Optimal Management of Rectal Prolapse

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Colorectal Surgeon
Assistant Professor of Surgery
Rectal Prolapse

- Recognized as early as 1500 BC \(^1\)

- Intussusception of the rectum.
  - Complete → full-thickness protrusion of the rectum through the anus
  - Mucosal → protrusion of the mucosa only, with the muscular layers of the rectum in place
  - Occult → does not extend beyond the anal canal → often not associated with any symptoms; → may be a precursor to complete prolapse.

\(^1\) Pikarsky et al. DCR. 2000
Rectal Prolapse

- Exact pathophysiology remains unclear

- Factors associated with its development
  - Constipation
  - Female gender
  - Postmenopausal status
  - Previous anorectal surgical procedures
Anatomic Abnormalities Associated with Rectal Prolapse

- Deep cul-de-sac
- Redundant rectosigmoid colon
- Elongated mesorectum
- Diastasis of levator ani
- Perineal descent
- Herniation of pelvic organs through pelvic funnel
- Patulous anus
- Loss of support of uterus and bladder
Symptoms of Rectal Prolapse

- Sensation of protrusion of tissue through anus
- “Persistent hemorrhoids”
- Mucoid or bloody discharge
- Constipation
- Straining
- Incontinence
- Incomplete evacuation
- Perineal pressure
- Excoriation of perianal skin
Rectal Prolapse

Evaluation

• History
  – Defecatory history
  – Medical History / Comorbidity
  – Prior Surgical procedures

• Fecal incontinence
  – 30-80% of patients
  – +/- sphincter defect → Anal Ultrasound
    → Electromyography
  – +/- pudendal neuropathy → PNTML
Rectal Prolapse

• Constipation
  – 50% of patients
  – Causes
    • Electrolyte imbalance → Calcium
    • Hormonal → hypothyroidism
    • Colonic inertia → Colonic Transit Study
    • Outlet obstruction → Defecogram (may alter treatment algorithm)
  – Presence may indicate resection rectopexy
    • Advocates: pexy alone may worsen constipation \(^1,^2\)

1- Luukkonen et al. Int J CRD, 1992
2- Tjandra et al. DCR, 1993
Rectal Prolapse

- Patient positioning

→ To reproduce prolapse during examination

- Seated on a Commode

- Additional investigations:
  - Colonoscopy
Cinedefecography of Rectal Prolapse

Rest

Push
Surgical treatment

• Choice of Procedure
  – No perfect procedure

• The choice of operation is determined by
  – Patient’s age, gender, operative risk
  – Associated pelvic floor defects
  – Degree of incontinence +/- sphincter defect
  – History of constipation
  – Surgeon’s experience
Rectal Prolapse

• Repair strategies:
  – Narrowing of the anal orifice
  – Obliteration of the pouch of Douglas
  – Restoration of the pelvic floor
  – Resection of the prolapsing segment
  – Suspension of the prolapsing rectum
Surgical Treatment

- Perineal procedures
  - Anal encirclement (Thiersch wire procedure)
  - Mucosal sleeve resection (Delorme procedure)
  - Perineal rectosigmoidectomy (Altemeier procedure)
Surgical Treatment

- Transabdominal procedures

  - Rectopexy
    - Suture vs. Resection
    - Anterior sling (Ripstein procedure)
    - Ivalon sponge (posterior rectopexy)
    - Posterior sling (modified Ripstein procedure)

  - Resection rectopexy (Frykman-Goldberg procedure)

  - Laparoscopic repairs
    - Resection rectopexy
    - Suture rectopexy
    - Rectopexy with mesh
Rectal Prolapse
Perineal approach

Altemeier procedure

Vernava et al. The ASCRS textbook of Colon and Rectal Surgery. 2007
## Results of Altemeier procedure

<table>
<thead>
<tr>
<th>Author/year</th>
<th>No. of patients</th>
<th>Mortality (%)</th>
<th>Continence (%)</th>
<th>Constipation (%)</th>
<th>Recurrence (%)</th>
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<tbody>
<tr>
<td>Altemeier, 1971</td>
<td>106</td>
<td>0</td>
<td>NS</td>
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<td>Prasad, 1986</td>
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<td>Williams, 1992</td>
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<td>46</td>
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<td>Johansen, 1993</td>
<td>20</td>
<td>1</td>
<td>21</td>
<td>NS</td>
<td>0</td>
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<tr>
<td>Ramanujam, 1994</td>
<td>72</td>
<td>0</td>
<td>67</td>
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<tr>
<td>Deen, 1994</td>
<td>10</td>
<td>0</td>
<td>80</td>
<td>NS</td>
<td>1</td>
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<tr>
<td>Agachan, 1997</td>
<td>32</td>
<td>0</td>
<td>NS</td>
<td>NS</td>
<td>4</td>
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<td>Takesue, 1999</td>
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<td>0</td>
<td>NS</td>
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<tr>
<td>Kim, 1999</td>
<td>183</td>
<td>NS</td>
<td>53</td>
<td>61</td>
<td>29</td>
</tr>
</tbody>
</table>

