Realizing the Value of Minimally Invasive Surgery

Ethicon Endo-Surgery
a Johnson & Johnson Company

October 2, 2007
The surgical standard practice has been evolving to become less invasive.

- LAPAROTOMY: "OPEN" - Up to the 1990s
- LAPAROSCOPY: 1990s - Today
- NATURAL ORIFICE: Next step

INVASIVENESS: LAPAROTOMY ("OPEN") → LAPAROSCOPY → NATURAL ORIFICE

TECHNICAL DEVELOPMENT: Minimally Invasive Procedures → Feel Better Sooner
Minimally invasive procedures have proven to be as effective as conventional surgery, with demonstrated:

- Shorter length of stay (LOS) in the hospital
- Less overall complications
- Quicker recovery / Quicker return to work and to normal activities
- Less scarring
- Less pain
- Reduced infection rates
Overview: Minimally Invasive Surgery

The impact from a cost perspective is obvious:

• **Direct cost:**
  • Shorter LOS and reduced hospital resources
  • Less post procedure pain = less Rx. and physical therapy

• **Indirect costs:**
  • Quicker return to normal activities
    – reduced absenteeism
    – improved presenteeism

*R.O.I. is immediate*
Quality of Laparoscopy v. Open

• Major complications occur in less than 1 percent of laparoscopic procedures

• Laparoscopy and lap assisted techniques have become common in the United States and in certain procedures have replaced open techniques

• Several factors make minimally invasive abdominal surgery an appealing alternative to traditional procedures due to:
  - Shorter hospital stays
  - Less Pain
  - Less Scarring
  - Earlier return to activities of daily living in many cases

Medical Society Support

– American Society of Colon and Rectal Cancer
  • “Laparoscopic colectomy for curable cancer results in equivalent cancer related survival to open colectomy when performed by experienced surgeons.”

– National Comprehensive Cancer Network
  • “The NCCN guidelines recommend laparoscopic colectomy as an option because clinical trials have shown (...) as good a procedure as abdominal colectomy.”

– The American Society of Breast Surgeons
  • Percutaneous Needle Biopsy for Image Detected Breast Abnormalities
  • “Image guided percutaneous needle biopsy is the diagnostic procedure of choice for image-detected breast abnormalities. It should be readily available to all patients with image-detected lesions.”
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Adoption Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholecystectomy</td>
<td>91%</td>
</tr>
<tr>
<td>Reflux Surgery</td>
<td>70%</td>
</tr>
<tr>
<td>Gastric Bypass (Bariatric)</td>
<td>68%</td>
</tr>
<tr>
<td>Breast Biopsy</td>
<td>60%</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>41%</td>
</tr>
<tr>
<td>Colectomy</td>
<td>25%</td>
</tr>
<tr>
<td>Hemorrhoidectomy</td>
<td>12%</td>
</tr>
</tbody>
</table>

Source: Data on file at EES

There is opportunity for further MIP adoption
Meta-Analysis Summary

– Summary of 112 articles on MIP vs. open surgical procedures:
  • Prospective, randomized comparative trials
  • Systematic review or meta-analysis
  • Prospective, non-randomized comparative trials
  • Retrospective, observational studies

– Measures included
  • Length of stay in the hospital
  • Return to Normal Activities
  • Return to Work

Source: An Examination of Six Laparoscopic Surgical Procedures
Adam Roumm1, Laura Pizzi1, PharmD MPH, Andrei Belsky, MD, Carrie Elwood1 MPP, Neil I. Goldfarb1, and Herbert Cohn, MD
MIP Benefits – Length of Stay

In a retrospective review, the laparoscopic approach resulted in a decrease in the overall average LOS when compared with the conventional approach*

MIP Benefits – Return to Normal Activities

In a retrospective review, the laparoscopic approach resulted in a decrease in the overall average RTNA compared to the conventional approach.*

Weighted Average Range of Reduction in Return to Normal Activities (Δ RTNA) Days

Laparoscopic vs. Open Procedure Comparison

Laparoscopic vs. Open Cholecystectomy (lap chole) 2 studies reviewed All showed reduction
Laparoscopic vs. Open Colectomy (LC) 14 studies reviewed 11 showed reduction 2 showed increase 1 showed no change
Laparoscopic vs. Open Appendectomy (LA) 1 study reviewed 1 showed reduction
Laparoscopic vs. Open Fundoplication (LF) 1 study reviewed 1 showed reduction
Laparoscopic vs. Open Hysterectomy (LH) vs. Vaginal hysterectomy (VH) 1 study reviewed 1 showed reduction
Laparoscopic vs. Open Hysterectomy (LH) vs. Abdominal hysterectomy (AH) 1 study reviewed 1 showed reduction
Laparoscopic vs. Abdominal Hernia Repair (LVHR) 1 study reviewed 1 showed reduction

MIP Cost Impact: Short Term Disability

MIP gets employees back to work sooner

- Cost savings through earlier return to work
- Improved presenteeism and decreased absenteeism
## Healthcare Company

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Colon</th>
<th>Appe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACTIVE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50,000 Lives</td>
<td>Direct Medical</td>
<td>$8,585</td>
<td>$4,299</td>
</tr>
<tr>
<td></td>
<td>Absenteeism</td>
<td>$6,240</td>
<td>$704</td>
</tr>
<tr>
<td></td>
<td>Presenteeism</td>
<td>$2,039</td>
<td>$13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$16,864</td>
<td>$5,016</td>
</tr>
<tr>
<td></td>
<td># of Procedures for MIP Conversion</td>
<td>X 20</td>
<td>X 42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$337,280</td>
<td>$210,672</td>
</tr>
<tr>
<td><strong>DEPENDENTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75,000 Lives</td>
<td>Direct Medical</td>
<td>$8,585</td>
<td>$4,299</td>
</tr>
<tr>
<td></td>
<td># of Procedures for MIP Conversion</td>
<td>X 33</td>
<td>X 61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$281,588</td>
<td>$262,239</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>$618,868</td>
<td>$472,911</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$1,091,779</td>
<td></td>
</tr>
<tr>
<td>Incremental Sales Needed to Offset</td>
<td></td>
<td></td>
<td>$5,458,895</td>
</tr>
</tbody>
</table>
Realizing the Value of MIS
An Employer’s Perspective

Colorado Springs School District 11

March 22, 2005
WHY MIS?

Meets Institute of Medicine Quality Criteria:

✓ S – Safety
✓ T – Timely
✓ E – Effective
✓ E – Efficient
✓ P – Patient Centered
✓ E – Equity
COPAYMENT INCENTIVES (for three procedures)

<table>
<thead>
<tr>
<th></th>
<th>MIS</th>
<th>Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient</td>
<td>$800</td>
<td>$1,200</td>
</tr>
<tr>
<td>Outpatient</td>
<td>$400</td>
<td>$ 600</td>
</tr>
</tbody>
</table>
## PROJECTED SAVINGS - OPEN TO MIS

**June 2005 – May 2007**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colectomy</td>
<td>$16,092</td>
</tr>
<tr>
<td>Hysterectomy - Lap</td>
<td>$182,180</td>
</tr>
<tr>
<td>Cholecystectomy</td>
<td>$622,400</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$820,672</strong></td>
</tr>
</tbody>
</table>
- Win for the Healthcare System
- Quality : Value : Lower Cost
- Alignment of incentives
- Patient education – options
- The Value of Choice