FEMALE PELVIS Normal Tissue
RTOG Consensus Contouring Guidelines

Hiram A. Gay, M.D., H. Joseph Barthold, M.D., Elizabeth O'Meara, C.M.D., Walter R. Bosch, Ph.D.,
Issam El Naqa, Ph.D., Rawan Al-Lozi, Seth A. Rosenthal, M.D., Colleen Lawton, M.D., F.A.C.R.,
W. Robert Lee, M.D., Howard Sandler, M.D., Anthony Zietman, M.D., Robert Myerson, M.D., PH.D.,
Laura A. Dawson, M.D., Christopher Willett, M.D., Lisa A. Kachnic, M.D., Anuja Jhingran, M.D.,
Lorraine Portelance, M.D., Janice Ryu, M.D., William Small, Jr., M.D., David Gaffney, M.D., Ph.D.,
Akila N. Viswanathan, M.D., M.P.H, and Jeff M. Michalski, M.D.

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<table>
<thead>
<tr>
<th>Organ</th>
<th>Standardized TPS Name</th>
<th>Tumor Category</th>
<th>Consensus Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>anus + rectum</td>
<td>AnoRectum</td>
<td>GYN</td>
<td>Inferiorly from the anal verge as marked with a radiopaque marker at the time of simulation. Contouring ends superiorly before the rectum loses its round shape in the axial plane and connects anteriorly with the sigmoid. The AnoRectum is used with the Sigmoid and BowelBag.</td>
</tr>
<tr>
<td>sigmoid</td>
<td>Sigmoid</td>
<td>GYN</td>
<td>Bowel continuing where the AnoRectum contour ended. Stops prior to connecting to the ascending colon laterally. Contoured when a brachytherapy applicator rests in the uterus. Any sigmoid adjacent or above the uterus or a brachytherapy applicator should be contoured.</td>
</tr>
<tr>
<td>bowel bag</td>
<td>BowelBag</td>
<td>GYN</td>
<td>* Inferiorly from the most inferior small or large bowel loop, or above the Rectum (GU) or AnoRectum (GYN), whichever is most inferior. If when following the bowel loop rule the Rectum or AnoRectum is present in that axial slice, it should be included as part of the bag; otherwise it should be excluded. Tips: Contour the abdominal contents excluding muscle and bones. Contour every other slice when the contour is not changing rapidly, and interpolate and edit as necessary. Finally, subtract any overlapping non-GI normal structures. If the TPS does not allow subtraction leave as is.</td>
</tr>
</tbody>
</table>

*Stop contouring the BowelBag, SmallBowel, and Colon 1 cm above PTV for most coplanar beam plans, but the choice will depend on the treatment technique. Stop these PTVs at distances much greater than 1 cm for non-coplanar beam plans depending on the beam angle and path. Tomotherapy plans will require stopping from 1 to 5 cm above the PTV, depending on the selected field size, which is often 2.5 cm.

Abbreviations: TPS = treatment planning software
## GYN/GI

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<tr>
<td>bladder</td>
<td>Bladder</td>
<td>GYN, GI</td>
<td>Inferiorly from its base, and superiorly to the dome</td>
</tr>
<tr>
<td>uterus + cervix</td>
<td>UteroCervix</td>
<td>GYN</td>
<td>The uterus and cervix as one structure. Tip: Fuse with MRI to help identify it.</td>
</tr>
<tr>
<td>ovaries + fallopian tubes</td>
<td>Adnexa_R, Adnexa_L</td>
<td>GYN</td>
<td>Right and left ovary and fallopian tube. Tip: Fuse with MRI to help identify these. Refer to the article by Olson et al. PubMed ID: 1609137</td>
</tr>
<tr>
<td>proximal femurs</td>
<td>Femur_R, Femur_L</td>
<td>GYN, GI</td>
<td>The proximal femur inferiorly from the lowest level of the ischial tuberosities (right or left) and superiorly to the top of the ball of the femur, including the trochanters.</td>
</tr>
</tbody>
</table>

Tips: Auto-contouring threshold parameters with bone can facilitate this process, but requires editing any auto-contouring artifacts.
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<tr>
<td>small bowel</td>
<td>SmallBowel</td>
<td>GI</td>
<td>* In order to distinguish from large bowel, the use of oral contrast is encouraged. After administration of contrast (e.g. 3 oz gastrograffin and 3 oz water/barium mixture) 30 minutes prior to scanning, the small bowel can be outlined as loops containing contrast.</td>
</tr>
<tr>
<td>colon</td>
<td>Colon</td>
<td>GI</td>
<td>* Large bowel continuing where the AnoRectumSig contour ended. Depending on the volume treated, this will include portions or all of the ascending, transverse, descending and sigmoid colon.</td>
</tr>
</tbody>
</table>

