Original Paper

Orthopedic Surgeons' Perspectives on the Decision-Making Process for Use of Bioprinter Cartilage Grafts: Web-Based Survey

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Abstract

Background: Traumatic and degenerative lesions in the cartilage are one of the most difficult and frustrating types of injuries for orthopedic surgeons and patients. Future developments in medical science, regenerative medicine, and materials science may allow the repair of human body parts using 3D bioprinting techniques and serve as a basis for new therapies for tissue and organ regeneration. One future possibility is the treatment of joint cartilage defects with in vivo 3D printing from biological/biocompatible materials to produce a suitable cell attachment and proliferation environment in the damaged site and employ the natural recovery potential of the body. This study focuses on the perspectives of orthopedic surgeons regarding the key factors/determinants and perceived clinical value of a new therapeutic option.

Objective: This study aimed to determine the knowledge and expectations of orthopedic surgeons regarding the clinical use of bioprinted cartilage.

Methods: The survey, conducted anonymously and self-managed, was sent to orthopedic surgeons from the Catalan Society of Orthopedic and Traumatology Surgery. In accordance with the method devised by Eysenbach, the Checklist for Reporting Results of Internet E-Surveys was used to analyze the results. The following factors were taken into consideration: the type and origin of the information received; its relevance; the level of acceptance of new technologies; and how the technology is related to age, years, and place of experience in the field.

Results: Of the 86 orthopedic surgeons included, 36 believed the age of the patient was a restriction, 53 believed the size of the lesion should be between 1 and 2 cm to be considered for this type of technology, and 51 believed that the graft should last more than 5 years. Surgeons over 50 years of age (38/86, 44%) gave more importance to clinical evidence as compared to surgeons from the other age groups.

Conclusions: The perspective of orthopedic surgeons depends highly on the information they receive and whether it is specialized and consistent, as this will condition their acceptance and implementation of the bioprinted cartilage.

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KEYWORDS

orthopedic surgeons; online survey; 3D bioprinting; cartilage; graft

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