INPLASY PROTOCOL

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Corresponding author:
Matthias Holzbauer

matthias.holzbauer@a1.net

Author Affiliation:
Department of Orthopaedics and Traumtology, Kepler University Clinic Linz.

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None declared.

Intra-articular application of autologous, fat derived orthobiologics in the treatment of osteoarthritis: A systematic review

Holzbauer, M[1]; Kølle, ST[2]; Weninger, P[3]; Duscher, D[4].

Review question / Objective: **The aim of this systematic review is to analyze the current literature on mid-term results of intra-articularly applied, autologous fat derived orthobiologics in the treatment of osteoarthritis without any further arthroscopic, marrow stimulating procedures.**
Eligibility criteria: **The following exclusion criteria were defined: (1) mean or median follow-up period of less than 1.5 years, (2) the arthroscopic technique contained additional bone marrow stimulation, i.e. microfracture or drilling, or (3) no clinical parameters available.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 March 2023 and was last updated on 23 March 2023 (registration number INPLASY202330088).

INTRODUCTION

Review question / Objective: **The aim of this systematic review is to analyze the current literature on mid-term results of intra-articularly applied, autologous fat derived orthobiologics in the treatment of osteoarthritis without any further arthroscopic, marrow stimulating procedures.**

Condition being studied: **Primary osteoarthritis of any joint of the musculoskeletal system.**

METHODS

Search strategy: **The medical literature was screened to identify all studies investigating the intra-articular injection of fat derived orthobiologics aiming to treat**

osteoarthritis. The literature search was conducted on the online databases of Cochrane Library, and PubMed until the 1st of November 2022. Studies in English and German language were included in this review. For literature search in these databases, the following search algorithm (in the title and abstract) was applied: 'adipose-derived stem cells', 'fat grafting', 'fat injection', 'fat transfer', 'fat transplantation', 'mesenchymal stem cells', 'mesenchymal stromal cells', 'microfragmented adipose tissue' OR 'stromal vascular fraction' AND 'osteoarthritis' OR 'arthritis'.

Participant or population: Patients with primary osteoarthritis.

Intervention: Autologous, processed or non-processed, intra-articular fat tissue injection intra-articularly applied, autologous fat derived orthobiologics.

Comparator: n/a.

Study designs to be included: prospective or retrospective cohort studies or case series, RCT.

Eligibility criteria: The following exclusion criteria were defined: (1) mean or median follow-up period of less than 1.5 years, (2) the arthroscopic technique contained additional bone marrow stimulation, i.e. microfracture or drilling, or (3) no clinical parameters available.

Information sources: Cochrane Library and PubMed.

Main outcome(s): Pain values and/or functional scores.

Additional outcome(s): The study type, details regarding the study population (assessed patients and joints, gender distribution, mean or median age, mean or median follow-up period), origin and procession of the fat tissue (mechanically or enzymatically with or without culture), additionally injected substances, and details regarding the arthroscopic procedure were noted. Furthermore, the articles were screened for a radiographic follow-up examination (via x-ray or MRI) or a second-look arthroscopy as secondary outcome parameter.

Quality assessment / Risk of bias analysis: After the screening of the medical literature (titles and abstracts) of the author 1, the original articles were assessed by author 1 and 4 for the above mentioned exclusion criteria.

Strategy of data synthesis: Qualitative analysis.

Subgroup analysis: Subgroups were analysed according to the investigated joint.

Sensitivity analysis: n/a.

Language restriction: English and German.

Country(ies) involved: Austria.

Keywords: adipose tissue-derived stromal cells; cartilage regeneration; mesenchymal stem cells; osteoarthritis; review; stromal vascular fraction.

Contributions of each author:
Author 1 - Matthias Holzbauer.
Author 2 - Stig-Frederik Kølle.
Author 3 - Patrick Weninger.
Author 4 - Dominik Duscher.