

Changing Physician Behavior to be More Cost Conscious in Distal Radius Fracture Surgical Management: A Survey Study

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Objectives: To evaluate six surgeons' overall experience using cost-effective implants compared to the implants they typically use.

Setting: A Metropolitan Healthcare System

Participants: Six surgeons who operatively treat distal radius fractures regularly.

Intervention: Surgeons were asked to alternate implant (brand name vs. generic) use in DRF fixation each month. They were then sent a 10-question survey to evaluate their experience with the generic implants. Most questions were rated on a 1-10 Likert scale (1=worst outcome, 10=best outcome).

Main Outcome Measurements: Ease of Use and Continued Generic Implant Use

Results: All six surgeons completed the survey (100% response rate). Most surgeons completed a hand surgery fellowship (83.3%) and performed their cases in an ambulatory surgery center (83.3%). The average rating for ease of use and how intuitive the system was were 8.8 ± 2.2 and 8.5 ± 1.7 . Most surgeons felt that generic implants added little or no extra time to the procedure (4.5 ± 1.0 , with 5 being neutral). Most in this group would use generic implants again and recommend them to colleagues (8.2 ± 2.9 , 8.0 ± 3.2 , respectively).

Conclusions: Implant preference is often driven by exposure during residency and fellowship and is minimally evidence-based by comparison. In many instances, there is a belief that the value lies in the technology when, in fact, patient selection, surgical technique, and postoperative management are more important in determining patient outcomes. As cost containment strategies are developed and implemented, we recommend they come from physician leadership, and not top-down administrative mandates.

Level of Evidence: Level IV

Key Words: Surgeon Behavior, Satisfaction Survey, Implant Cost, Cost Containment Strategy, Generic Implants, Distal Radius Fracture

INTRODUCTION

As healthcare costs continue to increase across North America, many healthcare systems have implemented or will implement cost containment strategies. Orthopaedic surgery makes

up a substantial portion of total healthcare spending¹, making it a common focus of these strategies. Affecting change among staff in an organization can be challenging, and orthopaedic surgeons are no exception. In many cases, surgeon preferences and experiences may not align with value-based care strategies. Shared decision-making between orthopaedic surgeons and other stakeholders (i.e., hospital administrators, supplier representatives, etc.) is key to successfully implementing these strategies and providing cost-effective care².

One strategy to reduce the cost of care is by modifying orthopaedic implant use. Implants are often the single largest contributor to procedure costs^{3, 4}, while surgeons have been shown to have a poor understanding of implant cost³. One way to lower implant costs is through generic implant use. While generic implants undergo the same Food and Drug Administration approval and meet the same biomechanical standards as brand name implants, few orthopaedic surgeons have adopted their use⁵. To date, there is a paucity of literature about surgeons' experiences with using generic orthopaedic implants. This study specifically focuses on evaluating surgeons' experiences with generic volar locking plates (VLPs) used in surgically treated distal radius fractures (DRFs).

DRF open reduction and internal fixation (ORIF) was chosen for this study due to implants being a large component of the surgical cost of surgical DRF treatment⁶, and the relatively high incidence of this injury (25% of pediatric and 18% of geriatric fractures)⁷. Together, these factors make DRF ORIF an ideal area to implement cost containment strategies such as generic implant use. The purpose of this study was to evaluate surgeons' overall experience using generic implants compared to the implants they regularly use. The hypothesis was that most surgeons would have a generally positive experience using generic implants for distal radius ORIF.

