

# Not the Last Word: Joint Replacement for Patients With Obesity is About Opinions and Incentives

Joseph Bernstein MD<sup>1</sup> 

According to one of the world's leading medical journals, the *New York Times* [6], a grave injustice is being perpetrated by American orthopaedic surgeons: They are denying joint replacement to patients with obesity, succumbing to outdated biases and stigmas.

In the conversations between patients and surgeons recounted in the *Times* article [6], the participants seem to be talking past each other. The patients describe their symptoms with

great sincerity and document the many ways in which their arthritis is disabling. The surgeons, with equal conviction, point to the statistics that they believe indicate the operation should not be done: Patients with obesity are at higher risk for infection, perioperative complications, lower functional scores, and premature revision surgery [5].

The reason we witness this “failure to communicate” [9] is that both perspectives are incomplete. In point of fact, to determine whether a surgical operation is a wise choice, one must consider both the subjective feelings the patients assert and the objective facts surgeons put forth. Simply put: Surgery is said to be indicated if the expected utility of the patient's state after treatment exceeds that of the status quo. In turn, the expected value of the future state is derived by considering all possible  $n$  outcomes after surgery, assigning some measure of value to each of them, and producing the average of these values, weighted according to the probability of reaching given outcome states, as given by the following equation [2]:

$$\sum_{i=1}^{\{n\}} \text{utility of state}[i] \times \text{probability of reaching state}[i]$$

To illustrate this, consider a simplified decision tree in which joint replacement surgery has two possible outcome states: success and failure (I said it was simplified!). Those two outcome states along with the state of not operating are assigned utility values by the patient. Probabilities are given by the surgeon's expertise. Surgery is indicated if and only if the weighted average of the utility of these postoperative outcomes exceeds the utility value of the starting state (Fig. 1).

For the purposes of this discussion, the key phrase above is “are assigned utility values by the patient.” An outcome state is incompletely described by a statement of how probable it may be; one must also know how much (or how little) it is valued [3]. Once viewed through that lens, the arguments over joint replacement for patients with obesity can be understood as mere differences of opinion: If different values are ascribed to the possible outcome states, different choices might ensue, even if there is complete agreement about the probability data. (There may be additional sources of potential disagreement to consider as well, such as different temporal discount rates or appetite for risk [10] [Fig. 2], that play an even bigger role in clinical practice.)

A key question is why the disagreement persists. In the end, one might expect surgeons to acquiesce to patients' demands. After all, the customer is always right. It may be absurd


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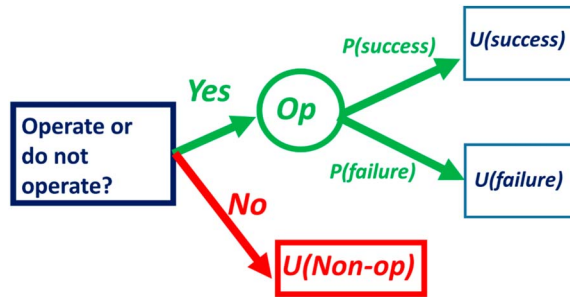
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**Fig. 1** A simplified decision tree for total joint replacement. The utility of surgery in this case is defined as the probability of success multiplied by the utility of a successful outcome [ $P(\text{success}) * U(\text{success})$ ] plus the probability of failure multiplied by the utility of a failed outcome [ $P(\text{failure}) * U(\text{failure})$ ]. Even if the same values for the probabilities are applied by all decision-makers, different values ascribed to the outcomes may tilt the selected option one way or another. Because these utility values are a matter of personal preference, they cannot be deemed right or wrong. They simply are what they are: *de gustibus non est disputandum*.

to install a simulated tropical rain forest in your second-story bedroom, but it's not impossible to find a contractor to build it (I have seen it done). Similarly, it may be absurd to use platelet-rich plasma therapy or viscosupplementation to treat end-stage arthritis, but it's not impossible to find a doctor willing to inject them (I have seen this too!). In those realms, at least, the customer reigns supreme. Why is this not the case for patients with obesity seeking joint replacement?

