General history

- Gender: Female
- Age: 31 y/o
- Admission: 2004/08/17

Chief complaint

- Intermittent lower abdominal pain for four months and progressive diarrhea noted

Present illness

- Hx of major depression for five years
- Diarrhea noted since 2004/02, colonoscopy refused, UGI series: normal
- Progressed diarrhea with hypogastralgia since 2004/08, IBS suspected
- Body weight loss 5kg/6m noted
- Pelvic sono revealed huge mass, admitted

Personal history

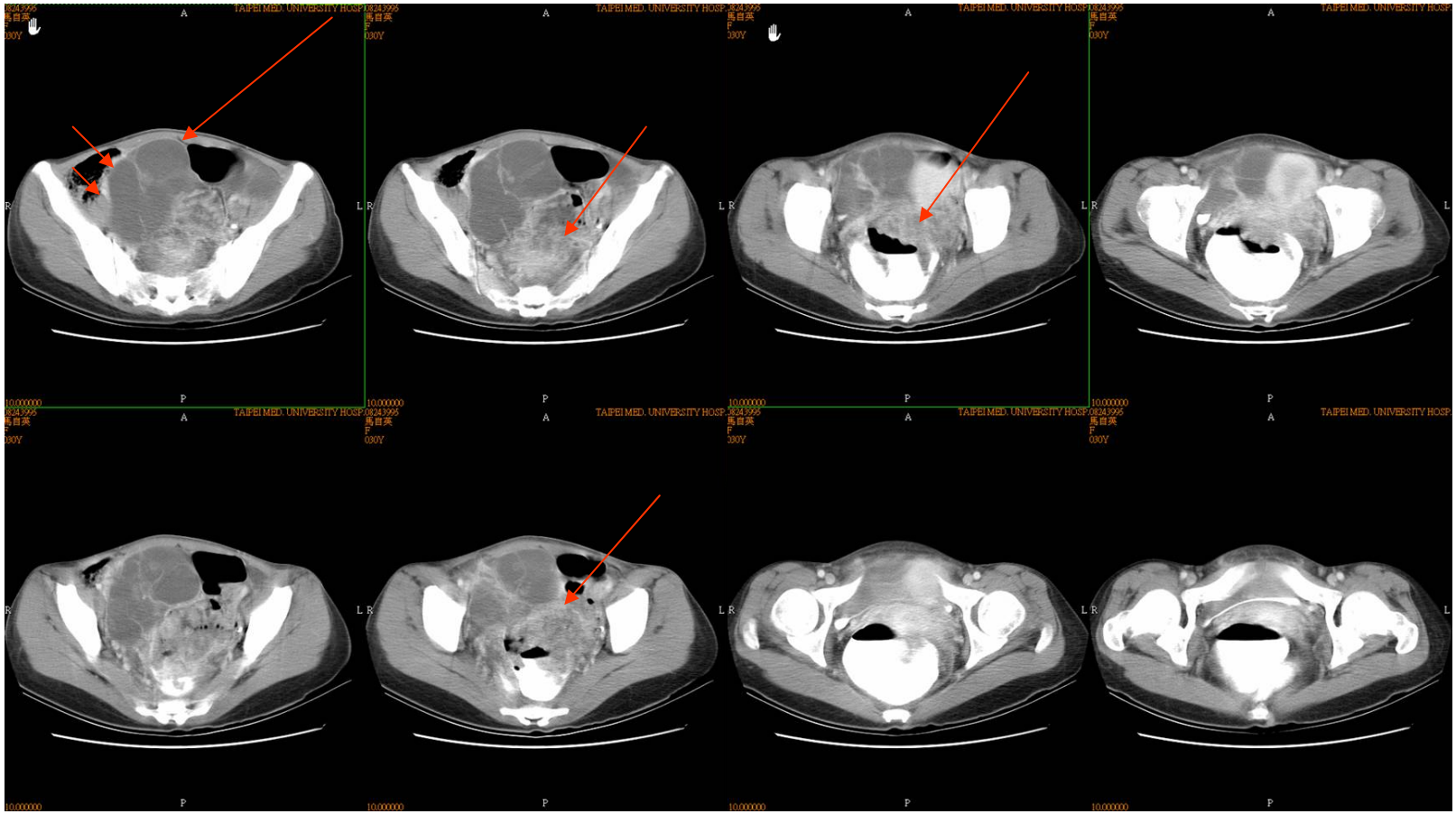
- G0P0, dysmenorrhea (+)
- Smoke: ¼ PPD Alcohol: nil
- Past Hx: asthma, IDA, major depression
- Family Hx: 2 aunts, unknown ovarian ca
- Surgical Hx: nil

