

ePoster #134: The High Prevalence of Spin Reporting Bias in Meniscal Allograft Transplant Research

Matt Gulbrandsen, MD; Mustafa Hashimi, MD; Taha Taka, MD; Anthony Essilfie, MD; Anikar Chhabra, MD; Trevor Gulbrandsen, MD; Seth Sherman, MD



LOMA LINDA UNIVERSITY
HEALTH

Many Strengths.
One Mission.

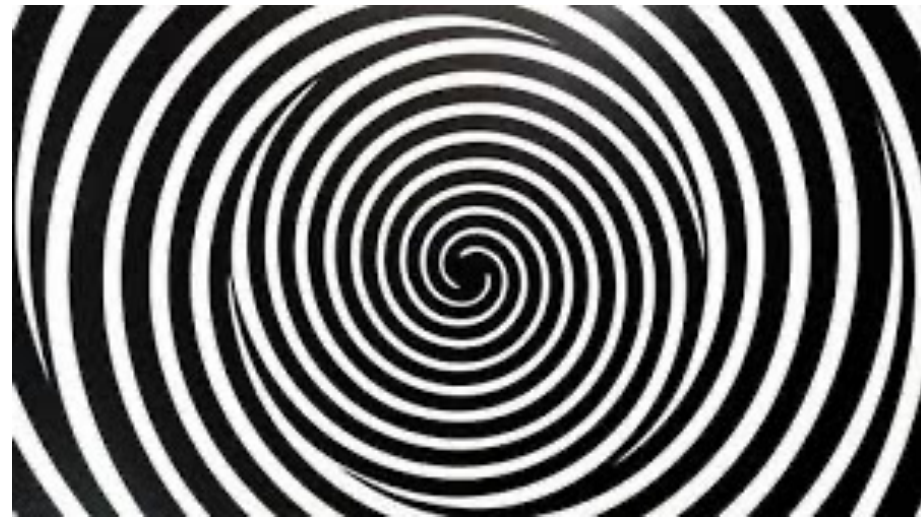
Disclosures

- » Self Funded
- » Dr. Chhabra: Zimmer Biomet, Arthrex, Wolters Kluwer Health
- » Dr. Sherman: AAOS, AOSSM, Arthrex, AANA, Bioventus, CONMED Corp, ICRJPS, Kinamed, Patellofemoral Foundation, Smith and Nephew, Vericel, JRF Ortho, ISAKSOSM
- » The remaining authors in this study have nothing to disclose

Introduction of Spin

» Spin

- ~ Reporting data to highlight the beneficial effect of experimental treatment
- » Found in many fields of medicine including orthopaedics
- » Can affect decision making and patient treatment



Orthopaedic Spin

- » Arthur et al found spin in 44.8% of orthopaedic RCTs they reviewed (1)
- » Checketts et al found spin in 58.7% of lower extremity arthroplasty RCTs (2)
- » Jones et al found spin in 34.2% of proximal humerus fracture systematic reviews or meta-analyses (3)



Introduction of Meniscal Allograft Transplant (MAT)

- » MAT is used for symptomatic meniscus deficiency
- » Relatively New with 3300 performed between 2007-2011 (4)
- » Utility of MAT is evolving and controversial
- » Important to understand the quality of the current research



Purpose and Hypothesis

- » Purpose: Identify the prevalence of spin in meta-analysis and systematic review abstracts regarding MAT
- » Hypothesis: Spin will be present in a significant portion of abstracts from systematic reviews and meta-analyses regarding MAT

Methods

- » Systematic review of literature regarding MAT
- » Inclusion Criteria: Meta-analyses and systematic reviews of MAT
- » Data points included
 - ~ Spin Grade - Yavchitz et al Tool (5)
 - ~ Review of methodology - AMSTAR-2 Tool (6)
 - ~ Year of publication
 - ~ Number of yearly citations
 - ~ Journal impact factor

Results

- » 1088 article abstracts were reviewed
- » 27 met final inclusion criteria
- » 74% (20/27) found to have spin in abstract
- » Type 5 was most common: 74% (20/27)
 - ~ “Conclusion claims the beneficial effect of the experimental treatment despite high risk of bias in the primary studies” (5)
- » No association was found between spin and the year of publication, journal impact factor, AMSTAR-2 score, number of citations

Results - Spin Classification System (5)