One possible explanation is that the patient seeking a joint replacement is not really the customer. For most joint replacement patients, the actual customer is the Centers for Medicare & Medicaid Services (CMS), and the "customer preferences" expressed by CMS can dictate surgeons' choices, even for patients not covered by Medicare (due to Medicare's outsized market share). And it seems that CMS prefers to discourage surgeons from

offering joint replacement to patients with obesity.

CMS reimburses the same amount for joint replacements in all patients, regardless of weight, even though surgery on a patient with obesity is more time-consuming. Positioning, dissection, and closure all take longer, and longer procedures performed at a set fee result in lower hourly pay. Additionally, longer operations limit the number of procedures that can be performed in a given day, further constraining income. Moreover, bundled payments and global period fees (covering all care given within 90 days after surgery) mean that patients—like those with obesity—who are at higher risk for complications often receive additional care that is not compensated. CMS's quality metrics (which influence "Best Hospital" and "Top Doc" ratings in the lay press) also penalize surgeons for operating on higher-risk patients. All in all, a surgeon who engages in "lemon

dropping" [1] by deliberately avoiding patients with obesity will enjoy a higher income, an easier job, and a better placement on popular rank lists.

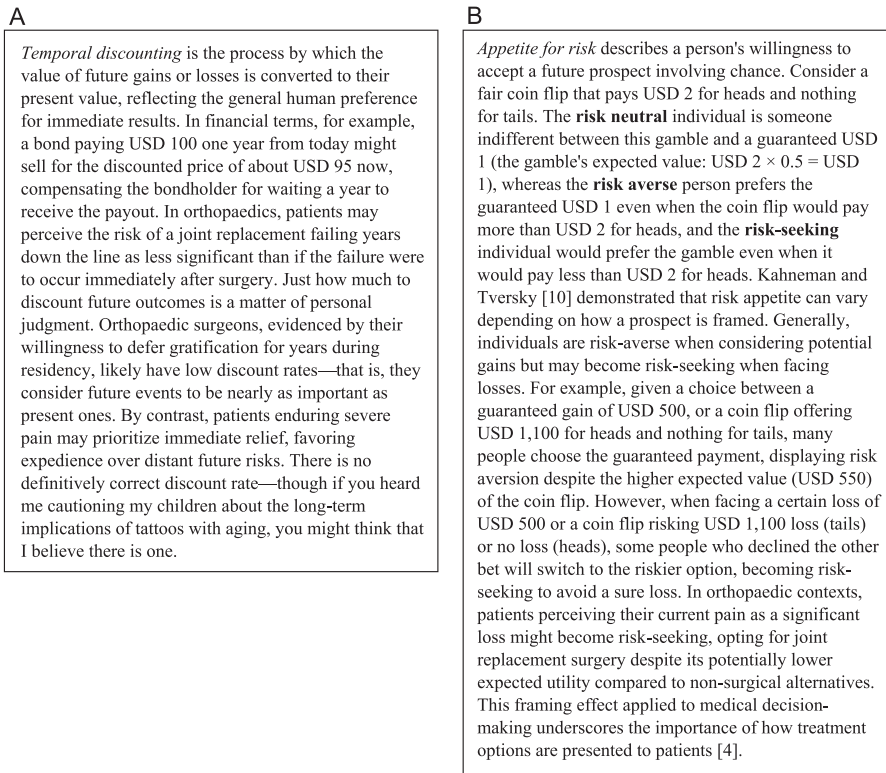
Understanding these systemic barriers is crucial in developing strategies to ensure that all patients receive the care they need and deserve. If orthopaedic surgeons are hesitant to perform joint replacements in patients with obesity due to improper incentives, perhaps we can better meet the pressing demand for surgery by reconfiguring those incentives and increasing supply.

To that end, I propose establishing specialized centers dedicated to performing joint replacements for patients with obesity. These centers would employ surgeons who possess the necessary expertise, skills, and attitudes to treat this patient population effectively. They would also have the appropriate support staff, specialized operating room tables, and other necessary equipment.