Physical examination

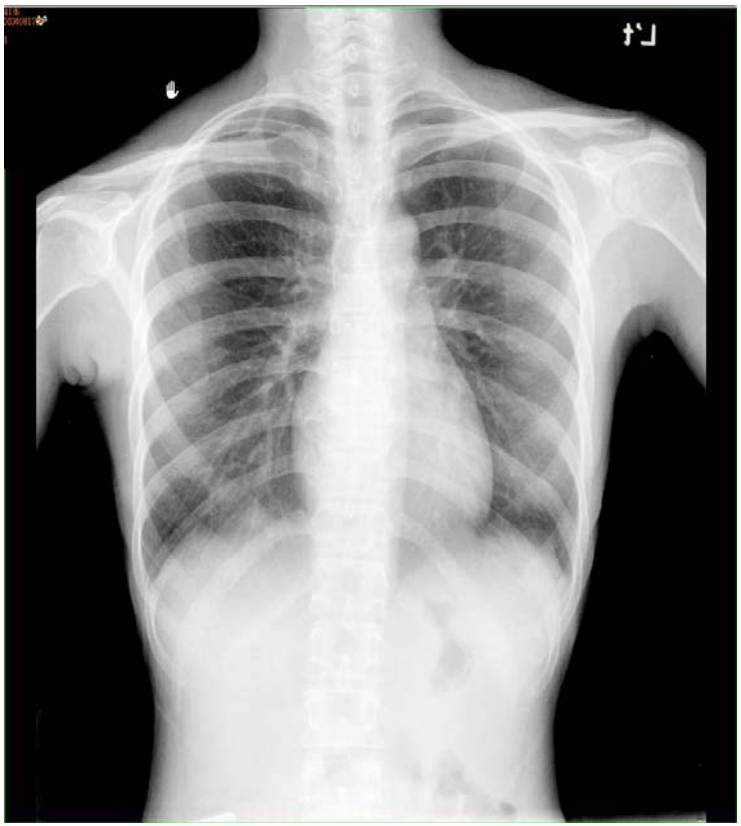
- DRE: polypoid tumor with central ulceration at ant. wall of rectum, 6 cm above anal verge
- Lab: Hb: 9.1, MCV: 63.8

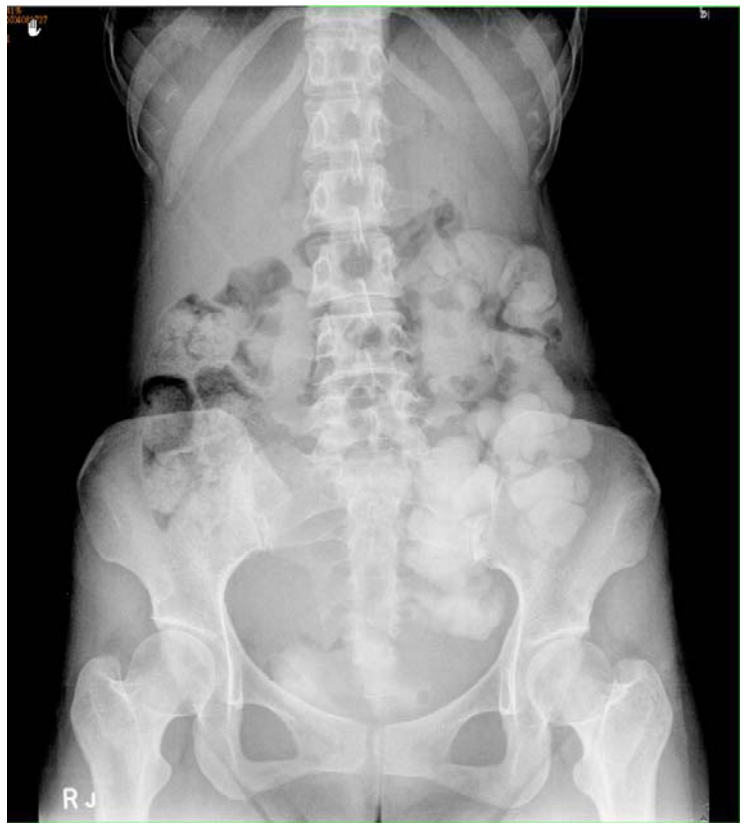
  CEA: 5.17, Alb: 3.1

Pelvic CT (2004/8/12)



CXR and KUB (8/17)



