability of the hydrogel to be loaded and to sustain release for up to 96 hours of the following antibacterial/antibiofilm compounds: vancomycin, ciprofloxacin, meropenem, gentamycin, amikacin, tobramycin, clindamycin, doxycyclin, linezolid, NAsalicylate, N-acetylcysteine. In vivo studies showed a bacterial load reduction ranging from 94% to 99.9% using vancomycin-loaded DAC, compared to controls. **Discussion:** DAC, a fast-resorbable antibacterial carrier, showed the ability to be loaded with various antibacterial compounds and a highly significant reduction of bacterial colonization of implanted biomaterials in an animal model, opening a new pathway to local prevention and treatment of biofilm-/implant-related infections.

<http://www.sicot.org/index.php?key=eEtmczhTYSs2dnRuR2RtMzFOSVBqYkN4TTRCdU5pMm9HK0xLS3NLbms2dmdMUENvcWZMQkpwRWtJTTRGUA1TmVDSkNPb3ZZNnhXNWJLZFNjSmJ4Z2c9PQ==>