



## Retraction of Academic Literature: The Urology Perspective

RETRACTION is the withdrawal of a manuscript from the academic literature due to invalid or flawed research. Retraction corrects and maintains the integrity of the literature by notifying readers about unreliable findings.<sup>1</sup> Retraction may occur for many reasons, the most common of which include erroneous data secondary to research misconduct (eg, fabrication) or honest error (eg, inaccuracy), plagiarism, unethical research practices, redundant publications, or failure to disclose author competing interests.<sup>1</sup> Retraction decisions are typically made by journal editorial staff based on input from experts who have critically appraised the article or identified data integrity concerns. Retracted articles ultimately remain in the literature but are marked to signify that they must be disregarded.<sup>2</sup>

Retraction rates in the scientific and engineering literature have increased 8-fold since 2000.<sup>3</sup> Over two-thirds of retractions in the biomedical and life-sciences literature can be attributed to research misconduct “including fraud or suspected fraud (43.4%), duplicate publications (14.2%), and plagiarism (9.8%).”<sup>4</sup> The clinical and public health implications of unsound research can be profound. The retracted COOPERATE trial published in *The Lancet* in 2003 resulted in hundreds of thousands of patients receiving a combination of losartan and trandolapril to slow renal disease progression.<sup>5</sup> This trial’s data were fabricated, resulting in patient exposure to the side effects of combination therapy with no clinical benefit to renal function.<sup>6</sup> The infamous Wakefield paper published in *The Lancet* in 1998, suggesting a link between autism and the measles, mumps, and rubella vaccine, has fueled anti-vaccination campaigns and severely compromised public health.<sup>7</sup> The Wakefield paper has been cited over 4,000 times, with increased frequency since retraction in 2010.<sup>3</sup>

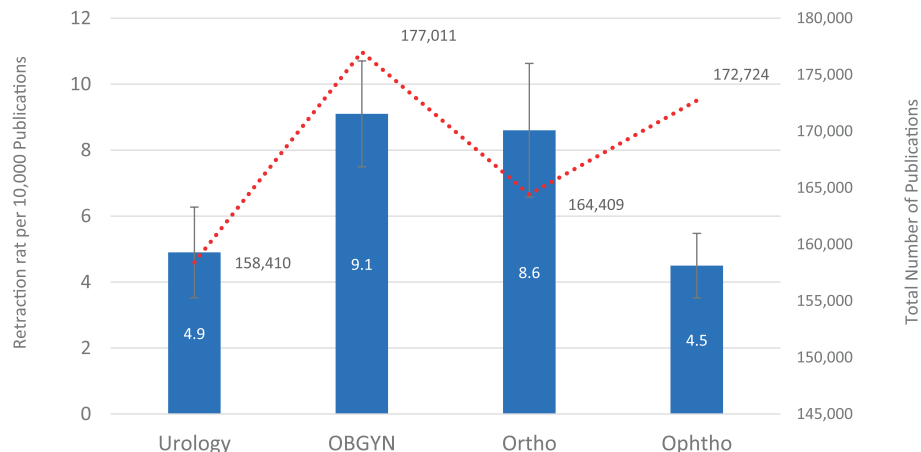
Retractions in urology are rare, comprising 138 articles between 1999 and 2018.<sup>8</sup> Two-thirds of these were retracted due to research misconduct, with the majority pertaining to urologic oncology (70%).<sup>8</sup> A 2015 randomized trial of narrow-band vs white-light cystoscopy for restaging transurethral resection in bladder cancer published in *European Urology* was retracted due to misrepresentation of the study methodology.<sup>9</sup> Contrary to the paper’s description, patients were not

randomized according to permuted block allocation or consented to participate in a randomized trial.<sup>9</sup> Although the clinical implications were likely minimal for participants, the study was not performed or described in an ethically sound or accurate manner, undermining the trust that medical research relies on. Without the trust and commitment of patients and families participating in research, advances in clinical practice would be impossible. This is not unique, as urological retractions span the continuum of care from sexual medicine to pediatric urology across 76 different journals.<sup>8</sup>

Retraction rates have been viewed by some as a crude surrogate for the quality of a body of research literature. The estimated retraction rate for *The Journal of Urology*® is 0.024%, for example, which is far lower than *BJU International* at 0.189%.<sup>8</sup> These rates, however, are difficult to interpret at the journal-specific level and within internal urological content areas. We instead compared urology retraction rates to those of other surgical specialties to better characterize the quality of the urological literature. We hypothesized that similar retraction rates would be observed across other surgical specialties assuming that the instances of research misconduct, identification of concerning papers, and editorial review processes are comparable.

We calculated retraction rates for the 2021 top 50 journals in urology, obstetrics and gynecology (OB-GYN), orthopedics, and ophthalmology (according to *SCImago Journal Rank*) for the years 2000 to 2020. Retractions for each journal per year (numerator) were obtained from the Retraction Watch database.<sup>3</sup> Number of total publications for each journal per year (denominator) was obtained from the *SCImago Journal Rank* website.<sup>10</sup>

For the study period, a mean±SD retraction rate of 4.9±1.4 papers per 10,000 publications was calculated for urology (78 retractions). This rate was comparable to ophthalmology at 4.5±1.0 papers per 10,000 publications (77 retractions). However, urology had a significantly lower retraction rate when compared to orthopedics (8.6±2.0/10,000, 141 retractions) and OB-GYN (9.1±1.6/10,000, 161 retractions). These findings confirm that retraction rates are very low in urology and that significant variation exists in retraction



**Figure.** Retraction rates per 10,000 publications by specialty (blue columns). Black bars represent 95% confidence intervals. Red line shows total number of articles for each specialty. OBGYN indicates obstetrics and gynecology; Ophtho, ophthalmology; Ortho, orthopedics.

rates across surgical specialties (see Figure). The retraction rate in OB-GYN is almost double that of urology.