*Stop contouring the BowelBag, SmallBowel, and Colon 1 cm above PTV for most coplanar beam plans, but the choice will depend on the treatment technique. Stop these PTVs at distances much greater than 1 cm for non-coplanar beam plans depending on the beam angle and path. Tomotherapy plans will require stopping from 1 to 5 cm above the PTV, depending on the selected field size, which is often 2.5 cm.*
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<tr>
<td>anus + rectum + rectosigmoid (target)</td>
<td>AnoRectumSig</td>
<td>GI</td>
<td>Target structure. Inferiorly from the anal verge as marked with a radiopaque marker at time of simulation. Contouring ends superiorly at the rectosigmoid flexure after the mesorectum disappears. The AnoRectumSig is used with the Small Bowel and Colon.</td>
</tr>
<tr>
<td>mesorectum (target)</td>
<td>Mesorectum</td>
<td>GI</td>
<td>Target structure for anal and rectal cancer. The rectum inferiorly below where the mesorectal fat disappears, and continuing superiorly and encompassing the mesorectal fat until the mesorectal fascia disappears. For these entities, the AnoRectoSig (anus + rectum + rectosigmoid), unlike the rest of the alimentary canal, is NOT an avoidance structure.</td>
</tr>
</tbody>
</table>

In cases where it is difficult to visualize the mesorectum, the anatomical borders of the mesorectum include: cranial, the level of the recto-sigmoid junction; caudal, the anorectal junction defined by where the levator muscles fuse with the external sphincter muscles (or where the mesorectal fat/space can no longer be seen tapering inferiorly); posterior, pre-sacral space; anterior, GU/GYN organs with an internal margin of 10 mm to the anterior mesorectal border on the axial slices of the bladder to account for bladder volume variation on this boundary; lateral-medial edge of the levator ani in the lower pelvis and pelvic brim in upper (excluding any non-target muscle). 

Tip: Adjusting the windowing level may facilitate visualizing the mesorectum.
Contour BowelBag, Colon and SmallBowel the recommended cm above PTV, not necessarily this high

subtract any overlapping non-GI normal structures from BowelBag
Any sigmoid adjacent or above the uterus or a brachytherapy applicator should be contoured.
It is an excellent habit to always use the standardized nomenclature, even if the patient is not in a protocol.
A radiopaque marker would have helped better identify the anal verge.
GI:
- Small Bowel
- AnoRectum
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
lowest level of ischial tuberosities, this is where Femur_L and Femur_R start.
GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

GI:
- Small Bowel
- AnoRectumSig
- Colon

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GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

this is also part of Femur_L
GI:
- Small Bowel
- AnoRectum
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
GI:
- Small Bowel
- AnoRectum
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
BowelBag starts Inferiorly from the most inferior small or large bowel loop, or above the Rectum (GU) or AnoRectum (GYN), whichever is most inferior. In this case the large bowel (see Colon below) is most inferior.
If the AnoRectum (GYN) or Rectum (GU) is present in a BowelBag axial slice, it should be included as part of the bag; otherwise it should be excluded.

AnoRectum stops here since this is the last cut it has a round shape.
rectum becomes elongated as it connects anteriorly with the rectosigmoid
GI:
- Sigmoid
- AnoRectum
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

UteroCervix, Bladder, Adnexa_R, and Adnexa_L excluded from BowelBag
GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

Any Sigmoid adjacent or above the uterus or a brachytherapy applicator should be contoured.
**GYN:**
- Sigmoid
- AnoRectum
- BowelBag

**GYN/GI:**
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

**GI:**
- Small Bowel
- AnoRectumSig
- Colon
oral contrast would have helped distinguish the small bowel from the colon
Stop contouring Sigmoid prior to connecting to the ascending colon laterally.
The BowelBag is bounded by the muscles and bone.
GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder
GI:
- Small Bowel
- AnoRectum
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

Transverse Colon
GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder

GI:
- Small Bowel
- AnoRectumSig
- Colon
GI:
- Small Bowel
- AnoRectumSig
- Colon

GYN:
- Sigmoid
- AnoRectum
- BowelBag

GYN/GI:
- UteroCervix
- Femur_L
- Femur_R
- Adnexa_R
- Adnexa_L
- Bladder