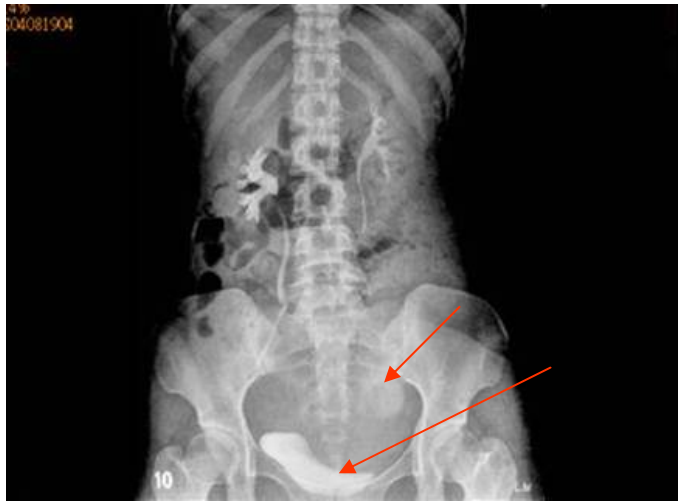


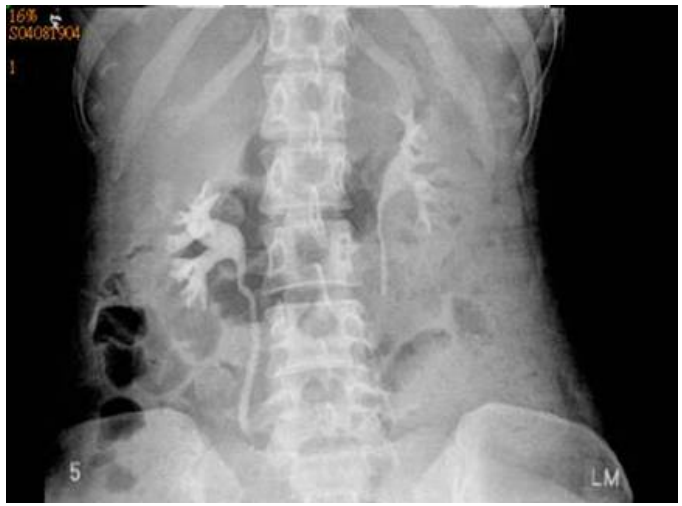
Negative finding both

Colonoscopy (8/20)

- Tumor, rectum, r/o primary rectal cancer or invasion by malignancy of adjacent organ
- Polyp, rectum
- Biopsy done

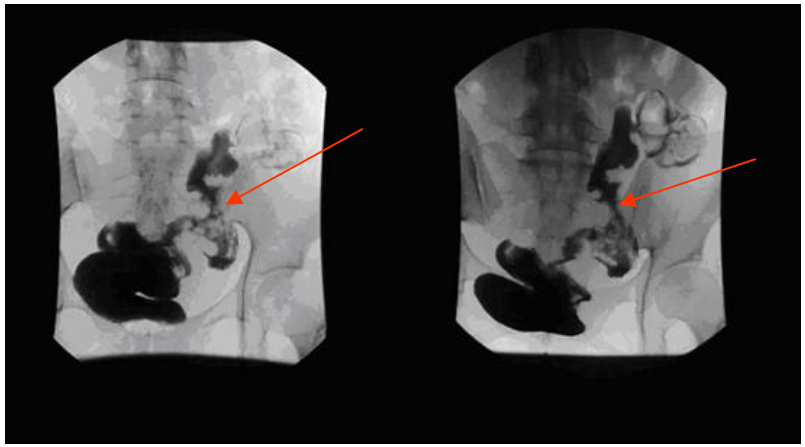
IVP (8/20)

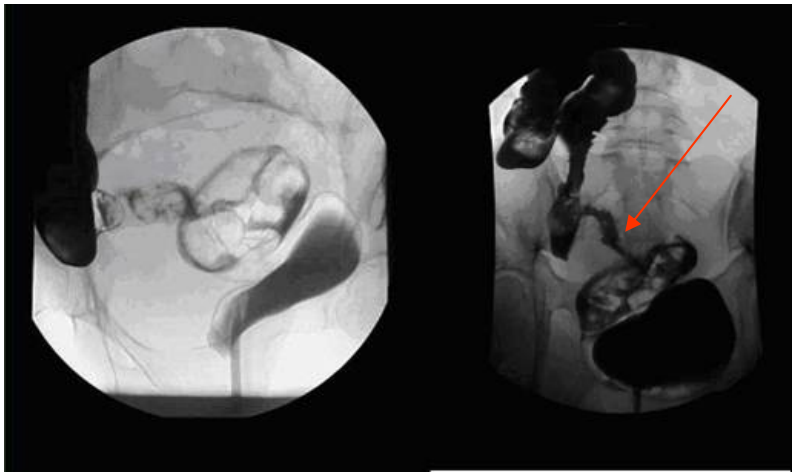




- urinary bladder is not fully filled by contrast medium, due to smoothly superior indentation by pelvic mass
- relatively increased radiopaque density at left pelvic cavity region

Colon series (8/26)



