

Supplementary file 1

Search strategy used in PubMed database

Search Topic	#	Search Terms
Population: <i>Human subjects with rotator cuff tear</i>	#1	("rotator cuff tear"[Mesh]) OR (rotator cuff tear [All Fields]) OR (rotator cuff[All Fields])
	#2	("stem cell transplantation"[Mesh]) OR ("cell- and tissue-based therapy"[Mesh]) OR ("mesenchymal stem cells"[Mesh]) OR ("stem cell therapy"[All Fields]) OR ("cellular therapy"[All Fields]) OR ("stem cell therapy"[All Fields]) OR ("mesenchymal stem cell therapy"[All Fields])
	#3	("bone marrow"[Mesh]) OR ("adipose tissue"[Mesh]) OR ("bone marrow transplantation"[Mesh]) OR ("bone marrow"[All Fields]) OR ("adipose tissue"[All Fields]) OR ("bone marrow transplantation"[All Fields])
	#4	#2 AND #3
	#5	#1 AND #4
Intervention: <i>Cellular therapy, Injection, BM-MSC, AD- MSC, Bone marrow, Adipose tissue</i>	#6	("clinical trial"[All Fields] OR "clinical trials as topic"[MeSH Terms] OR "clinical trials"[All Fields] OR "randomized controlled trial"[All Fields] OR "randomized controlled trials as topic"[MeSH Terms] OR "randomized controlled trial"[pt] OR "controlled clinical trial"[pt] OR "randomized"[tiab] OR "randomly"[tiab] OR "trial"[ti] OR "randomised controlled trial"[All Fields] OR "randomized controlled trial"[pt] "prospective studies"[MeSH Terms] OR "prospective studies"[All Fields] OR "retrospective studies"[MeSH Terms] OR "retrospective studies"[All Fields] OR "retrospective study"[All Fields])
	#7	#5 AND #6
Study design: <i>Comparative Clinical Studies</i>	#8	("biography"[Publication Type] OR "comment"[Publication Type] OR "directory"[Publication Type] OR "editorial"[Publication Type] OR "festschrift"[Publication Type] OR "interview"[Publication Type] OR "lecture"[Publication Type] OR "legal case"[Publication Type] OR "legislation"[Publication Type] OR "letter"[Publication Type] OR "news"[Publication Type] OR "newspaper article"[Publication Type] OR

	“patient education handout”[Publication Type] OR “popular work”[Publication Type] OR “congress”[Publication Type] OR “consensus development conference”[Publication Type] OR “consensus development conference, nih”[Publication Type] OR “practice guideline”[Publication Type]) OR “Review”[Publication Type])
#9	#7 NOT #8

Full text article excluded with reasons (n=15)

1. Review articles on BMAC for rotator cuff tear (n=5)

- a. Cho WS, Chung SG, Kim W, Jo CH, Lee SU, Lee SY. Mesenchymal Stem Cells Use in the Treatment of Tendon Disorders: A Systematic Review and Meta-Analysis of Prospective Clinical Studies. *Ann Rehabil Med*. 2021 Aug;45(4):274-283. doi: 10.5535/arm.21078. Epub 2021 Aug 30. Erratum in: *Ann Rehabil Med*. 2021 Oct;45(5):410. PMID: 34496470; PMCID: PMC8435464.
- b. Montgomery SR, Petrigliano FA, Gamradt SC. Biologic augmentation of rotator cuff repair. *Curr Rev Musculoskelet Med*. 2011 Dec;4(4):221-30. doi: 10.1007/s12178-011-9095-6. PMID: 22021012; PMCID: PMC3261240.
- c. Cheung EV, Silverio L, Sperling JW. Strategies in biologic augmentation of rotator cuff repair: a review. *Clin Orthop Relat Res*. 2010 Jun;468(6):1476-84. doi: 10.1007/s11999-010-1323-7. PMID: 20352390; PMCID: PMC2865611.
- d. Gowd, A.K., Cabarcas, B.C., Frank, R.M., & Cole, B.J. (2017). Biologic Augmentation of Rotator Cuff Repair: The Role of Platelet-Rich Plasma and Bone Marrow Aspirate Concentrate. *Operative Techniques in Sports Medicine*, 26, 48-57.
- e. Imam MA, Holton J, Horriat S, Negida AS, Grubhofer F, Gupta R, Narvani A, Snow M. A systematic review of the concept and clinical applications of bone marrow aspirate concentrate in tendon pathology. *SICOT J*. 2017;3:58. doi: 10.1051/sicotj/2017039. Epub 2017 Oct 9. PMID: 28990575; PMCID: PMC5632955.