METHODS

A prospective quality improvement project was conducted within a single metropolitan healthcare system. From November 2022 to April 2023, a group of surgeons block randomized VLP use (generic vs. brand name) each month for their operatively treated DRF cases. Figure 1 contains plain radiographs of the generic and brand-name VLPs used in this study. The generic VLP (Orthopaedic Implant Company®) is a pre-contoured anatomic titanium plate with screw options consisting of locking pegs, non-locking screws, and locking fixed- and variable-angle screw fixation. Vendor sales representatives were available for cases with the generic implants, however, no additional training with the generic VLP system was provided to the surgeons. All physicians involved in the study were board-certified orthopaedic surgeons who operatively treat distal radius fractures regularly. The group was sent a 10-question

electronic survey to evaluate their experience using the generic implants after having performed at least one case with generic implants. The survey was only sent to surgeons who used generic implants during the prospective study period.

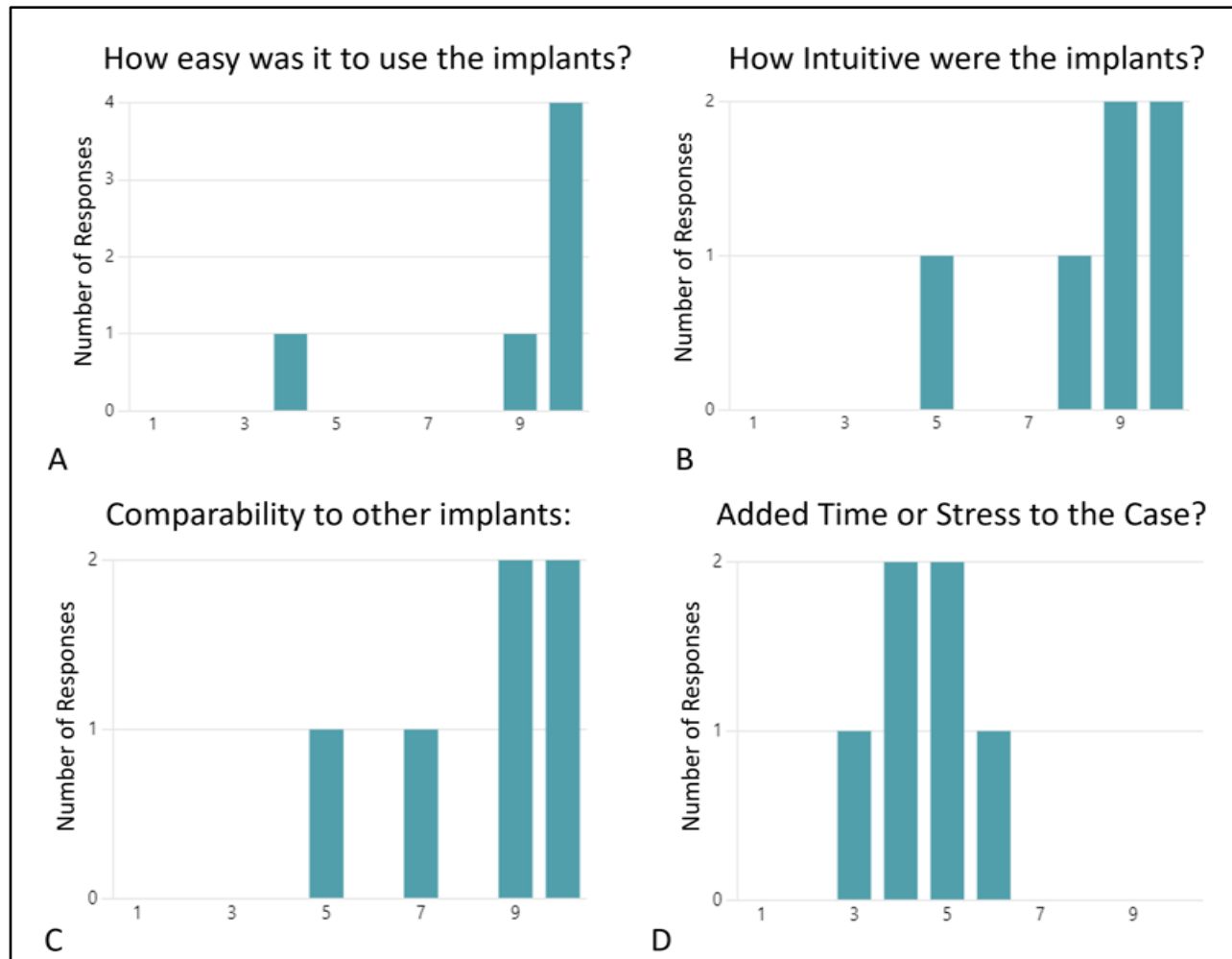