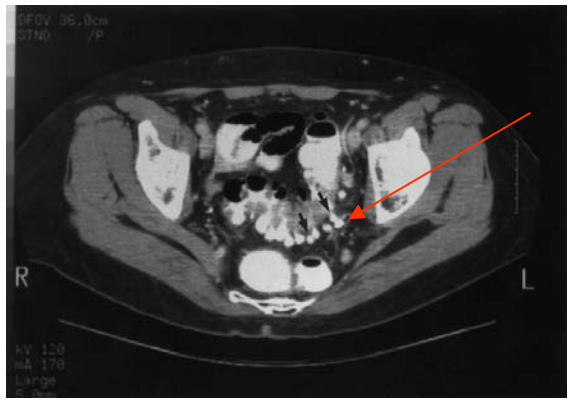


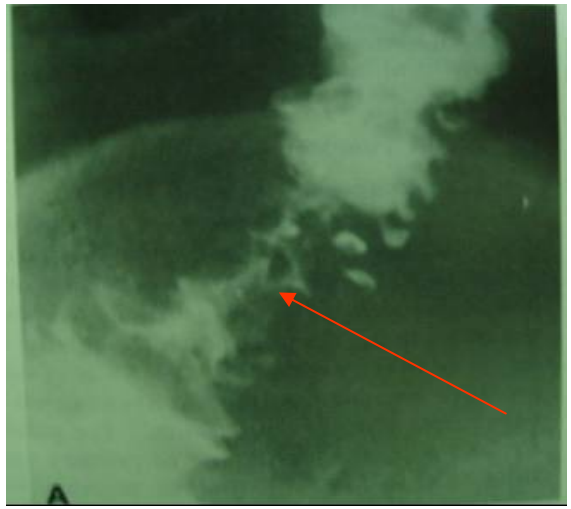
- Circumferential narrowed lumen (apple-core like) with irregular, polypoid-like mucosa folds
- A ulcerative pouch arising from the left aspect of this rectal lesion

Differential diagnosis (I) of colorectal narrowing (LGI)

- Most likely
  1. Rectal carcinoma
  2. Tumor metastasis
- Less likely
  1. Diverticulitis
  2. Ulcerative colitis
  3. Ischemic colitis
  4. Endometriosis
  5. Pelvic lipomatosis

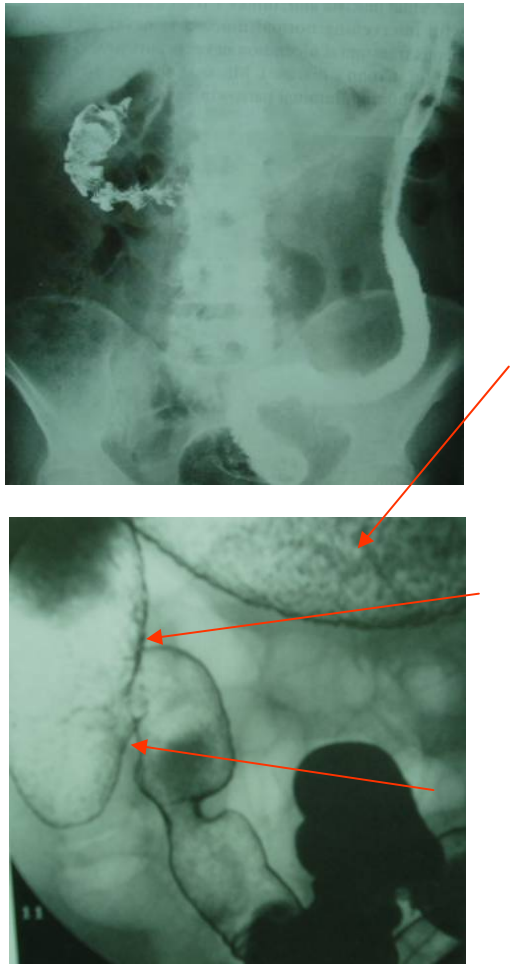
Diverticulitis





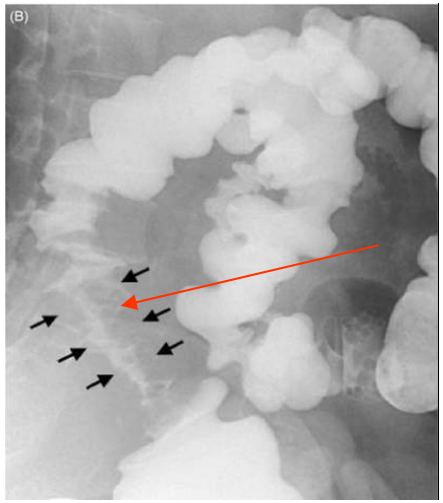
- Intra-luminal inflammatory process causes a localized narrowing of the lumen of the sigmoid colon

