

INPLASY

The use of Orthobiologics in Spine Treatment- Focused on Fresh Products -A Literature Review

INPLASY2024100073

doi: 10.37766/inplasy2024.10.0073

Received: 16 October 2024

Published: 16 October 2024

Neto, ARM; Melo, BM.

Corresponding author:

Avai Neto

dravaineto@gmail.com

Author Affiliation:

Clinic Ecco Prime.

ADMINISTRATIVE INFORMATION

Support - Own financing.

Review Stage at time of this submission - Submitted to Journal of Stem Cells and Regenerative Medicine.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2024100073

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 October 2024 and was last updated on 16 October 2024.

INTRODUCTION

Review question / Objective To describe the current progress of the use of fresh orthobiologics in spine disorders (platelet rich plasma, bone marrow aspirate concentrated and adipose-derived tissue) and discuss its results.

Background Spinal disorders represent a significant financial and psychological burden for the general population, interfering with daily activities. The point prevalence of these conditions is estimated at 30-50%, with a lifetime prevalence as high as 80-85%. Since 1990, the prevalence of spine-related diseases has increased, becoming one of the leading causes of global disability. Chronic lower back pain is observed in 25% to 60% of patients one year or more after the initial episode. When pain persists for weeks or months, it affects the patient's physical and psychological

well-being, as well as their social responsibilities, including work and family. Degenerative spinal pathologies, such as intervertebral disc disease and osteoporosis, have high morbidity and increase with age, resulting in long-term disabilities. A common cause of back pain is discogenic pain, observed in 22-42% of patients with low back pain. Conventional treatments include oral analgesics, physical therapy, and epidural corticosteroid injections, as well as invasive options like spinal fusion surgeries and disc replacement. However, these methods have several drawbacks, such as adjacent segment disorders, pseudoarthrosis, postoperative recurrence, and drug dependence. Orthobiologics emerge as a promising alternative, using natural body-derived substances to promote the healing of musculoskeletal injuries and degeneration. Products like Platelet-Rich Plasma (PRP), bone marrow concentrate (BMAC) and adipose-derived

products have shown potential in tissue regeneration, improving pain and function in patients with discogenic diseases. Although more long-term studies are needed, orthobiologics offer an innovative and less invasive approach to treating spinal disorders, with the potential to reduce pain and improve patients' quality of life.

Rationale The use of orthobiologics due to its composition, presenting cells, growth factors, immunomodulatory proteins, cytokines, could help in treating and improve symptoms and pain in patients with a lot of musculoskeletal disorders, including spine. These biomolecules stimulates the endogenous healing, starting regeneration process and ameliorating symptoms.

METHODS

Strategy of data synthesis We used pubmed and web of science data bases with the words "platelet rich plasma", "bone marrow aspirate concentrated", "microfragmented fat", "stromal vascular fraction" and spine and selected clinical trials of the last 8 years, preferentially. We choose randomized controlled trials, however, when it was not find it, we looking for non randomized clinical trials.

Eligibility criteria Does not apply.

Source of evidence screening and selection The words "platelet rich plasma" or "bone marrow aspirate concentrated" or "microfragmented fat" or "stromal vascular fraction" and spine for selection. We focused on clinical trials of the last 8 years and high quality as double blind randomized controlled trials, however, when it was not find it, we looking for non randomized clinical trials. We try effectively synthesizing the data from a scoping review, providing valuable insights into the current state of knowledge, identify gaps in the literature, and inform future research directions.

Data management It was made a standardization of the main information in each article including study design, intervention, outcomes to ensure consistency and completeness. We did not use a specific software for quality assessment of the included study.

Language restriction Only english articles were included.

Country(ies) involved Brazil - Clinic Ecco Prime.

Keywords Spine disorders, platelet rich plasma, bone marrow aspirate concentrate, adipose-derived products, orthobiologics.

Contributions of each author

Author 1 - Avai Neto.

Email: dravaineto@gmail.com

Author 2 - Bianca Melo.