NAPLES, ITALY 30 JUNE - 4 JULY
ACEX2025 NAPLES
18th International Conference on Advanced Computational Engineering and Experimenting

ABSTRACT

Treatment of Osteoarthritis through the Application of Artificial Matrix: Advances and Perspectives

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Osteoarthritis is a degenerative condition affecting millions of people worldwide, causing pain, inflammation, and loss of joint function. Despite advances in osteoarthritis treatment, effective and durable solutions remain a challenge. The application of artificial matrix has been used as a promising technique for osteoarthritis treatment. Artificial matrix is a biocompatible material used to repair or replace damaged cartilage tissue. This technique has been shown to be effective in promoting cartilage regeneration and improving joint function in osteoarthritis patients. In this works, surgical and clinical experience with the application of artificial matrix in osteoarthritis treatment will be presented. The fundamental principles of the technique, clinical case results, and benefits and limitations of this approach will be discussed. Furthermore, future perspectives for the development and application of artificial matrix in osteoarthritis treatment will be analyzed, including ongoing research and potential applications in other medical fields. This research provides a unique opportunity to learn about the latest advances in osteoarthritis treatment and to gain insight into Orthopedic surgery, clinical experience and the Biomechanics – engineering support in the validation of the preliminary modelling and CAE simulations.

Keywords: Osteoarthritis, Artificial matrix, Cartilage regeneration, Orthopedic treatment, Tissue engineering, Computed Aided Engineering.