A Cost Analysis of Postoperative Pain Management in Endometrial Cancer Patients: Robotic Department of Surgery vs. Laparoscopy Department of Surgery

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A Cost Analysis of Postoperative Pain Management in Endometrial Cancer Patients: Robotic Surgery vs. Laparoscopy Surgery

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Background:
Postoperative pain management is an advantage of minimally invasive surgery, along with reduced morbidity, decreased hospital length of stay, and improved patient satisfaction scores.

As patients experience less pain, they consume less postoperative pain medication and perhaps less narcotic medications. This may lead to fewer nurse interventions and thus a reduction in the cost associated to deliver that care.

Robotic Surgery is the most advanced minimally invasive technology over standard laparoscopy include:

- Tools with six degrees of rotational freedom which enables the surgeon to make dexterous hand motions
- 3-D, high-definition view of the operative field
- Ergonomically designed console which decreases surgeon's fatigue

Objectives:
To compare the postoperative pharmacopatherapeutic pain management in endometrial cancer patients who had a robotic-assisted or laparoscopic-assisted hysterectomy with/without lymph node dissections

Primary outcomes:
- Patient-recorded pain scores
- Nurse intervention pain management interventions

Secondary outcomes:
- Cost of postoperative pain medication

Table 1. Patient Demographics

<table>
<thead>
<tr>
<th>Age (y)</th>
<th>Mean</th>
<th>SD</th>
<th>25%</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td></td>
<td></td>
<td>20</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 2. Frequency of Postoperative Pain Management Interventions

<table>
<thead>
<tr>
<th>Type of Drug Intervention</th>
<th>Laparoscopic (n=114)</th>
<th>Robotic (n=114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narcotic drug interventions</td>
<td>2.61</td>
<td>2.48</td>
</tr>
<tr>
<td>Non-drug interventions</td>
<td>3.83</td>
<td>3.61</td>
</tr>
</tbody>
</table>

Table 3. Patient Recorded Pain Levels

<table>
<thead>
<tr>
<th>Pain Management Period</th>
<th>Avg. Pain</th>
<th>SD</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-hour postoperative period</td>
<td>2.65</td>
<td></td>
<td>2.1</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Methods:
- Pain scores and nursing interventions were analyzed for five intervals over a 24-hour postoperative period, beginning once the patient entered the floor.
- Nursing interventions were categorized as either a drug or non-drug intervention.
- Drug interventions were subclassified as narcotic or non-narcotic.
- Data was analyzed using Student’s t-tests and Pearson’s X² tests in SPSS.

Results:
Two hundred fifteen (101 robotic and 114 laparoscopic) patients met the inclusion criteria. There were no significant differences between the two groups in age, BMI, clinical stage, comorbidities, lymph nodes retrieved, and the number of narcotic v. non-narcotic drug interventions administered.

Primary outcomes:
- Robotic patients had a lower number of initial drug interventions (21 vs 52; P<0.01) and total drug interventions (162 vs 216; P<0.01). The robotic cohort also had a lower initial patient-recorded pain score (2.1 vs 3.0; P<0.01)

Secondary outcomes:
- There was a 50% reduction in the postoperative pain medication cost on the day of surgery for robotic patients ($12.24 vs $24.45; P<0.01), and a 56% cost reduction for the rest of their length of stay ($3.63 vs $8.17; P<0.01).

Conclusion:
- Endometrial cancer patients who have robotic surgery experience less initial postoperative pain and have fewer drug interventions to manage their pain.
- The cost associated to deliver that care represents a savings of greater than 50% when compared to a laparoscopic cohort.
- These factors demonstrate the value of robotic surgery by delivering higher quality care at a lower cost.

References: