Solutions for minimally invasive colorectal surgery
The da Vinci Surgical System

Surgeon Benefits

Maintain the oncological and intraoperative principles of open colorectal surgery using a minimally invasive approach

The visualization, precision, dexterity and control provided by the da Vinci Surgical System offers the following potential surgeon benefits:

- Low circumferential positive margin rates\textsuperscript{1,2,3,4}
- Lower rate of conversion to open surgery compared to traditional laparoscopy\textsuperscript{5,6}
- Shorter length of stay compared to open surgery\textsuperscript{4} and traditional laparoscopy\textsuperscript{6}
- Quicker recovery of voiding and sexual function compared to traditional laparoscopy\textsuperscript{5,7}
- Less postoperative pain compared to open surgery and traditional laparoscopy\textsuperscript{4}
- Effective intracorporeal anastomosis\textsuperscript{8}, shown to reduce intraoperative complications and length of stay\textsuperscript{9}
- Equal access to left and right rectal sidewalls\textsuperscript{5,10,11}

\textbf{• High-definition 3D vision}

\textbf{• EndoWrist\textsuperscript{®} instrumentation}

\textbf{• Intuitive\textsuperscript{®} motion}
Six ways da Vinci technology facilitates a precise colorectal surgery:

**Vascular Control**

The EndoWrist One™ Vessel Sealer offers effective transection of blood vessels and tissue bundles.

**Posterior Rectal Dissection**

Excellent exposure, reach and dexterity facilitate dissection in the proper avascular plane down to the pelvic floor.

**Anterior Rectal Dissection**

Use of three EndoWrist instruments in concert enables exposure and countertraction during dissection in the confined space of the anterior rectal plane.

**Distal Rectal Division**

The surgeon-controlled and fully wristed EndoWrist Stapler 45 offers access to critical anatomy and provides confidence when stapling deep in the pelvis with SmartClamp™ Feedback.

**Tissue Perfusion Assessment**

Firefly™ Fluorescence Imaging offers unique visualization of ischemic boundaries in the proximal colon to impact decision-making at the surgeon console.

**Intracorporeal Anastomosis**

Fully wristed instruments allow for efficient suturing and stapling when performing an intracorporeal anastomosis.

For technology videos visit

www.daVinciSurgeryCommunity.com
Outcomes of minimally invasive versus open surgery for rectal cancer


<table>
<thead>
<tr>
<th></th>
<th>Open (n=165)</th>
<th>Laparoscopic (n=165)</th>
<th>Robotic (n=165)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive margin*</td>
<td>10.3%</td>
<td>6.7%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Wound infection*</td>
<td>4.8%</td>
<td>1.2%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Time to first flatus, days+</td>
<td>3.0</td>
<td>2.4</td>
<td>2.2</td>
</tr>
<tr>
<td>Time to resumed soft diet, days+</td>
<td>6.4</td>
<td>5.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Estimated blood loss, mL*</td>
<td>275.4</td>
<td>140.1</td>
<td>133.0</td>
</tr>
</tbody>
</table>

Limitations include but are not limited to: application of preoperative chemoradiotherapy; disproportionate surgical experience between approaches.

Outcomes of laparoscopic versus robotic surgery for rectal cancer


<table>
<thead>
<tr>
<th></th>
<th>Laparoscopic (n=50)</th>
<th>Robotic (n=50)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time (mins)</td>
<td>280 (240-350)</td>
<td>270 (240-315)</td>
<td>0.863</td>
</tr>
<tr>
<td>CRM (&lt;2mm)‡</td>
<td>6</td>
<td>0</td>
<td>0.022</td>
</tr>
<tr>
<td>Conversions‡</td>
<td>6</td>
<td>0</td>
<td>0.011</td>
</tr>
<tr>
<td>Length of stay (days)‡</td>
<td>10 (8-14)</td>
<td>8 (7-11)</td>
<td>0.034</td>
</tr>
<tr>
<td>IPSS at 1 month (measure of voiding function)‡</td>
<td>7.08 ± 3.5</td>
<td>6.71 ± 5.9</td>
<td>0.012</td>
</tr>
<tr>
<td>No erectile dysfunction at 1 year (no. of patients)‡</td>
<td>10</td>
<td>17</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Limitations include but are not limited to: low number of performed procedures; not randomized and based on a single-center experience.

