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## Assessment of analgesic effect from drug-loaded cements using CatWalk gait analysis

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Postoperative pain following bone reconstruction is regarded as one of the major undesirable complications. This pain, which can become chronic, significantly disrupts patient recovery. However, the administration of local anesthetics has proven to be an effective analgesic technique for the treatment of postoperative pain with a significantly reduced drug use (e.g. morphine). In this clinical context, we proposed to evaluate the benefit in pain relief obtained with the defect filling by injectable calcium phosphate cement (CPC) loaded or not with local anaesthetics (bupivacaine or ropivacaine). Different formulations are prepared from a commercial CPC loaded with anesthetics. After their physicochemical characterizations, cements were implanted. 18 Wistar female rats were operated with 0% (unloaded cement), 8% of bupivacaine and 8% ropivacaine, in a critical cylindrical defect in distal femur. To compare postoperative pain after bone filling surgery, a functional evaluation was performed using gait analysis with the Catwalk system. This method seems to be a major tool for the discrimination of different implanted cements. Indeed, several gait parameters were determined and highlighted the reduction of pain as soon as 24 hours post-operatively for loaded cement. Some relevant parameters can discriminate also cement loaded with bupivacaine (more efficient) and cement loaded with ropivacaine.

### Biography

P Janvier is currently working as Assistant Professor at the University of Nantes (France) in the CEISAM laboratory. His research interests focus on phosphonate chemistry and biomaterials. He is the author of nearly 70 scientific articles, 7 patents and is also co-founder of a company specializing in bone substitutes.

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