Importantly, both the surgeons and the hospitals would receive higher compensation for their work to offset the financial penalty that would otherwise apply. Additionally, these centers would maintain statistics segregated from the health systems that might sponsor them. This way, the potential for adverse outcomes will not negatively affect the ranking of sponsoring organizations.

Surgical indications should be defined through shared decision-making [4], in which patients and their doctors collaborate to reach a consensus on the best course of action. In the case of patients with obesity who have disabling arthritis, achieving this consensus may be challenging. By fine tuning the economic incentives, we can ensure that all patients—regardless of body mass—receive appropriate and effective care.

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**Fig. 2** These sources of potential disagreement play a big role in patient decision-making.

### Yale A. Fillingham MD

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After reading Dr. Bernstein's perspective, I'm left thinking about the phrase, "in the eye of the beholder."

When I read the *Times*' article [6]—which I should mention I was quoted in—I did not get the sense that it was sensationalized, nor do I agree with Dr. Bernstein that it conveyed "a grave injustice being perpetrated by American orthopaedic surgeons." It would have been easy for the author to present a single-sided argument in favor of the patient with obesity because we're a minority voice among the *Times*' readership—casting the

American orthopaedic surgeon in an unfavorable position would likely not be met with much resistance. Instead, I thought the article was a balanced attempt at demonstrating the two gravitational forces interacting similarly as two objects would under Newton's Third Law of Motion: For every action, there is an opposite and equal reaction. Although the reader may perceive that patients and surgeons are talking past each other, one must remember how difficult it is for a journalist who independently interviews sources to show a real dialogue between two sides of a debate in an article.

Instead, I'm left wondering whether the *Times*' article [6] was able to help patients see our perspective, and help orthopaedic surgeons better understand the implications of a strict

body mass index cutoff, thereby accomplishing its goal of igniting further dialogue. The article highlighted how patients with obesity often walk away from their clinic visit with a simplified message from the orthopaedic surgeon: "You're too fat, so just go lose some weight." Clearly, more dialogue is needed. I think we can all agree that, at times, we might not have been the best communicators with our patients, but we must do better at taking the appropriate amount of time to explain our logic for not offering surgery. Even so, there is always the chance that in the "heat of the moment" of a clinic visit, a patient might not fully digest our message. My hope is that discussing this topic in more mainstream outlets will offer patients the opportunity to better digest the

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message we are trying to convey during the clinic visit.

In the eyes of one person, the concept of the summation of utility states and probabilities might apply to the current situation to assist in decision-making. Still, another person might consider it impractical and simply an interesting thought experiment. Regardless of your beliefs, we can likely agree that Dr. Bernstein's proposed surgical indication tool comes down to differences of opinion, since each patient must assign value to each potential outcome of their joint replacement surgery. Yet, how do patients who haven't experienced the complication of a periprosthetic joint infection (PJI)—or, heaven forbid, a failed treatment ending with a Girdlestone procedure—accurately assign individual values to these potential outcomes? I have doubts about Dr. Bernstein's tool relying on the assumption that patients can assign accurate values to outcomes they might not fully understand. But regardless, this is what happens regularly when this high-risk group of patients is offered surgery. The only solace I take in knowing patients might not be too far off in their assignment of values is that some patients who experienced a PJI after a joint replacement still come back requesting the same procedure in another joint. Again, it all comes down to the eyes of the beholder.

Lastly, we can probably agree that Dr. Bernstein's proposal to expand care for patients with obesity who are seeking a joint replacement would be successful *if* it could be implemented. However, the bulk of his solution involves increased funding. Given the continued decline in reimbursements for hip and knee replacements, we are unlikely to receive a meaningful increase in reimbursement to implement his proposal. In fact, since

reimbursement to orthopaedic surgeons has been viewed as a fixed (or declining) sized pie, funding any increase in joint replacements for patients with obesity would likely require a further decline in reimbursement for most other joint replacements. So perhaps, the only thing we can say that isn't in the eyes of the beholder is the lack of desire by policymakers and payers to improve these reimbursements.

