

Cartilage Regeneration: The Clinical Reality

S. Saha, J. Kirkham, D. Wood, S. Curran and X.B. Yang*

Summary

Throughout life, articular cartilage is subjected to repetitive physical stress, in addition to occasional mechanical trauma. Trauma to the cartilage surface within joints presents challenging clinical problems due to the limited capacity of articular cartilage for repair and regeneration. Following damage, the normal inflammatory response results in the formation of mechanically inferior fibrocartilage. To date, the treatments for cartilage damage have mainly focussed upon alleviation of symptoms, ranging from the use of analgesics and anti-inflammatory drugs to abrasion arthroplasty and the use of autografts or cell therapy. However, there is currently no standard protocol available for restoration of the tissue to its native functional state as most reported studies are beset with inconsistencies in the evaluation of outcomes and variabilities associated with tissue dedifferentiation.

This chapter reviews current progress in cartilage tissue engineering and discusses the different approaches to cartilage repair in vitro and in vivo together with their impact on current and future therapeutic applications.

KEYWORDS: Cartilage, tissue engineering, in vitro, in vivo, therapy.

 *Correspondence to: Dr Xuebin B Yang, Department of Oral Biology, University of Leeds, Leeds LS2 9LU, UK.
E-mail: X.B.Yang@leeds.ac.uk.