Nine Most Severe Types Of Spin	Abstracts With Spin
1. Conclusion contains recommendations for clinical practice not supported by the findings	0 (0%)
2. Title claims or suggests a beneficial effect of the experimental intervention not supported by the findings	0 (0%)
3. Selective reporting of or overemphasis on efficacy outcomes or analysis favoring the beneficial effect of the experimental intervention	5 (19%)
4. Conclusion claims safety based on non-statistically significant results with a wide confidence interval	1 (4%)
5. Conclusion claims the beneficial effect of the experimental treatment despite high risk of bias in the primary studies	20 (74%)
6. Selective reporting of or overemphasis on harm outcomes or analysis favoring the safety of the experimental intervention	2 (7%)
7. Conclusion extrapolates the review's findings to a different intervention	0 (0%)
8. Conclusions extrapolates the review's findings from a surrogate marker or a specific outcome to the global improvement of the disease	0 (0%)
9. Conclusion claims the beneficial effect of the experimental treatment despite reporting bias	2 (7%)

Example of type 5 spin

» Novaretti et al. (7)

- ~ Abstract states, “MAT can yield good long-term survivorship rates, with 73.5% and 60.3% of allografts remaining functional after 10 and 15 years, respectively.”
 - ~ However, within the manuscript they discuss the bias of the results due to the heterogeneity, short-term nature, and selection bias of the data.
- » Systematic reviews are only as good as the primary studies included

Example of Mitigating Type 5 Spin

»Smith et al. (8)

- ~ Abstract states, “There is some evidence to support the hypothesis that MAT reduces the progression of osteoarthritis.”
 - ~ Then further conditions their conclusion by stating, “Well-designed RCTs are needed to further test this hypothesis.”
- »Using this type of wording (‘some evidence’ and ‘further studies needed’) helps to not make blanket conclusions that contain spin

Limitations

- » Subjective nature of grading spin
- » 27 MAT systematic reviews & meta-analyses is not a large sample size
- » The “9 most severe forms of spin” is not an exhaustive list
- » We don't fully know how spin affects the reader



Conclusion

- 74% of the abstracts of meta-analyses and systematic reviews regarding MAT contain spin



Creating a “No Spin Zone”

- Strict criteria should be considered to reduce the prevalence of spin
- Orthopaedic surgeons should recognize spin when reviewing literature in deciding treatment options for patients with meniscal pathology.



References

- » 1. Arthur W, Zaaza Z, Checketts JX, et al. Analyzing Spin in Abstracts of Orthopaedic Randomized Controlled Trials with Statistically Insignificant Primary Endpoints. *Arthrosc J Arthrosc Relat Surg Off Publ Arthrosc Assoc N Am Int Arthrosc Assoc*. Published online January 16, 2020:1443-1450.e1. doi:10.1016/j.arthro.2019.12.025
- » 2. Checketts JX, Riddle J, Zaaza Z, Boose MA, Whitener JH, Vassar MB. An Evaluation of Spin in Lower Extremity Joint Trials. *J Arthroplasty*. 2019;34(5):1008-1012. doi:10.1016/j.arth.2019.01.016
- » 3. Jones C, Rulon Z, Arthur W, et al. Evaluation of spin in the abstracts of systematic reviews and meta-analyses related to the treatment of proximal humerus fractures. *J Shoulder Elbow Surg*. 2021;0(0). doi:10.1016/j.jse.2020.11.026
- » 4. Shea BJ, Grimshaw JM, Wells GA, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol* 2007; 7: 10.
- » 5. Yavchitz A, Ravaud P, Altman DG, et al. A new classification of spin in systematic reviews and meta-analyses was developed and ranked according to the severity. *J Clin Epidemiol*. 2016;75:56-65. doi:10.1016/j.jclinepi.2016.01.020
- » 6. Shea BJ, Reeves BC, Wells G, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ*. 2017;358:j4008. doi:10.1136/bmj.j4008
- » 7. Novaretti J, Lian J, Vaswani R, et al. Long-Term Survival Analysis and Outcomes of Meniscal Allograft Transplantation With Minimum 10-Year Follow-Up: A Systematic Review. *Arthrosc J Arthrosc Relat Surg Off Publ Arthrosc Assoc N Am Int Arthrosc Assoc*; 35. Epub ahead of print February 2019. DOI: 10.1016/j.arthro.2018.08.031.
- » 8. Smith NA, Parkinson B, Hutchinson CE, et al. Is meniscal allograft transplantation chondroprotective? A systematic review of radiological outcomes. *Knee Surg Sports Traumatol Arthrosc Off J ESSKA*; 24. Epub ahead of print September 2016. DOI: 10.1007/s00167-015-3573-0.