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#### [O61] TREATMENT OF CHRONIC OSTEOMYELITIS OF THE LOWER LIMB WITH A NEW INJECTABLE, VANCOMYCIN-LOADED, CALCIUM SULFATE / HYDROXYAPATITE COMPOSITE

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**Aim:** Treatment principles of chronic osteomyelitis include debridement, clean sampling, excision of dead bone, stabilization, dead space management, soft tissue closure and systemic antibiotic therapy. Dead space management becomes very complicated, if the bone infection is caused by multi-resistant bacteria. The aim of this investigation was to evaluate the effect of a new vancomycin-loaded hydroxyapatite / calcium sulfate composite\* in the treatment of chronic osteomyelitis (OM) caused by multi-resistant bacteria.

**Method:** From June 2015 to November 2015, 7 patients (4 males, 3 females, average age 52.6y) were treated according to the above mentioned principles using the new vancomycin-loaded hydroxyapatite / calcium sulfate composite\*. Infections were caused by methicillin-resistant *Staphylococcus aureus* (MRSA), multi-resistant *Staphylococcus epidermidis* (MRSE) and polymicrobial, vancomycin-sensitive bacteria.

We used a two-stage protocol with debridement, excision of bone and external stabilization in the first stage, followed by bone defect reconstruction. To fill the residual bone defects, in 3 patients the new vancomycin-loaded hydroxyapatite / calcium sulfate composite\* (10mL) was used on its own and in 4 patients combined with 18mL of an unloaded calcium sulfate / hydroxyapatite composite\*\*. Post-operative follow-up was evaluated clinically and by radiographs and CT scans at 6, 14 and 24 weeks.

**Results:** In 6 of 7 patients rapid control of infection was achieved. Soft tissue reactions and prolonged white wound drainage (caused by calcium sulfate dissolution) was seen in 3 of 7 patients. In 6 of 7 patients recurrence of infection has not been observed so far. Radiographs showed different elution intervals of the radiocontrast agent (Iohexol), depending on anatomical location. Bone remodeling or replacement of the composite by new bone was not uniform in the patients and showed specific radiographic signs. In addition to the so-called „puddle sign“, we found septae, membranes, vacuoles and sometimes arc-like structures. Therefore, we suggest the name “arc-sign” for these formations.

**Conclusions:** During the follow-up of the first 7 patients treated with the unloaded calcium sulfate / hydroxyapatite composite\*\*. in 6 of 7 cases no recurrence of infection was observed. This is very promising in the difficult situation of bone infections caused by multi-resistant bacteria. Follow-up radiographs and CT-scans showed specific patterns during the resorption of the composite and the formation of new bone, which have not been described in other bone graft substitutes so far. The bone defects are not completely filled yet, but the affected bones are clinically stable and patients can ambulate with full weight bearing.

\*CERAMENT™ V, Bonesupport, Lund, Sweden

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