Pre-operative Opioid Consumption Education Does Not Significantly Impact Opioid Use and Disposal Following Shoulder Arthroplasty: Results of a Randomized Controlled Trial

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INTRODUCTION: The opioid crisis remains a major public health concern in the United States. Prescription rates for opioid medications following orthopedic surgical procedures continue to be high, and specifically for patients undergoing shoulder surgery, there is a trend for overprescription. Additionally, there is only a small percentage of patients who decide to dispose of any remaining opioid pills safely, which ultimately can give rise to misuse, abuse, or diversion. The purpose of this study was to test the efficacy of preoperative education on opioid consumption and disposal following primary anatomic and reverse shoulder arthroplasty.

METHODS:

This was a single-blinded prospective randomized trial conducted at an academic institution. Participants were randomized in a 1:1 scheme to an intervention group or a control group and were blinded to arm randomization. The control group followed preoperative standard of care practices, while the intervention group, watched an educational video and received written educational material on responsible opioid use and opioid disposal, and were provided with a pre-paid secure envelope to dispose remaining opioid medications ("TakeAway Medication Recovery System Envelope", by Sharps Compliance Inc.). Following surgery, each patient was provided with a standard prescription of 40 tablets of 5mg oxycodone. The primary outcome measure was the difference between groups in those patients who had 10 or more opioid pills left unused following surgery. Secondary outcome was opioid disposal rates between groups.

RESULTS: A total of 127 participants were included for analysis. There was no significant difference between randomization arms in age, BMI, sex, smoking status, or type of procedure (anatomic and reverse shoulder arthroplasty) (Table 1). There was no significant difference in median opioid pill consumption with or without preoperative education (15 pills vs 21 pills respectively, p=0.7), nor between patients undergoing TSA vs RSA (21 pills vs 19 pills, p=0.91). There was no significant difference between groups for those who had 10 or more pills unused (p=0.6). At 6 weeks post-operative there was no difference in the rate of opioid disposal between intervention and control groups (37 vs 31% respectively, p=0.5). The vast majority of patients (74% and 70% intervention and control arm respectively) reported intention to dispose of unused opioid medication if they had not already done so at the 6-week mark after surgery. Younger patients (<70 years old) had significantly higher rates of disposal of unused opioid pills at 6-weeks postoperative (p=0.012).

DISCUSSION AND CONCLUSION:

Pre-operative education and standardized disposal methods do not significantly impact opioid consumption and disposal among patients undergoing shoulder arthroplasty. However, younger patients may be more compliant with opioid disposal. The findings from this study help define appropriate opioid prescribing patterns among patients undergoing TSA and RSA. This data can help surgeons avoid overprescribing and can inform surgeons on which patients might be more likely to dispose of unused opioids following elective shoulder arthroplasty. Given the lack of significant impact of pre-operative education on opioid consumption, this study highlights the need to consider other interventions during the episode of care that could be more beneficial in aiding with decreased opioid consumption and in promoting opioid disposal.

Variable	Intervention (n=64)				Control (n=63)				p-value
	Mean	SD	Min	Max	Mean	SD	Min	Max	
Age (Years)	68.1	7	48	85	67.7	8.5	48	87	0.7404
BMI (kg/m²)	31.9	6.5	19.7	47.9	31.3	6.4	19.7	55.4	0.6287
Gender (n, % female)	29 (45.3%)				23 (36.5%)				0.3130
Smoking Status:									0.2823
Never	35 (54.69%)				43 (68.25%)				
Former	24 (37.50%)				17 (26.98%)				
current	5 (7.81%)				3 (4.76%)				
Procedure:									0.5170
TSA	28 (43.75%)				24 (38.1%)				
Reverse	36 (56.25%)				39 (61.9%)				

Table 1: Baseline characteristics of the cohort, by randomization arm.