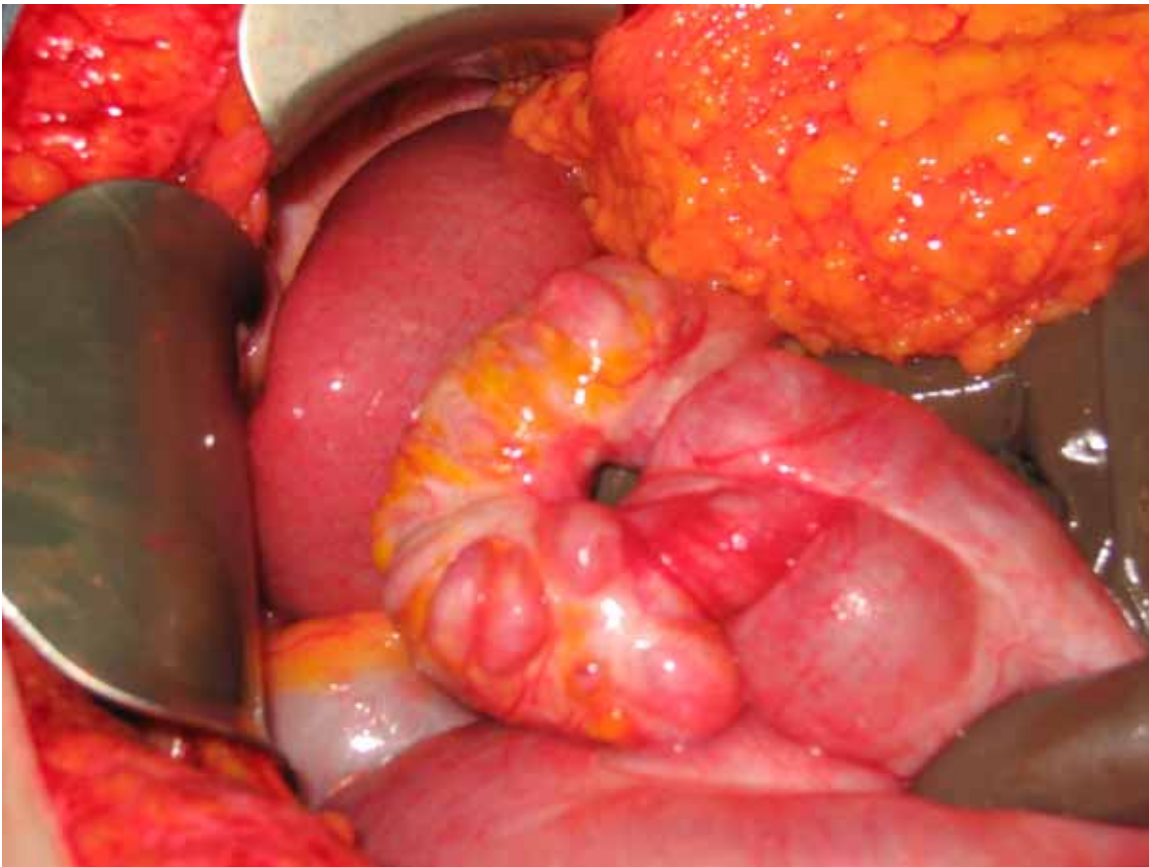


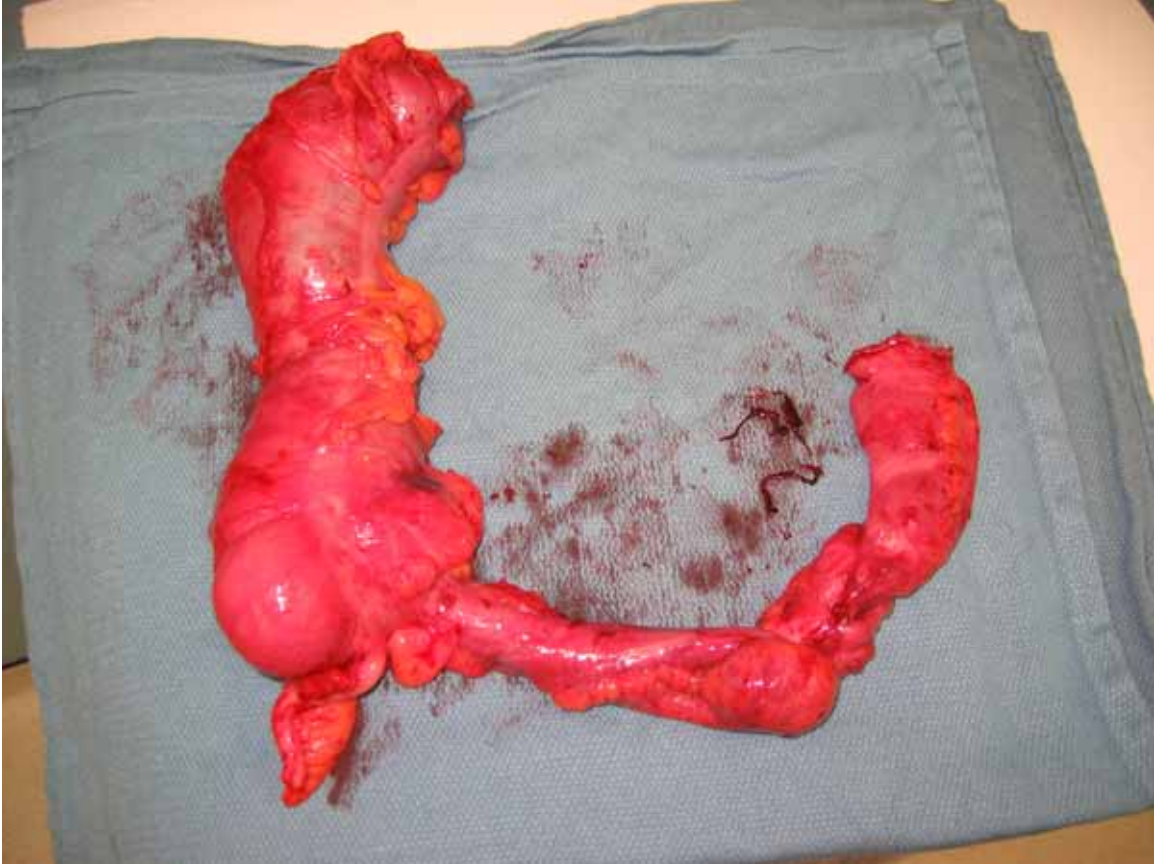
**eTumor**  
**11/2/2004**

**Prepared by**  
**Anna Signorelli, Lorelei Thornburg & Meghan McKeever**

A 52 yo was diagnosed with stage IIIc endometrial cancer and underwent postoperative pelvic radiation. Three years later admission was required for intestinal obstruction. [Figure 1](#) shows the findings at exploratory laparotomy. [Figure 2](#) shows the surgical specimen.



**Figure 1**



**Figure 2**

## Questions

1. What is the most likely diagnosis?
  - a) large intestinal obstruction secondary to stricture
  - b) gastroenteritis
  - c) small intestinal obstruction secondary to tumor
  - d) ileal stenosis secondary to radiation enteritis

[Answer](#)

2. What is the underlying pathologic process in radiation enteritis?
  - a) sloughing and necrosis of tumor cells
  - b) endarteritis obliterans
  - c) decreased absorptive surface from thermal insult
  - d) mitotic arrest of crypt cells

[Answer](#)

3. Which of the following are predisposing factors for radiation enteritis?
  - a) radiation doses  $> 5000\text{cGy}$
  - b) hypertension
  - c) diabetes
  - d) preexisting vascular disease
  - e) all of the above

[Answer](#)

4. What is the appropriate surgery for ileal stenosis secondary to radiation enteritis (specimen shown in Figure 2)?
  - a) lysis of adhesions
  - b) ileostomy
  - c) ileal resection with reanastomosis