Gourgiotis. Int J Colorectal Dis. 2007
Perineal rectosigmoidectomy for rectal prolapse: role of levatorplasty

• Aim: compare outcomes of perineal rectosigmoidectomy with and without levatorplasty
• 1989 to 1999
• 109 patients (10 men)
• 120 procedures for rectal prolapse
• Mean age: 75.7 (23-94) years
• Mean follow up: 28 (0.4-126.4) months

Chun SW. et al. Tech. Coloproctology 2004
Perineal rectosigmoidectomy for rectal prolapse: role of levatorplasty

- **Recurrence rate**
  - With Levatorplasty → 7.7% \( (P=0.049) \)
  - Without Levatorplasty → 20.6%

- **Interval for recurrence**
  - With Levatorplasty → 45.5 months \( (P<0.001) \)
  - Without Levatorplasty → 13.3 months

- **Both groups → improved continence**

Chun SW. et al. Tech. Coloproctology 2004
Comparison of 3 perineal procedures

- **Aim**
  
  compare the short-term outcome of Delorme’s procedure and perineal rectosigmoidectomy (with and without levatorplasty) in patients with rectal prolapse

- **61 patients (55 women)**

- **Mean age: 75 (range, 48-101) years**

Comparison of 3 perineal procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Recurrence</th>
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<tbody>
<tr>
<td>Delorme procedure</td>
<td>38%</td>
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<tr>
<td>Perineal rectosigmoidectomy</td>
<td>13%</td>
</tr>
<tr>
<td>Perineal rectosigmoidectomy with levatorplasty</td>
<td>5%</td>
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</table>

Stapled Transanal Rectal Resection (STARR)
STARR to reverse the anatomic disorders of pelvic floor dyssynergia

- 16 patients (12 female)
- All had evacuation difficulties
- Pre-operative dynamic defecography:
  - 12 patients rectoanal intussusception > 2 cm
    - 8 rectocele 2-4 cm
    - 4 rectocele > 4 cm
  - 4 patients rectoanal intussusception 1-2 cm
    - Rectocele < 2 cm

STARR to reverse the anatomic disorders of pelvic floor dyssynergia

- Obstructive defecation symptoms:
  - Remained in 7 → anismus on anal manometry
  - Improved in 6
  - Disappeared in 3

- Immediately after surgery
  - Urgency
  - Frequent small motions
  - Resolved over 3-5 weeks

Other procedures
Gant-Miwa-Thiersch-Yoshida Method for Complete Rectal Prolapse

Yoshida et al. journal of Japanese society of CRS, 2001
ABDOMINAL PROCEDURE: RECTOPEXY
Dr. David Schaffzin at St. Mary Medical Center, Langhorne, PA
Rectal Prolapse
Abdominal approach

Anterior mesh rectopexy
(Ripstein, USA)
## Rectal Prolapse

### Abdominal approach

#### Results of anterior mesh rectopexy

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No of Patients</th>
<th>Recurrence (%)</th>
<th>Follow up (Years)</th>
<th>Morbidity (%)</th>
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<tbody>
<tr>
<td>Ripstein</td>
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<td>Roberts</td>
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<td>135</td>
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<td>52</td>
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<td>Tjandra</td>
<td>1993</td>
<td>142</td>
<td>7</td>
<td>4.2</td>
<td>21</td>
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<tr>
<td>Schultz</td>
<td>2000</td>
<td>69</td>
<td>2</td>
<td>7</td>
<td>33</td>
</tr>
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</table>
Rectal Prolapse
Abdominal approach

Posterior mesh rectopexy
(Wells, UK)
Rectal Prolapse
Abdominal approach

Results of posterior mesh rectopexy

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No of Patients</th>
<th>Recurrence (%)</th>
<th>Follow up (Years)</th>
<th>Morbidity (%)</th>
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<tr>
<td>Morgan</td>
<td>1972</td>
<td>150</td>
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<td>Penfold</td>
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<td>101</td>
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<td>Yoshioka</td>
<td>1989</td>
<td>165</td>
<td>10.5</td>
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<td>Novell</td>
<td>1994</td>
<td>31</td>
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<td>19</td>
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<tr>
<td>Aitola</td>
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<td>96</td>
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<tr>
<td>Dulucq</td>
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<td>68 (Lap)</td>
<td>1.3</td>
<td>2.8</td>
<td>4.4</td>
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</table>
Functional Results after Posterior Mesh Rectopexy