The survey was created by the study authors and was assessed by a committee for clarity and completeness. After implementing the suggested revisions, the survey was distributed to the six participants. The survey included questions regarding the location of operative cases, fellowship training, and experience with the implants. Most questions were rated on a 1-10 Likert scale (1=worst outcome, 10=best outcome). One free response question was included for reporting what the surgeons did and did not like about the generic implants. A copy of the survey can be found in Table 1 (index). Survey data was collected and analyzed using Microsoft Forms and Microsoft Excel (Redmond, WA). Results are reported as counts, percentages, means, and ranges where appropriate.

RESULTS

All six surgeons asked to participate in the study completed the survey (100% response rate).

Figure 1: Likert scale (1-10) responses to the use of generic implants.



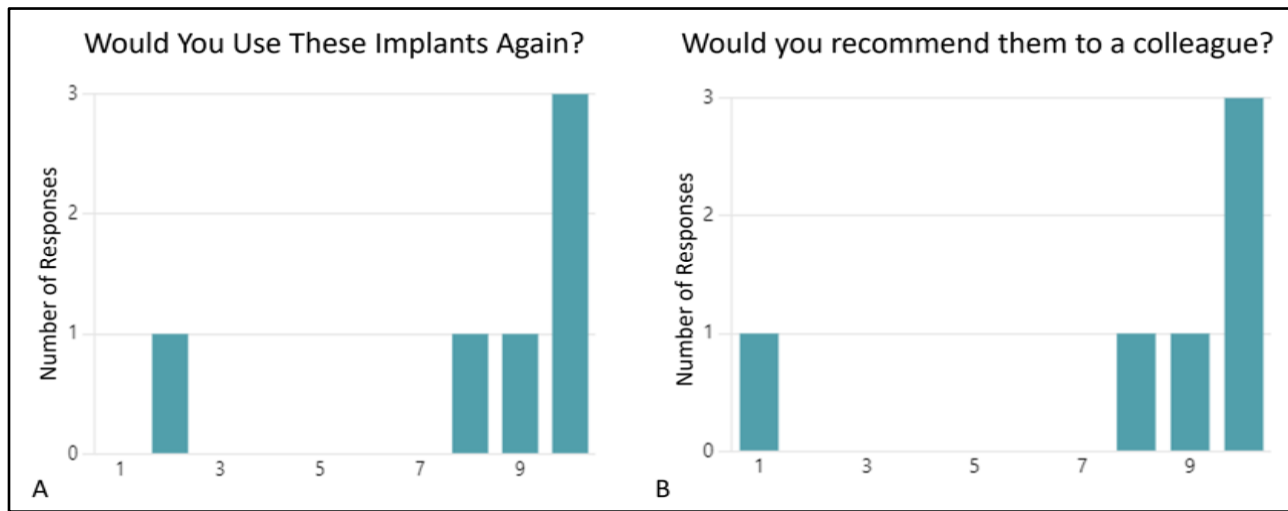
Most of the surgeons completed a hand surgery fellowship (83.3%) and performed their cases in an ambulatory surgery center (ASC) (83.3%). The average number of procedures performed with generic implants per respondent was 3.8 ± 0.9 .

Five out of the six surgeons gave ratings of seven or higher for the survey questions, with average ratings of eight or more for each question (Table 2; index). The average rating for ease of use of the generic system was 8.8 ± 2.2 (Figure 2A). Most

felt the generic system was comparable to other systems (8.3 ± 1.8) and was overall intuitive to use (8.5 ± 1.7) (Figure 2B, C).