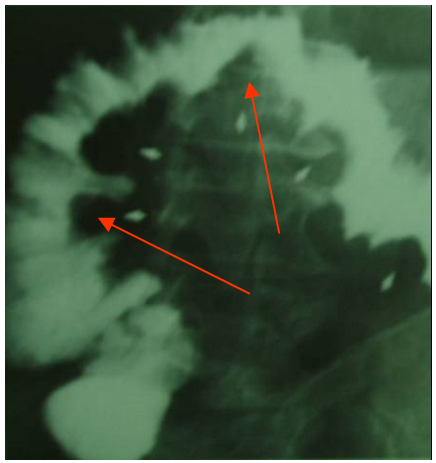
Ulcerative colitis



- Continuous lesion
- Fine, symmetrical ulceration
- Shallow ulcers, granular mucosa
- “back-wash ileitis”
- Haustral obliteration

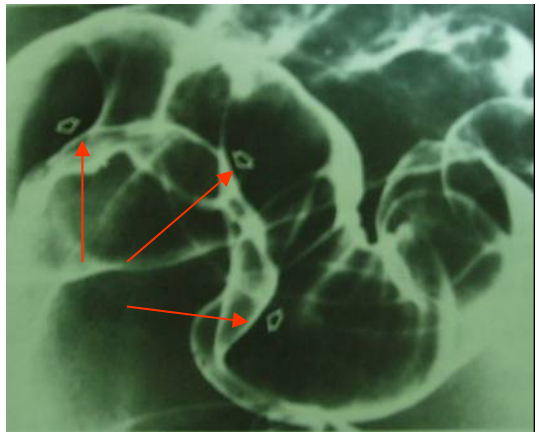
Ischemic colitis

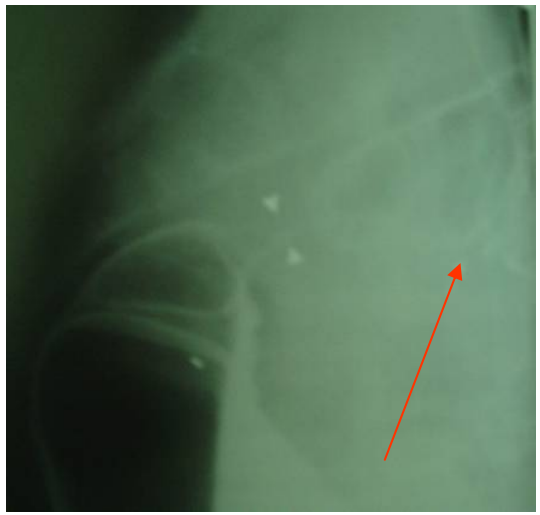




- “Thumbprinting”
- Occasionally the damage is severe enough to result in a smooth stricture
- Splenic flexure
- Loss of haustration

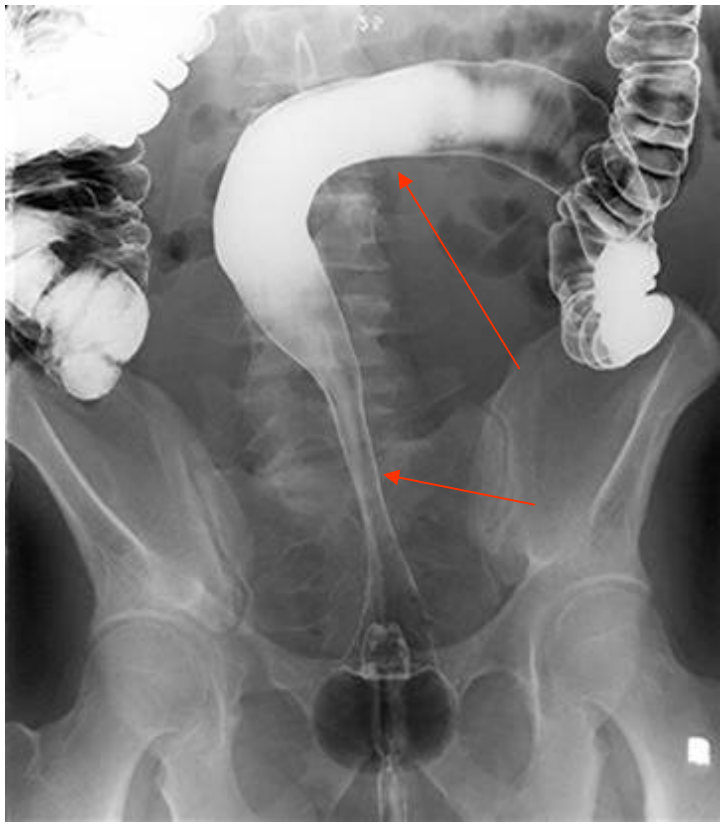
Endometriosis





- Large mass infiltrating the wall and protruding into the lumen
- Puckering of the serosal surface due to adhesion
- Mucosa intact
- The narrowing is smooth and often tapered