2. Animal Studies (n=3)

- a. Liu XN, Yang CJ, Kim JE, Du ZW, Ren M, Zhang W, Zhao HY, Kim KO, Noh KC. Enhanced Tendon-to-Bone Healing of Chronic Rotator Cuff Tears by Bone Marrow Aspirate Concentrate in a Rabbit Model. *Clin Orthop Surg*. 2018 Mar;10(1):99-110. doi: 10.4055/cios.2018.10.1.99. Epub 2018 Feb 27. PMID: 29564054; PMCID: PMC5851862.
- b. Maleas G, Mageed M. Effectiveness of Platelet-Rich Plasma and Bone Marrow Aspirate Concentrate as Treatments for Chronic Hindlimb Proximal Suspensory Desmopathy. *Front Vet Sci*. 2021 Jun 18;8:678453. doi: 10.3389/fvets.2021.678453. PMID: 34222402; PMCID: PMC8253571.

- c. Sun Y, Jung HW, Kwak JM, Tan J, Wang Z, Jeon IH. Reconstruction of large chronic rotator cuff tear can benefit from the bone-tendon composite autograft to restore the native bone-tendon interface. *J Orthop Translat.* 2020 Jan 30;24:175-182. doi: 10.1016/j.jot.2020.01.001. PMID: 33101968; PMCID: PMC7548344.

3. No comparison groups (n=6)

- a. Kim SJ, Song DH, Park JW, Park S, Kim SJ. Effect of Bone Marrow Aspirate Concentrate-Platelet-Rich Plasma on Tendon-Derived Stem Cells and Rotator Cuff Tendon Tear. *Cell Transplant.* 2017 May 9;26(5):867-878. doi: 10.3727/096368917X694705. Epub 2017 Jan 20. PMID: 28105983; PMCID: PMC5657720.
- b. Havlas V, Kotaška J, Koníček P, Trč T, Konrádová Š, Kočí Z, Syková E. Použití kultivovaných lidských autologních kmenových buněk kostní dřeně při rekonstrukci ruptury rotátorové manžety - studie bezpečnosti metody, předběžné výsledky [Use of cultured human autologous bone marrow stem cells in repair of a rotator cuff tear: preliminary results of a safety study]. *Acta Chir Orthop Traumatol Cech.* 2015;82(3):229-34. Czech. PMID: 26317295.
- c. Centeno CJ, Al-Sayegh H, Bashir J, Goodyear S, Freeman MD. A prospective multi-site registry study of a specific protocol of autologous bone marrow concentrate for the treatment of shoulder rotator cuff tears and osteoarthritis. *J Pain Res.* 2015 Jun 5;8:269-76. doi: 10.2147/JPR.S80872. PMID: 26089699; PMCID: PMC4463777.
- d. Jo CH, Chai JW, Jeong EC, Oh S, Yoon KS. Intratendinous Injection of Mesenchymal Stem Cells for the Treatment of Rotator Cuff Disease: A 2-Year Follow-Up Study. *Arthroscopy.* 2020 Apr;36(4):971-980. doi: 10.1016/j.arthro.2019.11.120. Epub 2019 Dec 3. PMID: 31805388.
- e. Chris H. Jo, Jee Won Chai, Eui Cheol Jeong, Sohee Oh, Paul S. Kim, Jeong Yong Yoon, Kang Sup Yoon, Intratendinous Injection of Autologous Adipose Tissue-Derived Mesenchymal Stem Cells for the Treatment of Rotator Cuff Disease: A First-In-Human Trial, *Stem Cells*, Volume 36, Issue 9, September 2018, Pages 1441–1450, <https://doi.org/10.1002/stem.2855>
- f. Voss A, McCarthy MB, Bellas N, Kellner R, Beitzel K, Dyrna F, Imhoff AB, Mazzocca AD, Muench LN, Berthold DP. Significant Improvement in Shoulder Function and Pain in Patients Following Biologic Augmentation of Revision Arthroscopic Rotator Cuff Repair Using an Autologous Fibrin Scaffold and Bone Marrow Aspirate Derived From the Proximal Humerus. *Arthrosc Sports Med Rehabil.* 2021 Oct 30;3(6):e1819-e1825. doi: 10.1016/j.asmr.2021.08.009. PMID: 34977636; PMCID: PMC8689277.