The surgeons also felt that the generic implant system saved or added no extra operative time to the procedure (4.5 ± 1.0 , with 5 representing no additional time compared to other systems) (Figure 2D). Five out of the six surgeons reported that they would use generic implants again if given the opportunity and would recommend them to colleagues (8.2 ± 2.9 , 8.0 ± 3.2 , respectively) (Figure 3).

Figure 2: Likert scale (1-10) showing surgeons response to the generic implant



DISCUSSION

Changing surgeon behavior can be a challenging process due to their previous experiences, education, and preferences. This study evaluated the experience of orthopaedic surgeons who were asked to use generic implants for their surgically treated DRF cases. Most found the system easy to use and felt that using the new system did not add any extra time or stress to the procedure (8.8 ± 2.2 , 4.5 ± 1.0 , respectively). The majority of the surgeons reported an overall positive experience and would use the generic implants again if given the opportunity ($n=5$, 83.3%). Although not every surgeon responded positively, this is to be expected with implementing changes at any institution. The change to using generic implants was proposed and led by one surgeon within the study institution. We recommend making surgeons active partners in implementing cost containment strategies at their respective institutions to help facilitate successful changes in practice (i.e., generic implant use, implant cost report cards, etc.). can be treated in a variety of ways, but when surgical management is chosen,

often a VLP is used. In DRF treatment, it has been shown that using more expensive VLPs is not associated with improved patient-reported outcomes (PROs), suggesting that lower-cost implant use will not negatively impact patient care⁸. Generic implants can provide a lower-cost option while allowing for similar patient outcomes. The current study also emphasizes that generic systems require no extra training, are relatively easy to use, intuitive, comparable to other systems, and add no additional time to the procedure from the surgeon's perspective. A previous study where generic implants were implemented in their institution resulted in a 56% reduction in implant costs, saving \$1,197 per case on average⁹. Even with many surgeons being aware of generic implants⁵, it can be difficult to influence physicians to transform their attitudes to align with more cost-conscious practices.

Previous work has shown that surgeons' reluctance to have limitations placed on their autonomy is one of the largest barriers to cost reduction strategies¹⁰. Incorporating multimodal interventions such as electronic-based reminders,

Table 1. Generic Implant Distal Radius Fracture System: Surgeon Satisfaction Survey

<p>1. Where have you performed distal radius ORIFs^a with the generic system?</p> <p>2. How many have you performed?</p> <p>3. Are you fellowship-trained? If so, in what subspecialty?</p> <p>4. What did you like and what did you not like about the generic distal radius implants?*</p> <p>The following questions are rated on a 1-10 Likert Scale.</p> <p>5. How easy was it to use the generic implant distal radius fracture system? (1=very difficult, 10=very easy)</p> <p>6. How comparable was it to the other systems you regularly use? (1=very different, 10=very similar)</p> <p>7. Do you feel like the generic implant system added additional stress or time to your case? (1=saved time, 10=added significant time)</p> <p>8. How intuitive was it to use the generic implant system? (1=not very intuitive, 10=very intuitive)</p> <p>9. How likely would you use the generic implant system again if given the opportunity? (1=not likely, 10=very likely)</p> <p>10. How likely would you recommend this system to one of your colleagues? (1=not likely, 10=very likely)</p>
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*Free response

