

Abstract Preview - Step 3/4

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Topic: 2. Bone bioengineer, regeneration and implants

Clinical case: No

Title: **Novel autologous bone graft substitute containing rhBMP6, autologous blood coagulum and bioceramics in a rabbit posterolateral lumbar spine fusion study**

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Text: The aim of this study was to investigate ectopic bone formation and osseointegration in the posterolateral spinal fusion (PLF) model in New Zealand white rabbits using a novel innovative autologous bone graft substitute (ABGS) containing recombinant human Bone Morphogenetic Protein 6 (rhBMP6), autologous blood coagulum (ABC) and tricalcium-phosphate (TCP) or biphasic (composed of 80% TCP and 20% hydroxyapatite) granulate bioceramics as compression resistant matrix (CRM). Blood samples were collected from rabbit ear marginal vein into tubes without an anticoagulant substance in a volume of 2500 µl. rhBMP6 (125 µg) was mixed with blood and bioceramics. The ABGS implants (n=6 per group) were implanted bilaterally between transverse processes of the lumbar vertebrae L5-L6 following exposition and decortication of transverse processes. All animals were euthanized on day 50 after surgery. To visualize new ectopic bone formation, lumbar spine was scanned by µCT. The success of spinal fusion was analysed on µCT sections through the anterior and posterior transverse process. Furthermore, lumbar spine was palpated and the mobility of fused transverse processes was tested. Total fusion success rate was 90,9% and the same result was obtained by both analysis of spinal fusion on µCT sections and by palpatory mobility testing. µCT analyses revealed that an extensive amount of newly formed bone was present in both experimental groups and that there was no significant difference (p>0,05) among experimental groups regardless the type of bioceramics used (biphasic bioceramics vs tri-calcium phosphate bioceramics). Bone formation and osseointegration were confirmed on histological sections through newly formed bone between transverse processes. Successful spinal fusion between adjacent transverse processes was confirmed radiologically, by palpatory segmental mobility test and on histological sections. Therefore, an ABGS containing rhBMP6, ABC and bioceramic granulate might be an innovative and original biological approach for achieving a successful lumbar spine fusion.

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ECTS Travel Awards: I will NOT apply

ECTS Allied Health Award: I will NOT apply

East-Meets-West Research Award: I will NOT apply

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The research (or substantially similar material) covered in the abstract submitted has been presented as an oral presentation at another international meeting / congress within Europe prior to the time of submitting this abstract to ECTS 2019

No

Hard numerical data and/or statistical evaluation: Presenting innovative concepts

Conference: 47th European Calcified Tissue Society Congress · Abstract: A-1145-0002-00359 · **Status: Draft**

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