<table>
<thead>
<tr>
<th>Author</th>
<th>No.</th>
<th>Constipation Preop/Postop</th>
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<tbody>
<tr>
<td>Madden (1992)</td>
<td>23</td>
<td>48%/52%</td>
</tr>
<tr>
<td>Delemarre (1991)</td>
<td>23</td>
<td>43%/50%</td>
</tr>
<tr>
<td>Sayfan (1990)</td>
<td>16</td>
<td>19%/44%</td>
</tr>
<tr>
<td>Yoshioka (1989)</td>
<td>165</td>
<td>24%/44%</td>
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</tbody>
</table>
## Rectal Prolapse

**Abdominal approach**

### Results of suture rectopexy repair

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No of Patients</th>
<th>Recurrence (%)</th>
<th>Follow up (Years)</th>
<th>Mortality (%)</th>
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<tr>
<td>Blatchford</td>
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<td>3</td>
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<tr>
<td>Graf</td>
<td>1996</td>
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<td>9</td>
<td>8</td>
<td>0</td>
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<tr>
<td>Khanna</td>
<td>1996</td>
<td>65</td>
<td>0</td>
<td>5.4</td>
<td>0</td>
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<tr>
<td>Briel</td>
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<td>0</td>
<td>5.6</td>
<td>0</td>
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<tr>
<td>Heah</td>
<td>2000</td>
<td>25 (Lap)</td>
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<td>0</td>
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<tr>
<td>Benoist</td>
<td>2001</td>
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Rectal Prolapse
Abdominal approach

Suture rectopexy with resection
## Rectal Prolapse

**Abdominal approach**

### Results of suture rectopexy with resection

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No of Patients</th>
<th>Recurrence (%)</th>
<th>Follow up (Years)</th>
<th>Morbidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husa</td>
<td>1988</td>
<td>48</td>
<td>9</td>
<td>4.3</td>
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<tr>
<td>McKee</td>
<td>1992</td>
<td>9</td>
<td>0</td>
<td>1.8</td>
<td>0</td>
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<tr>
<td>Huber</td>
<td>1995</td>
<td>39</td>
<td>0</td>
<td>4.5</td>
<td>7.1</td>
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<tr>
<td>Yakut</td>
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<td>19</td>
<td>0</td>
<td>3.2</td>
<td>NR</td>
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<tr>
<td>Kim</td>
<td>1999</td>
<td>161</td>
<td>5</td>
<td>8.2</td>
<td>20</td>
</tr>
</tbody>
</table>
Functional results 2 years after laparoscopic rectopexy

- **1993 – 1995** → 14 patients → lap. Posterior mesh rectopexy
- **1996 – 1999**
  - 18 patients → lap. Suture rectopexy with resection
  - 16 patients → lap. Suture rectopexy without resection
- Mean follow-up: 47, 24, 20 months respectively
- No mortality
- Similar morbidity

Functional results 2 years after laparoscopic rectopexy

- During follow-up:
- 1 patient per each group → mucosal prolapse
- Overall 75% improvement in continence
- Postoperative constipation:
  - 2 patients (11%) after resection rectopexy
  - 10 patients (62%) after suture rectopexy
  - 9 patients (64%) after mesh rectopexy

Conclusion: Laparoscopic resection rectopexy is safe, and reduces risk of constipation after surgery.

Laparoscopic-assisted resection-rectopexy for rectal prolapse: early and medium follow-up

- Aim: clinical outcomes + functional results
- 30 patients Lap. Assist. Resection rectopexy
- Median operative time: 185 minutes
- Median hospital stay: 5 days
- Morbidity: 13%
- Mortality: 1 patient

First 10 cases
Op. time       224 minutes
Hosp. Stay     6 days

Last 10 patients
Op. time       163 minutes
Hosp. Stay     4 days

Stevenson et al. DCR, 1998
Laparoscopic-assisted resection-rectopexy for rectal prolapse: early and medium follow-up

- Median follow-up: 18 months
- 2 patients: recurrent mucosal prolapse
- No full-thickness prolapse

<table>
<thead>
<tr>
<th>Functional improvement</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Overall improvement</td>
<td>92%</td>
</tr>
<tr>
<td>Continence</td>
<td>70%</td>
</tr>
<tr>
<td>Constipation</td>
<td>64%</td>
</tr>
<tr>
<td>Incomplete emptying</td>
<td>62%</td>
</tr>
<tr>
<td>Need to strain</td>
<td>59%</td>
</tr>
</tbody>
</table>