Pelvic lipomatosis



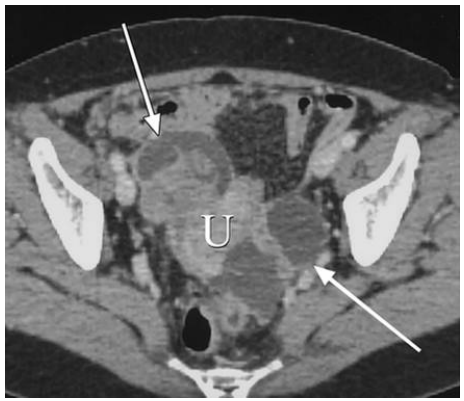
- Rare
- Excessive pelvic adipose tissue
- Elongate, straighten and narrow both the rectum and bladder

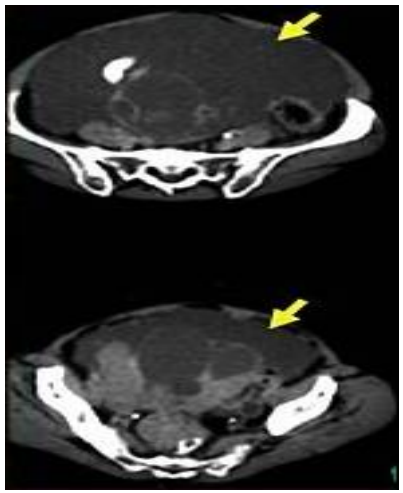
Differential diagnosis (II) of pelvic cystic mass (CT)

- Rectal cancer with metastasis
- Ovarian cancer
- Ovarian cyst
- Tubo-ovarian abscess

~ University of Toronto Medical Journal, Volume 79, May 2002

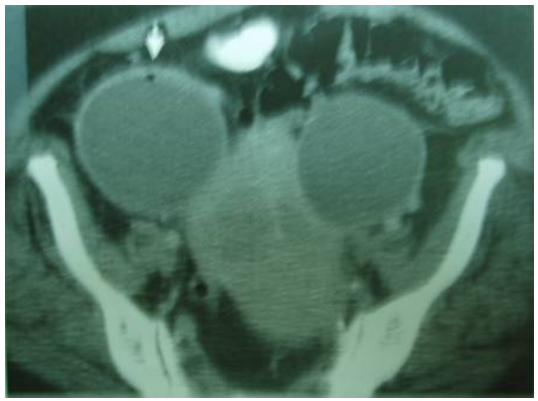
Ovarian cancer

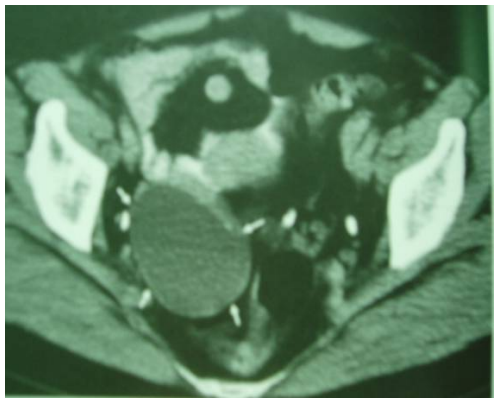




- Few symptoms and clinical signs
- Maybe ascites, omental metastasis, peritoneal metastasis and scalloping
- Bilaterally
- Solid or solid/cystic