  - d) right colectomy with ileal transverse reanastomosis

[Answer](#)

## Answers

1: (d) Ileal stenosis secondary to radiation enteritis. Radiation enteritis occurs most commonly following therapy for rectal, prostate or other pelvic cancers. It is believed to be secondary to oxidative damage from the formation of free radicals. Signs and symptoms include nausea, vomiting, obstruction, and weight loss. The classic triad is abdominal pain, nausea/vomiting, and diarrhea.

2: (b) Endarteritis obliterans. Radiation-induced fibrosis develops secondary to progressive endarteritis obliterans. In this process, the small submucosal blood vessels in the bowel are damaged, eventually leading to thrombosis and vascular insufficiency. The injury can result in necrosis and sometimes perforation, but more common complications are stricture formation and development of fistulas.

3: (f) All of the above. The condition typically develops after 4500 to 5500 cGy of radiation, and is uncommon with lower doses. Any condition that aggravates the occlusive vasculitis that occurs in small vessels following radiation will increase the risk of radiation enteritis

4: (d) With severe radiation damage there is a high risk of anastomotic leak if irradiated bowel is used for reanastomosis. Use of the transverse colon, which is usually out of the radiated field, has a lower risk of complications

## References:

Sabiston Textbook of Surgery, 17<sup>th</sup> Edition, Elsevier, 2004.