Is Implant Cost Associated with Clinically Significant Outcomes after THA? An Analysis of 525 Patients

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INTRODUCTION:

Healthcare is transitioning towards incentivizing interventions that generate high patient value, defined as the ratio between the change in patient-reported outcome (PRO) score and incurred interventional cost. Total hip arthroplasty (THA) is high-volume procedure with a wide selection of implants and variable costs. The purpose of this study was to evaluate the association between implant cost and one-year Hip Disability and Osteoarthritis Outcome Score Joint Replacement (HOOS-JR) clinically significant outcomes.

METHODS:

This was a retrospective review of prospectively-collected data. Patients that underwent primary THA from 2018-2020 at a multicenter healthcare system were identified. Patients without one-year HOOS-JR follow-up or recorded implant costs were excluded from the study. Clinically significant outcomes were determined by whether patients met an anchor-based minimum clinically significant difference (MCID) based on the Patient-Reported Outcome Measurement Information System quality-of-life instrument (PROMIS-QoL). Correlation between HOOS-JR change and implant costs was conducted. Patients that achieved MCID were compared to those that did not.

RESULTS:

A total of 525 patients were included. 53.9% were female with an average age and body mass index (BMI) of 63.9 and 30.7, respectively (Table 1). Average HOOS-JR change was +34.3 with an average total implant cost of $4,476.62 (S.D. $1,136.20). Implant cost did not correlate with one-year HOOS-JR change (r^2=0.01) (Figure 1). There was no difference in implant costs between patients that achieved MCID and those that did not (p=0.840).

DISCUSSION AND CONCLUSION:

Our analysis of primary THA patients revealed that there is no clear relationship between implant costs and clinically significant HOOS-JR score improvements. Implant choice potentially serves as a cost modifier under surgeon control. Conducting a more comprehensive patient-level value analysis looking at all costs involved in an entire THA care episode can help identify other areas amenable to cost mitigation and patient value maximization.

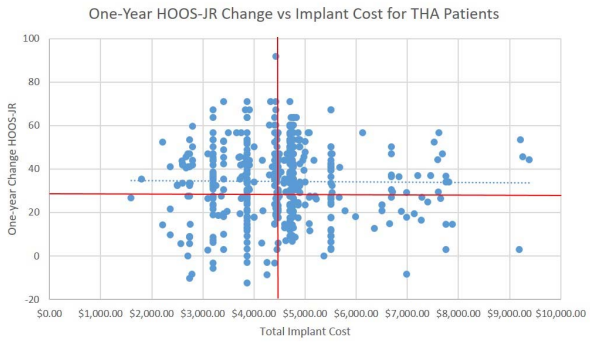

Table 1. Demographics and Baseline Characteristics for Primary THA[a] Patients (N=525).

Age	63.9 ± 10.0
Sex	
Female	283 (53.9%)
Male	242 (46.1%)
BMI[b]	30.7 ± 6.0
ASA[c] Score	
1	54 (10.4%)
2	338 (64.9%)
3	129 (24.8%)
Preoperative HOOS-JR[d]	51.6 ± 12.2
Operative Time (minutes)	126 ± 34
Hospital LOS[e] (hours)	30.6 ± 26.7
Discharge Disposition	
Home, Self-Care	320 (81.6%)
Home, Health Services	28 (7.1%)
Skilled Nursing Facility	44 (11.2%)
One-Year HOOS-JR	85.9 ± 14.7
One-Year HOOS-JR Change	34.3 ± 16.3
Achieved MCID[f]	294 (56.0%)
Total Implant Cost ($)	4476.62 ± 1136.20

Categorical data presented as N(%). Continuous data presented as mean ± S.D.
[a]THA = Total Hip Arthroplasty; [b]BMI = Body Mass Index; [c]ASA = American Society of Anesthesiologists; [d]HOOS-JR = Hip Disability and Osteoarthritis Outcome Score Joint Replacement; [e]LOS = Length of Stay; [f]MCID = Minimum Clinically Important Difference