

How to Effectively Reduce Costs Associated with Robotic Surgery: Is This Even Possible?

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How to Effectively Reduce Costs Associated with Robotic Surgery: Is this even possible?

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Objective:

The purpose of this study is to determine if transparency of surgeon metrics can reduce the actual costs associated with robotic surgery. Primary outcome measures reviewed included the direct variable operating room cost. Secondary outcome measures included total OR time and incision (cut to close) time in minutes.

Methods:

This is a retrospective cohort study of all patients who had a robotic-assisted hysterectomy from 7/1/10 to 6/30/11. All surgeries were performed by board certified gynecologic oncologists using the da Vinci S or Si surgical systems with 4 arms (including the camera arm). Studer Visibility Boards were installed in the robotic surgery rooms on 1/1/11 and their presence was emphasized to all robotic team members (Figure 1). The first six month period (7/1/10-12/30/10) was identified as the pre-visibility board cohort (Pre-VB) while the latter six month period (1/1/11-6/30/11) was identified as the post-visibility board cohort (Post-VB). Demographic data reviewed included patient's age, BMI, uterine weight, and benign versus malignant diagnosis. The direct variable cost represents all costs incurred in the operating room that are controllable by the OR team. Data was analyzed using Pearson's χ^2 tests and Student's t-tests in SPSS. This study was IRB-approved.

Table 1. Patient Demographics

	Pre-VB (n=140)	Post-VB (n=148)	p value
AGE (years)			
Mean \pm SD	53.2 \pm 12.1	55.2 \pm 13.4	0.187
BMI (kg/m²)			
Mean \pm SD	32.9 \pm 7.7	33.1 \pm 8.0	0.908
UTERINE WEIGHT (g)			
Mean \pm SD	176.1 \pm 183.4	166.7 \pm 126.2	0.618
BENIGN DIAGNOSIS			
n	81	80	0.516
MALIGNANT DIAGNOSIS			
n	59	68	

Table 2. Outcome Measures

	Pre-VB (n=140)	Post-VB (n=148)	p value
DIRECT VARIABLE OR COST			
Mean \pm SD	\$2635.39 \pm \$767.90	\$2410.96 \pm 677.74	0.010
TOTAL OR TIME (min)			
Mean \pm SD	234.8 \pm 85.3	228.7 \pm 85.2	0.548
INCISION TIME (min)			
Mean \pm SD	165.6 \pm 82.7	158.4 \pm 85.2	0.463

Figure 1. Robotic Costs Per Case



Results:

Two hundred eighty-eight patients met the inclusion criteria (140 Pre-VB and 148 Post-VB). There were no significant differences between the groups in age, uterine weight, BMI, and benign versus malignant diagnoses (Table 1). The Post-VB cohort had a significantly lower direct variable OR cost compared to the Pre-VB cohort (\$2410.96 vs. \$2635.39, P=.01). The lowest direct variable cost per robotic case at the conclusion of this study was \$1878.00. The Post-VB cohort also experienced a shorter total OR time (229 min vs. 235 min, P=.55) and incision time (158 min vs. 166 min, P=.46) compared to their Pre-VB counterparts, even though there was no statistical significance (Table 2).

Conclusion:

The costs associated with robotic surgery may be reduced when knowledge is provided to surgical teams of the actual costs associated with each case item by using visibility boards located near robotic operating rooms. These findings suggest that reducing operating room costs is feasible through teamwork and transparent interventions.

