ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

Spin is Prevalent in the Abstracts of Systematic Reviews and Meta-Analyses Comparing Biceps Tenodesis and Tenotomy Outcomes

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Faculty Disclosure Information

- The presenting author and co-authors declare that they have no relevant conflicts of interest to disclose.

Background – Biceps Tenodesis vs Tenotomy

- Two surgical options for long-head of the biceps tendon (LHBT) pathology, tenodesis secures the tendon to bone, tenotomy releases it.
- Trends in shoulder surgery show rising numbers of LHBT surgery, and simultaneously declining rates of SLAP lesion repairs, with potential clues pointing towards a greater than previously anticipated role for the LHBT in anterior shoulder pain [1-3].
- Systematic reviews and meta-analyses are regarded as robust sources of information that inform clinical practice; literature focused on biceps tenodesis and tenotomy shows conflicting conclusions with regards to functional outcomes.

What is “Spin” in Research?

- “Spin” refers to a pattern of reporting behaviors that may overstate benefits or understate harms of an intervention, potentially affecting a clinician’s interpretation of a study’s results [4].
- Yavchitz *et al.* identified 21 types of spin in abstracts and ranked them by severity [4].
- Since the establishment of their classification, multiple investigators in different medical and surgical fields utilized it to investigate reporting behaviors in their respective academic fields.

Spin in Orthopedic Literature

- In orthopedic literature, the presence of spin has been documented in the abstracts of numerous reviews and randomized controlled trials of highly important subjects such as knee osteoarthritis, ankle instability and orthobiologics (platelet-rich-plasma [PRP]).

- In orthopedic surgery, the presence of the more severe types of spin could mean that under-recognized risks of certain interventions are going unnoticed and potentially harmful guidance is being disseminated and integrated in clinical practice.

Study Aim and Hypothesis

- We aimed to "*assess the presence of spin in abstracts of systematic reviews and meta-analyses comparing biceps tenodesis and tenotomy outcomes, and to explore associations between spin and specific study characteristics"* [5].

- We suspected that based on a growing body of tenodesis versus tenotomy reviews, especially with non-aligning results, that spin would be prevalent, we posited that lower quality reviews may demonstrate more spin in their abstracts.

Methods

- We systematically searched the major databases for systematic reviews and meta-analyses comparing biceps tenodesis to tenotomy.
- 16 studies were considered eligible for analysis.
- Each review was evaluated for the presence of the nine most severe types of spin, as well as undergoing a methodological quality assessment via the AMSTAR-2, moreover, study characteristics such as citation metrics, journal impact and others were also collected.

Results – Prevalence of Spin (Top 3 Types)

- **81.3%** of systematic reviews had at least one form of spin in their abstracts. *Spin was widespread in this body of literature*.
  - Type 3 spin (selective reporting of favorable efficacy outcomes) was the most prevalent (56.3%) – *in most cases, this was in favor of tenodesis-associated functional outcomes.*
  - Type 6 spin (emphasis on safety by selective reporting of harm outcomes of opposite intervention) (43.8%) – *Again, in favor of tenodesis, usually by contrasting poor cosmetic outcomes (Popeye's deformity) against functional outcomes where no significant difference / tenotomy superiority was found.*
  - Type 5 spin (claiming benefit despite high bias risk) (37.5%) – *Strong conclusions were drawn in favor of tenodesis despite a high risk of bias in the included studies, at times with omission of this acknowledgment from the abstract.*

Results – Study Quality and “Spin”

- Our study demonstrated an interesting dynamic between the academic community and lower quality reviews (as deemed by the AMSTAR-2) – A strong positive correlation was found between AMSTAR-2 score and citation count ($r = 0.821$, $p < 0.001$). Another striking finding – reviews with a greater burden of spin attracted more scrutiny (in the form of letters to the editor) ($p = 0.0043$).

- This demonstrates that the academic community may be able to ”see through” more spin-laden reviews.

- This creates a discussion of whether pre-publication peer review should be more rigorous to catch spin and prevent dissemination.

Discussion – Why Does Spin Matter?

- The presence of spin in abstract conclusions means that actual results may not be faithfully represented; and for clinicians who often rely on abstracts for a quick take-home message, **this can be problematic.** *There is evidence suggesting that the presence of spin can impact a clinician's interpretation of a study's results* [6]. This means that potentially, by surrogate association, spin could lead to unfavorable patient outcomes.

- Spin might explain why different reviews on the same topic, utilizing overlapping source literature may demonstrate conflicting conclusions.

Reporting Integrity and Future Directions

- While the onus is on authors to represent results in abstract conclusions transparently, reader-clinicians should handle literature more critically and thoroughly, spending more time on full-text material.

- Interestingly, a discussion is warranted on whether spin is entirely avoidable or an inevitable “human footprint” in scientific writing. Our team is currently developing more robust methodologies for evaluating spin and working toward a reporting guideline tailored to orthopedic comparative studies, aiming to reduce the prevalence of the most severe forms of spin in their abstracts.

Conclusions

- Over 80% of abstracts showed spin, distorting the summary of systematic reviews on tenodesis vs tenotomy.
- Spin can mislead clinicians, leading to biased decisions and unjustified treatment preferences.
- Conclusions must align with data—avoid overstating findings, especially when evidence is weak.
- Journals and reviewers should treat spin as a critical reporting flaw and enforce accurate abstracts.
- Research is needed to reduce spin and improve trust in systematic review abstracts across specialties.

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