^aORIF=Open Reduction and Internal Fixation

education- and incentive-related strategies appear to be the most effective methods of producing change in physician behavior¹¹, although it is challenging to make any strong conclusions due to the overall lack of literature on this topic¹¹. Given the healthcare climate, surgeons have numerous competing interests and influences such as implant vendors, patients, hospital administration, mentors, and previous experiences^{2,10}. Prior work has shown that surgeons are aligned with vendor sales representatives compared to hospital purchasing managers^{1,10}. This is mostly due to familiarity with implants, technology, tenure with sales representatives, and financial compensation^{10,12}. The surgeon's role in providing fiscally responsible patient care is substantial. The lack of economic orthopaedic literature suggests how unfamiliar orthopaedic surgeons are with this subject¹³. Educating current surgeons starting as early as residency and fellowship is crucial to the integration

of value-based care practices. This study found most surgeons felt positive about the adoption of generic implant use (83.3%). Not every program introduced will be effective, but providing opportunities for surgeons to learn about cost-effective implants or other cost-containment strategies can stimulate interest and commitment to programs.

Surgeon and hospital administrator collaboration in the form of value analysis teams has been suggested as an effective method of reducing costs¹. At one institution, a similar committee mandated price ceilings for total joint arthroplasty implants, this strategy led to 22-33% cost reductions and saved the hospital more than \$2 million over one year¹⁴. Similar to price ceilings is the use of price benchmarks. Surgeons and supply chain management at one institution coordinated to negotiate target prices for vendors resulting in savings of over \$1 million¹⁵. Surgery cost scorecards have also been suggested as a method of reducing

Characteristic	(n=6)*
Fellowship Training	
Hand	5 (83.3%)
Trauma	1 (16.7%)
Average Generic Implant Cases Performed Per Surgeon	3.8 ± 0.9
Facility Type	
Hospital	1 (16.7%)
ASC	5 (83.3%)
Survey Questions^a	
Ease of use	8.8 ± 2.2
How comparable was this to other systems you use?	8.3 ± 1.8
Did you feel like it added extra time to the <u>case?</u> ^b	4.5 ± 1.0
How intuitive was this system?	8.5 ± 1.7
How likely would you use this system again?	8.2 ± 2.9
How likely would you recommend this system to a colleague?	8.0 ± 3.2

*Continuous data reported as mean ± standard deviation. Categorical data reported as N/n (%).

^aSurvey Questions were all rated on a 1-10 Likert scale (1=worst outcome, 10=best outcome).

^bRated on a 1-10 Likert Scale with 5 being no additional time added, 1=less time and 10=more time added.

costs^{16, 17}. Providing regular feedback on surgical costs is a simple, yet effective, method to aid in modifying surgeon behavior and per-case expenditure. One study demonstrated that costs decreased by \$269 per case after implementing scorecards¹⁷. Another study specifically evaluated the effect of the knowledge of price on implant selection in upper extremity fractures and found that surgeons who knew implant prices reduced cost by 9-11% compared to the price-naïve surgeons¹². The same study also showed that price-aware surgeons only selected the most expensive VLP compared to 25% of the price-naïve surgeons¹². The current study demonstrates how physician-led initiatives can result in positive experiences and increase the likelihood of lasting practice changes with most surgeons opting to use generic implants again if provided the

opportunity and recommending them to colleagues (83.3%).

This study had several strengths and weaknesses. One strength of this study was that all surgeons asked to be involved in the study completed the survey giving a 100% response rate. All respondents perform a substantial number of DRF procedures each year. The use of generic implants was randomized month to month to allow for a straightforward comparison of implant types. The sample of surgeons involved was relatively small. Future multicenter surveys with more surgeons may be helpful in evaluating the experience of using generic implants in practice. This study was conducted within a single metropolitan healthcare system which may limit the generalizability of these results.

CONCLUSION

Influencing surgeon behavior towards cost-conscious implant selection can be challenging. Many attribute patients' outcomes to specific technology and implants, when in truth, appropriate patient selection, surgical technique, and postoperative management are more important in determining patient outcomes. As cost-containment strategies are introduced to combat the rising cost of care in North America, surgeons should be actively engaged in the process to aid in the execution and effectiveness of these strategies. This approach can help provide meaningful cost-saving policies that are seen as physician-determined protocols instead of top-down administrative mandates.

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