### Casey Jo Humbyrd MD, MBE

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Many of our surgical outcomes are beyond our control. When I care for patients whose resources are ample, I seem to be a much better surgeon than when I care for patients whose means are more meager. My patients with resources have fewer nonunions, slow-healing wounds, deep vein thromboses, and infections; they seem to adhere to postoperative instructions well; and they rarely require home support.

The Centers for Medicare and Medicaid Services (CMS) was aware of how many things can influence a surgical outcome when they shifted the burden of financial risk onto physicians with bundled payments. CMS chose payment based on procedure rather than a tiered payment system that included patient variables and anticipated costs. Prior to the implementation of this payment model, many raised concerns that orthopaedic surgeons would not perform total joint replacements on patients who have more severe medical comorbidities or higher levels of psychosocial complexity because they would not want to be left holding the

(financial) bag if the anticipated complications associated with these conditions actually happened. Refusing to perform a total joint replacement is no small matter—if you ask patients what it's like to wait for this surgery, they will probably tell you that it is “worse than death” [7].

Dr. Bernstein recognizes the challenge of the CMS model and focuses on obesity as a paradigm case. He advocates for the creation of something I've opted to call Centers of Obesity Excellence to care for patients with obesity. To some degree, this is already happening. One study [8] found that most surgeons use BMI cutoffs to decide whether to do a total joint replacement, with the main difference being just what that cutoff is: 49.9% of surgeons use 40 as the cutoff, 24.5% of surgeons use 45, and 8.3% of surgeons use 50. This study also found that surgeons in academic centers were more likely to not have cutoffs for THA or TKA compared with surgeons in all other practice settings. Stated another way: Our academic centers already are de facto Centers of Obesity Excellence.

The disproportionate care of patients with obesity at academic centers may be based on the sense of mission that is common in many of those centers, which generally encourages physicians to care for all patients. Or, it may be that academic surgeons seek out more challenging procedures. More likely, though, the driving force is moral hazard—a situation in which a party is incentivized to take risks because they don't bear the full costs of those risks. Unlike many surgeons in nonacademic settings, academic orthopaedic surgeons are less likely to be involved in bundled payment gainsharing agreements around total joint arthroplasty, so they don't have as much “skin in the game” in



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terms of bearing the costs of complications under bundled care arrangements as do their community-practicing colleagues.

The ideal situation for all patients with obesity would be something between these two extremes: surgery without regard to health status (moral hazard) and denial of care to patients in need (lemon dropping). Dr. Bernstein's solution is to route patients with obesity to specialized joint replacement centers. However, I think his solution—even if it were possible in our current health-care system—is incomplete. I would propose three important changes.

First, the condition of obesity should not receive special consideration. The centers should focus on surgical risk in general, such as patients on immunosuppressive medications, patients with end-stage kidney disease, or patients who have had solid-organ transplants, not just patients with obesity. Given the number of total joint calculators, a risk score could help determine a patient's eligibility.

Second, I would recommend the centers utilize broader metrics of success rather than the current bundled payment model in which patient satisfaction (measured by Hospital Consumer Assessment of Healthcare Providers and Systems Survey) and quality (eg, readmissions) are primary

outcome variables. I would advocate for more validated patient-reported outcomes to be a focus, as well as novel assessments, such as gait patterns and distance walked, assessed by wearable devices.

Finally, the proposal should account for Medicare's budget neutrality requirements. If surgeons and hospitals receive higher compensation for care rendered to patients with greater levels of medical complexity, surgeons who care for healthier patients will receive lower compensation. Again, risk calculators could help determine the appropriate compensation. Yet, this approach is likely not feasible at the present time. Given the reluctance of CMS to implement risk adjustment on a macro level within the program, it is highly unlikely that a patient-by-patient risk calculator will be considered. Therefore, I think it would be wiser for surgeons to advocate for patients with significant medical complexity to be cared for outside the bundle, at specialty hospitals as proposed by Dr. Bernstein.

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