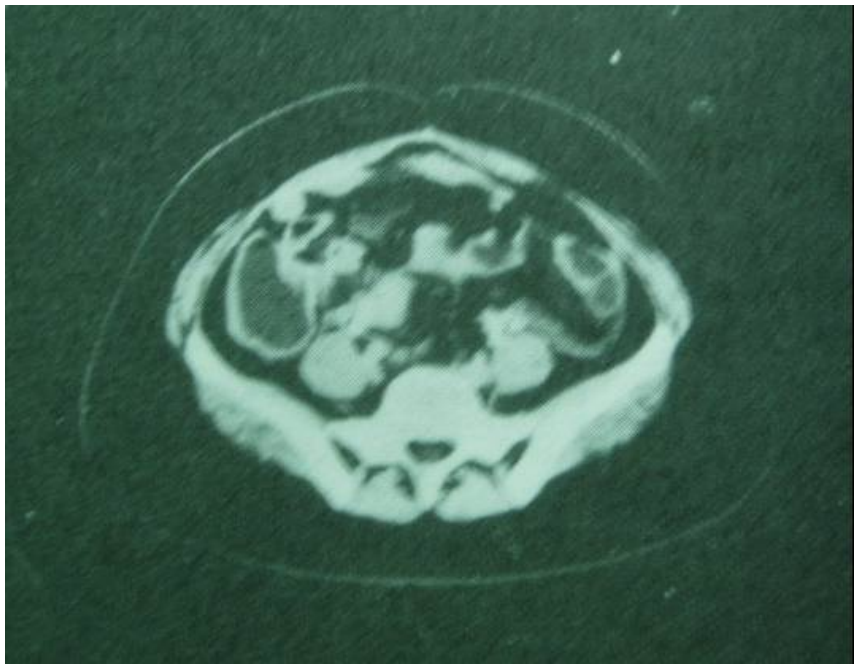
Ovarian cyst





- Mostly simple
- Bilateral or unilateral
- Smooth surface
- Intact capsule
- Septations sometimes
- Malignant transformation is uncommon

Tubo-ovarian abscess



- Correlation with clinical sign and laboratory
- Young and low parity
- Hx of PID
- Prefer US to CT

"Pelvic Mass: Appearance Is Not Everything"

Table 1
Classification of Adnexal Masses

Organ	Cystic Mass	Solid Mass

Ovary	• Functional cysts (follicular, corpus luteum), theca lutein cyst, luteoma of pregnancy, polycystic ovaries
	• Neoplastic cysts
	  • Benign
	  • Malignant
	• Endometriosis
		• Ovarian Neoplasms
		  • Benign
		  • Malignant

Fallopian tubes	• Tubo-ovarian abscess • Hydrosalpinx	• Ectopic pregnancy • Neoplasm
Uterus	• Intrauterine pregnancy	• Leiomyoma • Endometrial cancer
Gastrointestinal	• Distended cecum or sigmoid colon	• Diverticulitis • Ileitis • Appendicitis • Colon cancer
Other	• Distended bladder • Pelvic kidney	• Abdominal wall hematoma or abscess • Retro-peritoneal neoplasm

volume 79, number 3, May 2002 241

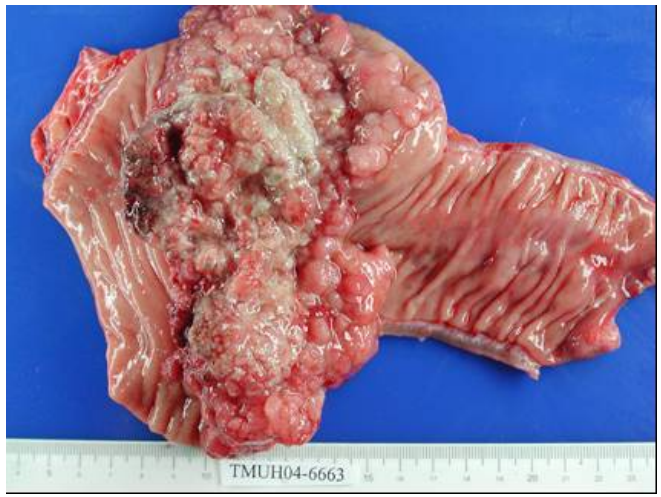
~ University of Toronto Medical Journal, Volume 79, May 2002

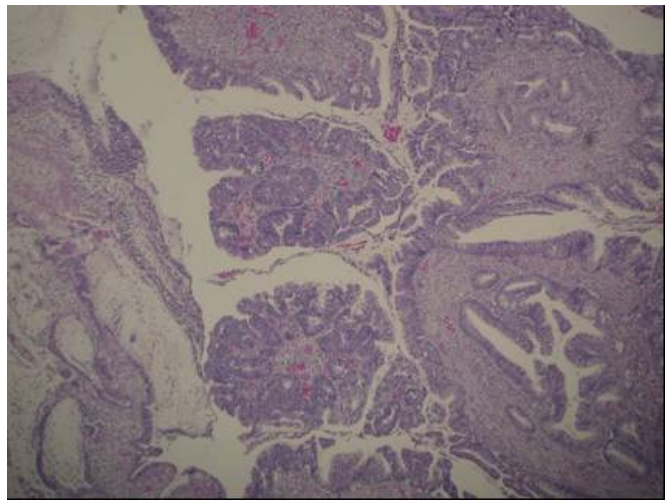
Operation

- 8/27, proctoscopy and biopsy
- 8/30, Hartmann's procedure + colostomy + debulking surgery (ATH + BSO + pelvic & para-aortic LNs smapling + omentectomy + appentectomy + bilateral paracolic gutter biopsy + right broad ligament biopsy) + double J insertion

Pathology

- Rectal cancer, mucinous adenocarcinoma, tubuloglandular type, ovarian and omentum metastases (Krukenberg tumor)





Discussion

Rectal cancer

Risk factors of rectal cancer

- > 50 y/o
- Family history of colon or rectal cancer
- Personal history of cancer
- History of Crohn’s disease or ulcerative colitis
- Hereditary condition (FAP, HNPCC)

