



The Overall Concept for Definitive Endometrium Radiotherapy

Subhakar Mutyala, MD

Associate Director, Baylor Scott & White Cancer Institute

Associate Professor, Texas &AM College of Medicine

smutyala@sw.org



Objectives

- ◆ Background
- ◆ Techniques
- ◆ Outcomes
- ◆ Toxicity



Background

- ◆ 320,000 endometrial cancer incidence worldwide in 2012*
 - ◆ 52,630 endometrial cancer per year in US**
- ◆ 74,000 deaths worldwide*
 - ◆ 8,590 death in US 2014**
- ◆ Initial treatment should be surgery for treatment and staging
- ◆ What do do with medically inoperable patients?

*www.wcrf.org

**www.cancer.org

ABS recommendations

- ◆ Tandem(s) or Heyman capsules
- ◆ Entire uterus, cervix and 3 cm of vagina
- ◆ 8.5 x 4, 7.3 x 5, 6.4 x 6, 5.7 x 7 HDR brachytherapy
- ◆ 45 Gy whole pelvis + 8.5 x 2, 6.3 x 3, 5.2 x 4 HDR brachytherapy
- ◆ Brachytherapy planning
 - ◆ Prescription is 2 cm from source
 - ◆ can optimize to serosa with image guidance
 - ◆ ICRU points for bladder and rectum

Nag, *IJROBP*, 2000



UPMC approach

- ◆ Low grade, minimal depth of invasion
 - ◆ Brachytherapy only
 - ◆ Rotte Y applicator
 - ◆ 7 Gy x 5 BID
- ◆ High grade or deep invasion
 - ◆ EBRT and brachytherapy
 - ◆ 45-50 Gy to pelvis
 - ◆ 4 Gy x 5 BID with Rotte Y

Gerszten, *Brachytherapy*, 2006

UPMC (cont)

- ◆ CT planning from 2005
- ◆ CTV included entire uterus, cervix and upper vagina
- ◆ OAR were bladder, rectum and sigmoid colon
 - ◆ Dose constraints were minimum dose to maximally irradiated 2 cc <80% of prescription dose



Vienna technique

- ◆ Brachytherapy only
 - ◆ EBRT added if inadequate brachytherapy
- ◆ Heyman capsules plus tandem or Rotte Y
- ◆ 7 Gy x 6 HDR brachytherapy
 - ◆ 1-3 fractions per week

Weitmann, *IJROBP*, 2005

Vienna (cont)

- ◆ CT and/or MRI for treatment planning
- ◆ CTV is entire uterus and proximal vagina
- ◆ GTV is tumor
- ◆ OAR contoured are bowel, bladder and rectum
 - ◆ Minimum dose to most exposed 2cc small bowel, bladder and rectum constrained
 - ◆ Isoeffective dose max 50Gy to bowel, 75-80Gy to rectum and 90Gy to bladder



Outcomes

- ◆ Local control 75%-100%
- ◆ Disease specific survival 76%-87%
- ◆ Overall survival difficult to interpret

Podzielinski, *Gyn Onc*, 2012

Toxicity

- ◆ Expected low with modern techniques
 - ◆ Using guidelines from cervical cancer
- ◆ No grade 3-4 toxicity with image guided OAR doses*
 - ◆ No grade 3-4 with image guided OAR in UPMC
- ◆ 5.2% grade 3 late toxicity at 5 years with 2D planning**
 - ◆ 8% grade 3 late toxicity at 5 years with 2D in UPMC

Weitmann, *IJROBP*, 2005
Knocke, *IJROBP*, 1997



Recommendations

- ◆ Applicator
 - ◆ Rotte Y
 - ◆ Heyman Capsules
- ◆ Dose
 - ◆ Brachytherapy only
 - ◆ 7 Gy x 5 BID in single insertion
 - ◆ 7 Gy x 6 multiple insertion
 - ◆ EBRT + brachytherapy
 - ◆ 45 Gy to pelvis + 5 Gy x 5 BID in single insertion
 - ◆ 45 Gy to pelvis + 6 Gy x 5 BID in multiple insertions
- ◆ Organ constraints
 - ◆ Bowel
 - ◆ EQD2 < 50Gy
 - ◆ Rectum
 - ◆ EQD2 < 75Gy
 - ◆ Bladder
 - ◆ EQD2 < 90Gy

Summary

- ◆ Endometrial cancer can be treated definitively with radiation for medically inoperable patients with brachytherapy +/- EBRT with reasonable to good DSS
- ◆ Different brachytherapy techniques exist, with a goal of getting dose to the entire uterus
- ◆ OAR toxicity is low using modern image guided brachytherapy.



Questions?