Outcomes of low anterior resection with and without near infrared (NIR) and indocyanine green (ICG)


<table>
<thead>
<tr>
<th></th>
<th>NIR + ICG (n=16)</th>
<th>Control (n=22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision of Transection Point</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>Anastomotic leak rate</td>
<td>6%</td>
<td>18%</td>
</tr>
<tr>
<td>Median level of anastomosis</td>
<td>3.5 cm</td>
<td>5.5 cm</td>
</tr>
</tbody>
</table>

Limitations include but are not limited to: retrospective study with a small sample size; surgical decision-making processes are unknown.

*Significant difference between open and robotic
‡Significant difference between open, laparoscopic and robotic
§Significant difference between laparoscopic and robotic

For additional data pertaining to these studies visit www.daVinciSurgeryCommunity.com
### POSSIBLE BENEFITS INCLUDE:

- Less blood loss\(^4,13^*\)
- Less pain\(^2,4^+\)
- Shorter hospital stay\(^2,4^+\)
- Quicker return of bowel function\(^2^*\)
- Quicker return to a normal diet\(^2^*\)
- Faster recovery\(^5^*\)
- Small incision for minimal scarring

\(^*\)Significant difference between open and robotic
\(^+\)Significant difference between open, laparoscopic and robotic
\(^\dagger\)Significant difference between laparoscopic and robotic

### POSSIBLE RISKS OF ANY COLORECTAL SURGERY INCLUDE:

- Anastomotic leak
- Ileus
- Pulmonary embolism
- Abscess
- Urinary problems

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**EndoWrist® Instruments Optimized for da Vinci® Colorectal Surgery**

<table>
<thead>
<tr>
<th>STANDARD/5,5i PNs</th>
<th>FEATURES</th>
</tr>
</thead>
</table>
| Hot Shears™ (Monopolar Curved Scissors) 400179/420179 | x Combined scissors and monopolar cautery  
  x Tapered tip profile |
| Requires Tip Cover: 400180 | |
| Monopolar/Permanent Cautery Hook 420183 | x Dissecting and coagulating |
| Fenestrated Bipolar Forceps 400205/420205 | x Fenestrated wide jaw profile  
  x Bipolar energy |
| Cadiere Forceps 400049/420049 | x Atraumatic grasping and retraction |
| Small Grapto® (Grasping Retractor) 420318 | x Atraumatic grasping and retraction |

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<thead>
<tr>
<th>STANDARD/5,5i PNs</th>
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</table>
| EndoWrist® Stapler 4S 410298 | x Surgeon control  
  x Fully wristed articulation  
  x SmartClamp™ feedback  
  x Blue and green reloads |
| EndoWrist® One™ Vessel Sealer 410322 | x Fully wristed articulation  
  x Dual-hinged jaw opening  
  x Up to 7mm vessels |
| EndoWrist® One™ Suction Irrigator 410299 | x Articulating carbide tip  
  x Snake Wrist architecture  
  x Surgeon console or bedside control |
| Harmonic™ Curved Shears 400174/420147 | x Ultrasonic energy  
  x Curved jaw design |
| Large Clip Applier 400230/420230 | x High grip strength  
  x Serrated jaw design |
Labeling Information
Contraindications applicable to the use of conventional endoscopic instruments also apply to the use of all da Vinci® instruments, including Single-Site Instrumentation. General contraindications for endoscopic surgery include bleeding diathesis, morbid obesity and pregnancy.

All surgeries carry risks of adverse outcomes. While clinical studies support the use of the da Vinci® Surgical System as an effective tool for minimally invasive surgery for specific indications, individual results may vary. Temporary pain or nerve injury has been linked to the inverted position often used during abdominal and pelvic surgery. Risk specific to minimally invasive surgery may include a longer operative time, the need to convert to an open approach, or for additional or larger incision sites. Converting the procedure could mean a longer operative time, a long time under anesthesia, and could lead to increased complications. Research suggests that there may be an increased risk of incision-site hernia with single-incision surgery. We encourage you to discuss your surgical experience and review these and all risks with your patients, including potential for human error and for equipment failure. We encourage patients and physicians to review all available information on surgical options and treatment in order to make an informed decision. Clinical studies are available through the National Library of Medicine at www.ncbi.nlm.nih.gov/pubmed.

This instrument may only be used on soft tissue. Do not use it on cartilage, bone or hard objects. Doing so may damage the instrument or make it impossible to remove from the cannula. The instrument is not intended for contraceptive tubal occlusion. This instrument should not be used in Cardiac or Central Nervous System applications. The use of the Harmonic Curved Shears Instrument in conjunction with the standard da Vinci® and da Vinci®, S™ (Models IS1000 and IS1200) is contraindicated for pediatric patients. In case of Emergency Stop or fault condition, the Instrument Arm may move due to gravity. Should this movement occur when the instrument is in contact with tissue, unintended injury may result.

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