management of the difficult perineal wound

Robert D. Madoff, M.D.
Department of Surgery
Division of Colon and Rectal Surgery
University of Minnesota
Minneapolis, MN
Robert D. Madoff, M.D.

No commercial interests to disclose.

Kaiser Permanente
Annual National Surgical Symposium
Minnesota bowel prep
unhealed perineal wound

how big is the problem?
Crohn’s proctocolectomy

- 103 patients, 1958-1997
  - 36 delayed perineal wound healing
  - most common complication

- 23/36 healed at 3-6 months
- 15/36 unhealed after 6 months

Yamamoto 2000
### Perineal Wound Complications

<table>
<thead>
<tr>
<th></th>
<th>Major (%)</th>
<th>Minor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rectal Cancer</strong></td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td><strong>Anal Cancer</strong></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>IBD</strong></td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>14</td>
<td>24</td>
</tr>
</tbody>
</table>

153 patients

--

Christian 2005
## Perineal Wound Complications

### Effect of Radiation Therapy

<table>
<thead>
<tr>
<th></th>
<th>Major (%)</th>
<th>Minor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rectal Cancer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) XRT</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>(-) XRT</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td><strong>Anal Cancer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) XRT</td>
<td>62</td>
<td>40</td>
</tr>
<tr>
<td>(-) XRT</td>
<td>0</td>
<td>67</td>
</tr>
</tbody>
</table>

Christian 2005
perineal wound complications

*University of Minnesota*

- 160 patients, 1988-2002
  - 157 rectal cancer
  - 117 pre-op RT or CRT
- APR with primary perineal wound closure

Bullard 2005
Perineal wound complications

*University of Minnesota*

<table>
<thead>
<tr>
<th></th>
<th>RT (%)</th>
<th>no RT (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major wound complication</td>
<td>41</td>
<td>19</td>
<td>0.021</td>
</tr>
<tr>
<td>Infection</td>
<td>14</td>
<td>0</td>
<td>0.015</td>
</tr>
<tr>
<td>Total wound complications</td>
<td>47</td>
<td>23</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Bullard 2005
unhealed perineal wound

patient risk factors

• underlying disease
• smoking
• diabetes mellitus
• excessive BMI
• malnutrition
• anemia
• comorbidities
unhealed perineal wound

treatment risk factors

• medical/ neoadjuvant therapy
  – radiation
  – chemotherapy
  – corticosteroids

• the surgeon
  – extent of resection
  – margins
  – contamination
ADVANCED PELVIC RECURRENCE
abdominosacral resection

abdominal phase

perineal phase
Perineal dissection

Incision

Ischiorectal fat
“bringing in fresh tissue”

- omentum
- rectus abdominus
- gracilis
- gluteus
- tensor fascia lata
- posterior thigh
omentoplasty in APR
systematic review

• 10 studies since 1970
  – no RCT’s
  – 4 studies with controls
  – 6 case series

• primary healing 50-100%, median 78%

Nilsson 2005
omentoplasty in APR

*trials with controls*

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>1 mo</th>
<th>3 mo</th>
<th>6 mo</th>
<th>healing time (days)</th>
<th>perineal complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>omentoplasty</td>
<td>64</td>
<td>68</td>
<td>87</td>
<td>95</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>controls</td>
<td>101</td>
<td>68</td>
<td>82</td>
<td>96</td>
<td>21</td>
<td>22</td>
</tr>
</tbody>
</table>
myocutaneous flaps

advantages
- reduction of dead space
- interposition of healthy tissue
- replacement of healthy skin

disadvantages
- longer operation
- 2\textsuperscript{nd} surgeon
- complications (flap loss, seroma, hernia)
VRAM flap

advantages

- reliable pedicle
- ease of technique
- large arc of rotation
- large volume of tissue
- +/- skin paddle
- acceptable donor site morbidity
RAM flap closure following chemoradiation

<table>
<thead>
<tr>
<th>Condition</th>
<th>RAM (%)</th>
<th>Control (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>perineal wound complications</td>
<td>16</td>
<td>44</td>
<td>.03</td>
</tr>
<tr>
<td>anal cancer</td>
<td>37</td>
<td>5</td>
<td>.002</td>
</tr>
<tr>
<td>recurrent cancer</td>
<td>63</td>
<td>7</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>vaginectomy</td>
<td>79</td>
<td>9</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I0RT</td>
<td>32</td>
<td>9</td>
<td>.02</td>
</tr>
</tbody>
</table>

*despite more risk factors in the RAM group!*

Chessin 2005
Initial Defect

Flap Design

Gluteus Myocutaneous based on Sup. And Inf. Gluteal vascular pedicles
Flap advanced into defect after de-epithelialization

Final Result
complex perineal sinus

* treatment results *

- 28 patients
  - 12 malignancy
  - 11 IBD
- all sinuses > 8 cm
- all patients treated with tissue transfer +/- preliminary VAC

Oomen 2007
**complex perineal sinus**

**treatment results**

**initial success** 61%

**after secondary surgery** 79%

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Success (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAM</td>
<td>56</td>
</tr>
<tr>
<td>gracilis</td>
<td>100</td>
</tr>
<tr>
<td>gluteal thigh</td>
<td>100</td>
</tr>
<tr>
<td>omentum</td>
<td>22</td>
</tr>
</tbody>
</table>

Oomen 2007
unhealed perineal sinus

↓

exclude associated abscess or fistula

pack VAC

fails

EUA

high narrow fibrotic

excise tissue transfer

curette, revise

low
difficult perineal wound

conclusions

• anticipate the problem!
  – predictable risk factors

• aggressive consideration of tissue transfer flap at time of initial surgery
  – favor TRAM

• systematic approach to established complex sinus