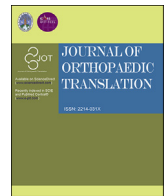


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Journal of Orthopaedic Translation

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EDITORIAL

Editorial: Fresh perspectives on established ideas



In science - and certainly medical science – we are always searching for innovative technologies, material, drug, etc. that will improve our medical services and benefit our society. However, science often develops from building on and expanding established ideas. In this issue, several papers explore fresh perspectives on well-established concepts in orthopaedics that may give way to further scientific progress and clinical care.

Biomaterial research and use plays a large part in orthopaedics, given the nature of the musculoskeletal system's requirements to support our body and its motion. Biodegradable biomaterials are being explored extensively for potential orthopaedic applications to promote bone regeneration and fracture healing. Xie et al. [1] demonstrate the effectiveness of biodegradable metal screw for fracture fixation in patients. Microcarriers are of rapidly growing interest in orthopaedics given their versatile applications. With this, one may mimic native tissue and seed drugs, cells, or proteins in various combinations. Liao et al. [2] present a systematic review on the use of microcarriers to repair cartilage defects. Traditional Chinese Medicine has been used for centuries and now, more and more formulations are being tested in large clinical studies using good clinical practice standards and modern scientific methods to demonstrate their efficacy. Hu et al. [3] demonstrate the effectiveness of Jingshu Keli in treating cervical spondylotic radiculopathy in a randomised, controlled clinical study. Li et al. [4] demonstrate that distraction osteogenesis, which has been practiced for decades remains an important fracture fixation technique that promotes bone healing and regeneration. However, these techniques may still be improved upon optimisation of biomaterials, as demonstrated in the review article.

Surgical hip repair and replacement has been optimised to suit the needs of elderly patients, who regularly require such treatment. However, when young patients experience hip dysfunction, the surgical techniques developed for the elderly, may not be best for them. Luo et al. [5] demonstrate the development of Ilizarov hip reconstruction (distraction osteogenesis) for adolescents and young patients in order to avoid having to undergo hip replacement. Distraction osteogenesis was also proven to be effective in promoting healing in patients with non-diabetic leg ulcers as presented by Nie et al. [6].

The use of animal models in research has always been and will continue to be controversial. However, there have been major advancements in animal research that have produced or establish better animal models of diseases that have in turn assisted in reducing and refining the experimental use of animals. Until *in silico* and *in vitro* methods can outperform *in vivo* models, we will continue to rely on them and develop

them further. Yao et al. [7] demonstrate both *in vitro* and *in vivo* that the relatively novel concept of ferroptosis occurs in chondrocytes, which contributes to osteoarthritis. The collagen-induced arthritis mouse model is a well-established mouse model of rheumatoid arthritis. Huang et al. [8] demonstrate that hepatocyte growth factor overexpression occurs in collagen-induced arthritis mice and that it may contribute to bone loss. Two rat models are presented in this issue, one demonstrating a modified model of osteonecrosis of the femoral head and the other demonstrating infected bone defects. Zhao et al. [9] demonstrate that local administration of zoledronic acid may prevent osteonecrosis of the femoral head and Yang et al. [10] demonstrate that copper-bearing titanium alloy biomaterials may prevent infections related to internal fixation implants. These models demonstrate promising novel approaches in treating common orthopaedic problems.

Science is constantly changing and evolving, building on existing research and concepts. It is never ending and will forever be changing. It is these types of studies presented in this issue that demonstrate the ability of scientists to adapt and improve upon previous research towards better treatment of our patients.

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