4. Case report (n=1)

- a. Marathe A, Song B, Jayaram P. Microfragmented Adipose Tissue With Adjuvant Platelet-Rich Plasma Combination Therapy for Partial-Thickness Supraspinatus Tear. *Cureus.* 2021 Jun 10;13(6):e15583. doi: 10.7759/cureus.15583. PMID: 34277204; PMCID: PMC8270056.

Supplementary file 2

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1. Review articles on BMAC for rotator cuff tear (n=5)
 - a. Cho WS, Chung SG, Kim W, Jo CH, Lee SU, Lee SY. Mesenchymal Stem Cells Use in the Treatment of Tendon Disorders: A Systematic Review and Meta-Analysis of Prospective Clinical Studies. *Ann Rehabil Med*. 2021 Aug;45(4):274-283. doi: 10.5535/arm.21078. Epub 2021 Aug 30. Erratum in: *Ann Rehabil Med*. 2021 Oct;45(5):410. PMID: 34496470; PMCID: PMC8435464.
 - b. Montgomery SR, Petrigliano FA, Gamradt SC. Biologic augmentation of rotator cuff repair. *Curr Rev Musculoskelet Med*. 2011 Dec;4(4):221-30. doi: 10.1007/s12178-011-9095-6. PMID: 22021012; PMCID: PMC3261240.
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 - b. Maleas G, Mageed M. Effectiveness of Platelet-Rich Plasma and Bone Marrow Aspirate Concentrate as Treatments for Chronic Hindlimb Proximal Suspensory Desmopathy. *Front Vet Sci*. 2021 Jun 18;8:678453. doi: 10.3389/fvets.2021.678453. PMID: 34222402; PMCID: PMC8253571.
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3. No comparison groups (n=6)
 - a. Kim SJ, Song DH, Park JW, Park S, Kim SJ. Effect of Bone Marrow Aspirate Concentrate-Platelet-Rich Plasma on Tendon-Derived Stem Cells and Rotator Cuff Tendon Tear. *Cell Transplant*. 2017 May 9;26(5):867-878. doi: 10.3727/096368917X694705. Epub 2017 Jan 20. PMID: 28105983; PMCID: PMC5657720.
 - b. Havlas V, Kotaška J, Koníček P, Trč T, Konrádová Š, Kočí Z, Syková E. Použití kultivovaných lidských autologních kmenových buněk kostní dřeně při rekonstrukci ruptury rotátorové manžety - studie bezpečnosti metody,

předběžné výsledky [Use of cultured human autologous bone marrow stem cells in repair of a rotator cuff tear: preliminary results of a safety study]. *Acta Chir Orthop Traumatol Cech.* 2015;82(3):229-34. Czech. PMID: 26317295.

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