

14. Sinkler MA, Furdock RJ, McMellen CJ, Calcei JG, Voos JE. Biologics, stem cells, growth factors, platelet-rich plasma, hemarthrosis, and scaffolds may enhance anterior cruciate ligament surgical treatment. *Arthroscopy* 2023;39:166-175.
15. Sakti M, Paturusi IA, Singjie LC, Kusuma SA. The use of platelet-rich plasma augmentation in meniscus repair results in a lower failure rate than in the control group: A systematic review from meta-analysis. *Arthrosc Sports Med Rehabil* 2024;6:00934.
16. Jawanda H, Khan ZA, Warriar AA, et al. Platelet-rich plasma, bone marrow aspirate concentrate, and hyaluronic acid injections outperform corticosteroids in pain and function scores at a minimum of 6 months as intra-articular injections for knee osteoarthritis: A systematic review and network meta-analysis. *Arthroscopy* 2024;40:1623-1636.
17. Di Matteo B, Anzillotti G, Gallese A, et al. Placenta-derived products demonstrate good safety profile and overall satisfactory outcomes for treating knee osteoarthritis: A systematic review of clinical evidence. *Arthroscopy* 2023;39:1892-1904.
18. Mojica ES, Markus DH, Hurley ET, et al. Estimated time to maximum medical improvement of intra-articular injections in the treatment of knee osteoarthritis: A systematic review. *Arthroscopy* 2022;38:980-988.
19. Leal DP, Fuller H, Varone BB, et al. Microfragmented adipose tissue associated with collagen membrane in the treatment of focal knee cartilage defect. *Arthrosc Tech* 2024;13:103075.
20. Feeley SM, Feldman MW, McCarthy CF, Colantonio DF, Tokish JM, Tucker CJ. Revision meniscal repair with amniotic membrane augmentation. *Arthrosc Tech* 2024;13:103072.
21. US Food and Drug Administration. Regulatory considerations for human cells, tissues, and cellular and tissue-based products: Minimal manipulation and homologous use. Guidance for industry and food and drug administration staff, <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/regulatory-considerations-human-cells-tissues-and-cellular-and-tissue-based-products-minimal>. Accessed May 14, 2025.
22. Rossi MJ. *Arthroscopy* family of journals acknowledges appreciation for their editors-in-chief *emeriti* and advances its vision to the future. *Arthroscopy* 2025;41:2165-2167.

**Orthopaedic Musculoskeletal Biologics Research Impacts Patient Care:
The Third Annual *Arthroscopy: The Journal of Arthroscopic and Related
Surgery* Orthobiologics Virtual Special Issue**



Abstract: Orthobiologics represent a rapidly advancing field of research in musculoskeletal care, providing novel therapies to modify symptoms and potentially augment tissue regeneration when used in the clinical or operative setting. These treatments are derived from autologous cells, tissues, and blood components, yielding bioactive elements that may promote healing, reduce symptoms, and be associated with improved patient outcomes. Biologic therapies such as platelet-rich plasma, bone marrow aspirate concentrate, adipose-derived products, and amniotic allograft tissues have demonstrated favorable clinical outcomes. *Arthroscopy: The Journal of Arthroscopic and Related Surgery* and its companion journals are committed to advancing the field by publishing high-quality, peer-reviewed orthobiologics research. This anthology of articles showcases significant recent advancements in musculoskeletal orthobiologics research.

O orthobiologics continue to advance as a critical component of musculoskeletal care, offering innovative therapies to enhance tissue repair and support biological healing. These treatments, sourced autologously from patient cells, tissues, blood-derived components, and growth factors, offer valuable support in advancing the management of orthopaedic injuries and musculoskeletal conditions. Commonly used modalities, including platelet-rich plasma, bone marrow aspirate concentrate, adipose-derived products,

and amniotic allograft tissues show promise in both surgical and nonsurgical applications. Ongoing research has broadened their application across a wide range of conditions, including osteoarthritis, rotator cuff injuries, ligament reconstruction, and meniscal pathology, with the aim of not only relieving symptoms but also addressing the underlying pathology.

This Third Annual Orthobiologics Virtual Special Issue, presented by *Arthroscopy: The Journal of Arthroscopic and Related Surgery* and the family of journals, continues to highlight the most significant advancements in this rapidly growing field. Released in conjunction with the Arthroscopy Association of North America Annual Meeting and the Biologic Association