Differences in retraction rates across specialties raised 2 questions. Is a low retraction rate better than a high one? A low retraction rate could suggest that a body of literature is of superior quality compared to literature associated with a high retraction rate, but a low retraction rate may also be due to a systematic failure to identify flawed research. Calculating and monitoring retraction rates thus provides only part of the overall assessment of research quality. Are we being critical enough in our conduct, review, and publication of urology research? This is difficult to answer. We suspect that re-reviews of published research by expert panels would likely result in higher retraction rates for every field.

The editorial review process among high-quality journals is demanding but not perfect, as demonstrated by *The Lancet*. Journals are moving toward more transparent and rigorous evaluation, including open peer review, stricter adherence to reporting guidelines, and encouraging authors to make data accessible. The availability of qualified content and statistical reviewers remains a burdensome challenge, however, and the editorial process is but one piece of the problem. It is almost impossible for editors and reviewers to identify cases of research misconduct in real time, which creates a window of potential risk for patients whose care is altered due to a study that is retracted years later. It is also important to improve our research culture, given that two-thirds of urology retractions are due to research misconduct.<sup>8</sup>

There are limitations to our analysis, including the potential of inaccuracy of our data sources. Our focus on the top 50 journals for each specialty may

have resulted in lower retraction rates by excluding lower-tier journals that may have less rigorous peer review processes. It is also likely, however, that lower-tier journals are less scrutinized and have fewer retractions. It is also unclear how many concerning articles were weeded out in the peer review process as there is no publicly available metric to accurately discern a journal's success in this regard.

Publish or perish is imperative in academia, for urology as much as any other specialty. This pressure starts prior to medical school and only increases with each new threshold for advancement. Research volume tends to be rewarded more than conducting excellent, high-quality science. Shifting the concept of academic success away from volume to quality may be one way (of many) to reduce retractions and unsound research in urology. Practical potential solutions to promote and recognize the conduct of high-quality urological science may include

1. Formal training in critical appraisal and evidence-based medicine for trainees,
2. Focusing additional attention on study design, data collection, and analysis during journal club and other research evaluation forums,
3. Providing trainees and junior faculty with protected time, tools, statistical expertise, mentorship, and oversight necessary to perform high-quality research, and
4. Creating a personalized career development plan for trainees and faculty that promotes and incentivizes devoting a certain percentage of their research portfolio to rigorous prospective studies, randomized controlled trials, and systematic reviews.

With these and other steps, we can reduce the need for retraction by fostering good research in residency and beyond.

**Thomas Alvermann,<sup>1</sup> Martin S. Gross,<sup>2</sup>  
and Michael E. Rezaee<sup>3\*</sup>**

<sup>1</sup>Geisel School of Medicine at Dartmouth, Hanover, New Hampshire

<sup>2</sup>Section of Urology, Department of Surgery, Dartmouth-Hitchcock  
Medical Center, Lebanon, New Hampshire

<sup>3</sup>The Brady Urological Institute, Johns Hopkins Medicine  
Baltimore, Maryland

Submitted January 12, 2023; accepted March 23, 2023; published March 31, 2023.

Support: None.

Conflict of Interest: MSG: Coloplast.

Ethics Statement. In lieu of a formal Ethics Committee, the principles of the Helsinki Declaration were followed.

\*Correspondence: The Brady Urological Institute, Johns Hopkins Medicine, 600 N Wolfe St, Baltimore, MD 21287 (telephone: 410-614-3377; email: [mrezaee2@jh.edu](mailto:mrezaee2@jh.edu)).

## REFERENCES

1. Wager E, Barbour V, Yentis S, Kleinert S. Retractions: guidance from the Committee on Publication Ethics (COPE). *Croat Med J*. 2009; 50(6):532-535.
2. International Committee of Medical Journal Editors. *Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals*. Accessed January 3, 2023. <https://www.icmje.org/recommendations/>.
3. Watch R. *Retraction Watch: Tracking Retractions as a Window into the Scientific Process*. Accessed January 3, 2023. <https://retractionwatch.com>.
4. Fang FC, Steen RG, Casadevall A. Misconduct accounts for the majority of retracted scientific publications. *Proc Natl Acad Sci U S A*. 2012;109(42):17028-17033.
5. Nakao N, Yoshimura A, Morita H, Takada M, Kayano T, Ideura T. Retracted: Combination treatment of angiotensin-II receptor blocker and angiotensin-converting-enzyme inhibitor in non-diabetic renal disease (COOPERATE): a randomised controlled trial. *Lancet*. 2003;361(9352):117-124.
6. Kunz R, Wolbers M, Glass T, Mann JF. The COOPERATE trial: a letter of concern. *Lancet*. 2008;371(9624):1575-1576.
7. Wakefield AJ, Murch SH, Anthony A, et al. Retracted: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet*. 1998;351(9103):637-641.
8. Mena JD, Ndoye M, Cohen AJ, Kamal P, Breyer BN. The landscape of urological retractions: the prevalence of reported research misconduct. *BJU Int*. 2019;124(1):174-179.
9. Herr HW. Retracted: randomized trial of narrow-band versus white-light cystoscopy for restaging (second-look) transurethral resection of bladder tumors. *Eur Urol*. 2015;67(4):605-608.
10. SCImago Institutions Rankings. *SJR: SCImago Journal & Country Ranks*. Accessed January 3, 2023. <https://www.scimagojr.com/journalrank.php>.