Stevenson et al. DCR, 1998
Laparoscopically-assisted resection rectopexy for rectal prolapse: ten years’ experience

- **Aim:** clinical outcomes and long-term results
- **1992-2003**
- **117 patients**
- **Follow-up:**
  - Questionnaire
  - Phone Contact
- **Data were divided into quartiles**

Ashari et al. DCR, 2005
Laparoscopically-assisted resection rectopexy for rectal prolapse: ten years’ experience

- Median follow-up: 62 months
- 80 % Alleviation of symptoms
- 69 % of constipated patients improved
- 2 (2.5%) patients: recurrent full-thickness prolapse
- 14 (18%) patients: mucosal prolapse
- 5 (4%) patients: anastomotic strictures

Ashari et al. DCR, 2005
Lateral Ligament
Lateral ligament division during rectopexy causes constipation but prevents recurrence

- Randomized prospective study
- Rectopexy with division: 14
- Rectopexy without: 12
- Incontinence: improved in both groups
- Constipation $\rightarrow$ increased in division group
  - 3 pre-op $\rightarrow$ 10 post-op $P<0.01$
- Recurrent prolapse
  - None $\rightarrow$ division group
  - 6 $\rightarrow$ no division group

Effects of rectal mobilization and lateral ligaments division on colonic and anorectal function

<table>
<thead>
<tr>
<th></th>
<th>Ligaments Divided n=10</th>
<th>Ligaments Preserved n=8</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean resting pressure</td>
<td>17</td>
<td>26</td>
<td>NS</td>
</tr>
<tr>
<td>Mean rectal compliance</td>
<td>6.7</td>
<td>6.9</td>
<td>NS</td>
</tr>
<tr>
<td>Mean post operative constipation score</td>
<td>7.6</td>
<td>7.9</td>
<td>NS</td>
</tr>
<tr>
<td>Mean defecation frequency</td>
<td>28.3</td>
<td>14.3</td>
<td>NS</td>
</tr>
</tbody>
</table>

Mollen et al. DCR, 2000
Suture of nylon strips on both sides of the rectum

Attach to longitudinal ligament in front of the promontory after mobilizing rectum

Resection of the peritoneum of the pouch of Douglas

Loygue et al. Colorectal Dis, 1984
Abdominal Approach in Advanced Ages
Laparoscopic rectal prolapse surgery with short hospital stay in elderly and debilitated patients

- 2000 – 2004
- 75 patients with full-thickness rectal prolapse
  - 65 patients → laparoscopically
  - 10 patients → open
- ASA was III or IV in 50% of patients
- Minimal blood loss

Laparoscopic rectal prolapse surgery with short hospital stay in elderly and debilitated patients

- Median hospital stay:
  - Rectopexy: 3 vs. 7 days \( P<0.00001 \)
  - Resection rectopexy: 4 vs. 7.5 days \( P<0.00001 \)
- No mortality
- 2 recurrent prolapses
- Overall improvement in fecal continence
- Improvement in symptoms:
  - 84% of patients who had rectopexy
  - 92% of patients who had resection rectopexy

Outcome of laparoscopic rectopexy for complete rectal prolapse in patients older than 70 years versus younger patients

• 1997 – 2001

• 14 patients:
  – 9 ≥ / = 70 years old
  – 5 < 70 years old

• Median follow-up: 34.5 (range 5 – 54) months

• No significant differences in:
  – Hospitalization, Morbidity, Mortality, Recurrence, Functional outcome

Kaiwa et al. Surg. Today, 2004
Conclusions

• Co-morbidities, bowel habit and continence

• Abdominal repair offers lower recurrence rates

• Perineal repair is reserved for those with major co-morbidities or contraindications to abdominal approach
Surgery for complete rectal prolapse in adults.

- Objective: to compare methods of repair
  - Methods: 324 patients, 10 RCT
  - Lateral ligaments may affect recurrence / constipation
  - Perineal surgery may increase incontinence
  - Laparoscopy reduces complications and stay

- Tailor operation to individual patient

- Larger trials are needed to improve the evidence to define optimal surgical treatment.

Algorithm for choosing an approach to rectal prolapse (Abdominal Approach)

- Constipation
  - Normal anal tone
    - Resection
    - Rectopexy
  - Hypotonic anal canal
    - Resection
    - Rectopexy
- Incontinence
  - Hypotonic anal canal
    - Well’s Rectopexy
- Diarrhea with / without incontinence
- Normal function
  - Normal continence
  - Rectopexy
Thank You