Summit, the 2025 edition features a diverse range of contributions, including laboratory science, clinical research, systematic reviews and meta-analyses, an expert opinion piece, an infographic, and technical notes. Collectively, these publications address an array of disorders and procedures such as focal cartilage defects of the knee,¹ meniscal injuries and repair,²⁻⁶ high tibial osteotomy,⁷ knee⁸⁻¹⁰ and hip¹¹ osteoarthritis, rotator cuff tears,¹² and anterior cruciate ligament reconstruction.¹³ They also explore various applications of specific orthobiologics¹⁴ and factors impacting their composition.¹⁵ Articles were selected on the basis of their scientific rigor, clinical relevance, and potential to advance evidence-based practice. The Table of Contents for the Virtual Special Issue is available on the *Arthroscopy: The Journal of Arthroscopic and Related Surgery* website at arthroscopyjournal.org/biologics_vsi_2025. *Arthroscopy: The Journal of Arthroscopic and Related Surgery* and its companion publications provide cutting-edge, evidence-based insights into orthobiologics and provide an essential resource for clinicians and researchers dedicated to advancing the field and enhancing patient outcomes. This issue underscores a commitment to high-quality research and further solidifies its role as a vital reference for orthopaedic professionals in this rapidly evolving area. Further, readers should think critically about these contributions and consider additional areas of research that they would enjoy conducting and ultimately submitting to the journal for peer-reviewed publication.

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References

1. Leal DP, Fuller H, Varone BB, et al. Microfragmented adipose tissue associated with collagen membrane in the treatment of focal knee cartilage defect. *Arthrosc Tech* 2024;13:103075.
2. Kimura M, Nakase J, Takata Y, et al. Regeneration using adipose-derived stem cell sheets in a rabbit meniscal defect model improves tensile strength and load distribution function of the meniscus at 12 weeks. *Arthroscopy* 2023;39:360-370.
3. Asai K, Nakase J, Yoshioka K, Yoshimizu R, Kimura M, Tsuchiya H. Adipose-derived stem cell sheets promote meniscus regeneration regardless of whether the defect involves the inner half or the whole width of the anterior half of the medial meniscus in a rabbit model. *Arthroscopy* 2022;38:2672-2683.
4. Hashimoto Y, Nishino K, Orita K, et al. Biochemical characteristics and clinical result of bone marrow-derived fibrin clot for repair of isolated meniscal injury in the avascular zone. *Arthroscopy* 2022;38:441-449.
5. Sakti M, Paturusi IA, Singjie LC, Kusuma SA. The use of platelet-rich plasma augmentation in meniscus repair results in a lower failure rate than in the control group: A systematic review from meta-analysis. *Arthrosc Sports Med Rehabil* 2024;6:100934.
6. Feeley SM, Feldman MW, McCarthy CF, Colantonio DF, Tokish JM, Tucker CJ. Revision meniscal repair with amniotic membrane augmentation. *Arthrosc Tech* 2024;13:103072.
7. Kim YS, Suh DS, Tak DH, Kwon YB, Koh YG. Adipose-derived stromal vascular fractions are comparable with allogenic human umbilical cord blood-derived mesenchymal stem cells as a supplementary strategy of high tibial osteotomy for varus knee osteoarthritis. *Arthrosc Sports Med Rehabil* 2023;5:e751-e764.
8. Jawanda H, Khan ZA, Warriar AA, et al. Platelet-rich plasma, bone marrow aspirate concentrate, and hyaluronic acid injections outperform corticosteroids in pain and function scores at a minimum of 6 months as intra-articular injections for knee osteoarthritis: A systematic review and network meta-analysis. *Arthroscopy* 2024;40:1623-1636.e1.
9. Di Matteo B, Anzillotti G, Gallese A, et al. Placenta-derived products demonstrate good safety profile and overall satisfactory outcomes for treating knee osteoarthritis: A systematic review of clinical evidence. *Arthroscopy* 2023;39:1892-1904.
10. Mojica ES, Markus DH, Hurley ET, et al. Estimated time to maximum medical improvement of intra-articular injections in the treatment of knee osteoarthritis—a systematic review. *Arthroscopy* 2022;38:980-988.e4.
11. Meadows MC, Elisman K, Nho SJ, Mowry K, Safran MR. A single injection of amniotic suspension allograft is safe and effective for treatment of mild to moderate hip osteoarthritis: A prospective study. *Arthroscopy* 2022;38:325-331.
12. Shim IK, Kang MS, Lee ES, Choi JH, Lee YN, Koh KH. Decellularized bovine pericardial patch loaded with mesenchymal stromal cells enhance the mechanical strength and biological healing of large-to-massive rotator cuff tear in a rat model. *Arthroscopy* 2022;38:2987-3000.
13. Sinkler MA, Furdock RJ, McMellen CJ, Calcei JG, Voos JE. Biologics, stem cells, growth factors, platelet-rich plasma, hemarthrosis, and scaffolds may enhance anterior cruciate ligament surgical treatment. *Arthroscopy* 2023;39:166-175.
14. Lee JS, Gillinov SM, Siddiq BS, Dowley KS, Martin SD. Surgical applications for bone marrow aspirate concentrate. *Arthroscopy* 2024;40:2350-2352.
15. Rossi L, Ranalletta M, Pasqualini I, et al. Substantial variability in platelet-rich plasma composition is based on patient age and baseline platelet count. *Arthrosc Sports Med Rehabil* 2023;5:e853-e858.