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## *Is there published evidence that the value to the patient of total shoulder arthroplasty has increased over the last two decades?*

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We very much appreciate the thoughtful review of the article, “Assessing the Value to the Patient of New Technologies in Anatomic Total Shoulder Arthroplasty,” provided by Professor Robert Z. Tashjian, M.D.. He emphasized the central message of the paper, “The value of [innovation and change] needs to be assessed to determine if the benefits outweigh the financial costs.”

Our analysis did not find evidence in published reports that patient outcomes have been improving over the last two decades during which new technologies have been in use. While, “absence of evidence is not evidence of absence”, the burden to produce evidence of superior patient outcomes from the use of a newer, more expensive technology should lie with the advocates of the technology. It is insufficient to show that patients benefit from procedures performed with new technologies (the great majority of shoulder arthroplasties turn out great, regardless of the technical details); rather it is the added value to the patient resulting from the use of new technologies that needs determination. The demonstration of the superiority of a new technology over legacy approaches requires direct comparisons of patient outcomes, complications, and costs. In this way we will be able to answer questions, such as, “how much technology do we need to effectively manage the majority of patients with the common forms of glenohumeral arthritis”?

Newer technology is not always of value to the surgeon either. As emphasized recently by Erickson et al

(1):“Preoperative planning software for shoulder arthroplasty has limited agreement in measures of version, inclination, and subluxation measurements, whereas surgeons have high inter-reliability. Surgeons should be cautious when using commercial software planning systems and when comparing publications that use different planning systems to determine preoperative glenoid deformity measurements.”

A final consideration, as pointed out in our paper, is that the greatest opportunity for improving the outcomes of shoulder arthroplasty may not lie in technological innovation. The authors of a recent review (2) concluded that “preoperative diagnosis of mental health disorders, WC [Workers’ Compensation] status, preoperative opioid use, patients’ expectations and confidence level, patients’ resilience, health insurance status, and amount of manual labor required for work all affect patient reported postoperative outcomes after TSA. Psychosocial factors may play just as important, if not more, a role in affecting patient outcomes after TSA as technical factors.”



## References

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Conflict of Interest: None Declared