INTRODUCTION:

Anal carcinoma is a relatively rare cancer, with an estimated 5,000 new cases diagnosed per year and an estimated annual death rate of 700 cases in the United States. The incidence, however, has been increasing secondary to an association with the human papilloma virus. Anal carcinoma is divided into tumors arising within the anal canal and the distal anal margin. Anal cancers may present with rectal bleeding, pain, or the sensation of a rectal mass. Assessment of tumor extension is primarily performed through rectal examination, whereas evaluation of lymph nodes is by imaging (CT/MRI) and FNA biopsy of suspicious nodes. The method of treatment for anal carcinoma has changed. Previously, an abdominoperineal resection was performed; however, the results revealed a high local recurrence rate. Current standard of care is concurrent chemoradiation therapy using 5-Fluorouracil and Mitomycin-C (5-FU and MMC). The exception is tumors of the anal margin that are ≤2 cm in the greatest dimension, well-differentiated, that can be treated with margin-negative local excision alone.

GOAL OF THE GUIDELINE:

This guideline outlines methods suitable for delivering anal carcinoma radiation therapy. The optimal doses scheduled for radiation therapy, together with chemotherapy, has been evaluated in a number of clinical trials. Combined therapy to this area of the body can result in significant toxicity. Meticulous attention to radiation delivery techniques is useful to both reduce treatment-related toxicity and reduce/eliminate treatment interruptions that can have a significant effect on control rates. Techniques such CT simulation, conformal approach and intensely modulated radiation therapy (IMRT) have shown promising results in ongoing clinical trials. IMRT use requires expertise in defining appropriate target volume over conventional conformal beam irradiation. As in most cancers, a multidisciplinary approach is preferred for treating patients with anal carcinoma.

GENERAL CONSIDERATIONS

Cancer of the anal canal is typically treated with concurrent chemoradiation, with the exception of T1, N0 well-differentiated anal margin lesions that can be treated with local excision alone.

- 5-FU plus Mitomycin is typically given with concurrent radiotherapy.
- Radiotherapy delivered to a minimum of 45 Gy in 25 fractions using multifield technique and photon energies of >6 MV is recommended.
- Dose of 54 Gy to 59 Gy is recommended for T3-4, node positive disease.
- Radiation fields typically include not only the anal canal, but the pelvis, perineum and inguinal nodes, with modification after 30.6 Gy to the superior edge of the field, and at 36 Gy on node negative inguinal nodes.
- Anterior electron boost is commonly used to treat the inguinal nodes. A direct perineal boost (electrons/photons) can be used.
- 3D CRT and/or IMRT may be used in the treatment of anal cancer.

Treatment interruptions/breaks should be avoided as it can compromise treatment effectiveness. Radiation induced toxicity can be reduced by judicious use of planning and limiting dose to normal surrounding tissue. Techniques such as IMRT have demonstrated reduced toxicity in multiple studies. Inverse planning and dose constraints for normal tissue are required.

MEDICALLY NECESSARY INDICATIONS FOR RADIATION THERAPY AND TREATMENT OPTIONS:

2D, 3D-CRT and IMRT are all appropriate techniques for treatment of anal cancer. Electron beam or photon beam are the most commonly used techniques for delivering boost radiotherapy.

- **Primary Treatment**
  - **Anal Canal (T1-2, N0):**
    - 45-50.4 Gy to include pelvis, perineum, and inguinal nodes
    - Radiation therapy delivered with chemotherapy
  - **Anal Canal (T3-4, N0 or Any T, N+):**
    - Conformal beam irradiation (54-59 Gy) with chemotherapy
  - **Anal Canal Metastatic Disease**
    - Conformal beam irradiation with chemotherapy
- **Post Operative**
  - **Anal Margin/Anal Skin:**
    - Consider local radiation therapy 45-50.4 Gy if inadequate margins (close/positive) and re-excision is not an option.

 Unless otherwise indicated standard radiation fractionation consists of 1.8 Gy to 2.0 Gy per day

TREATMENT OPTIONS REQUIRING ADDITIONAL CLINICAL REVIEW:

**Proton Beam Radiation Therapy**
Proton beam is not an approved treatment option for anal cancer. Proton beam has not been proven superior treatment to conventional radiation therapy.

**Stereotactic Body Radiation Therapy (SBRT)**
Stereotactic Body Radiation Therapy is not a standard treatment option for the treatment of bone metastasis. A peer review is required with a radiation oncologist.
REFERENCES