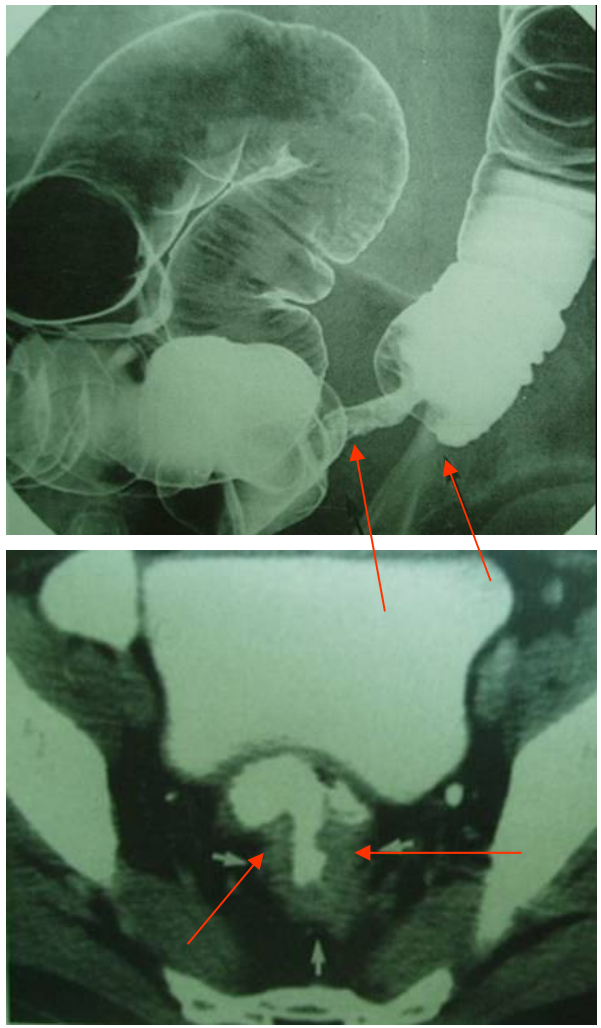
Physical examination

- Bowel habit change
- Blood in stool
- Diarrhea, constipation, tenesmus
- Small caliber of stool
- Body weight loss

Examination/Lab

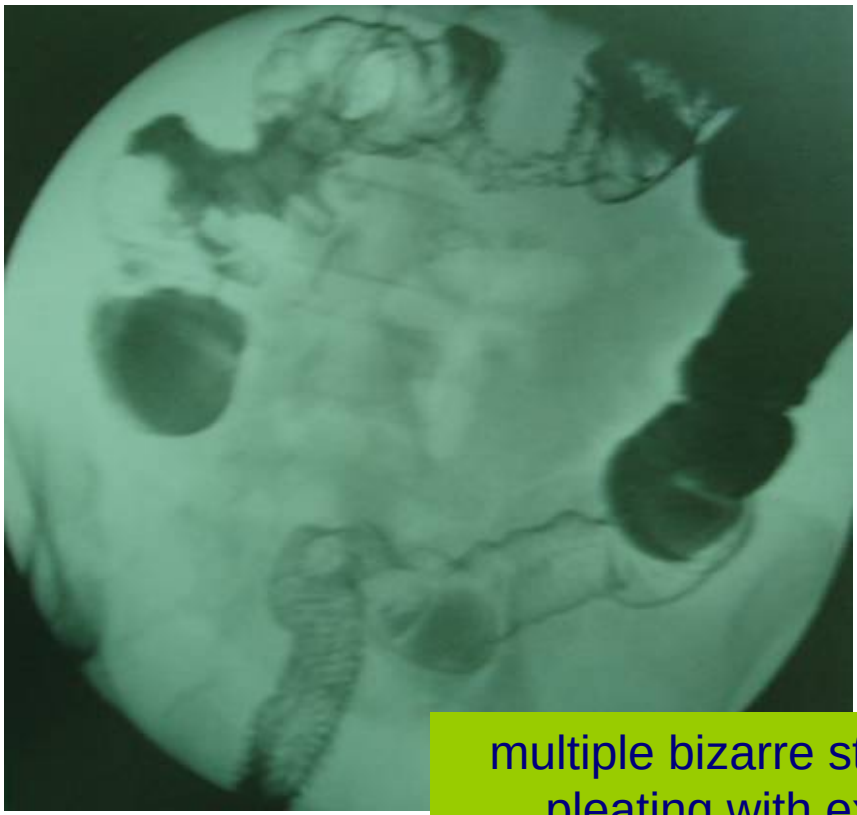
- Stool OB, DRE
- Coloscopy, sigmoidoscopy
- Lower GI series
- Pelvic CT
- Biopsy
- Tumor marker (CEA, CA199)

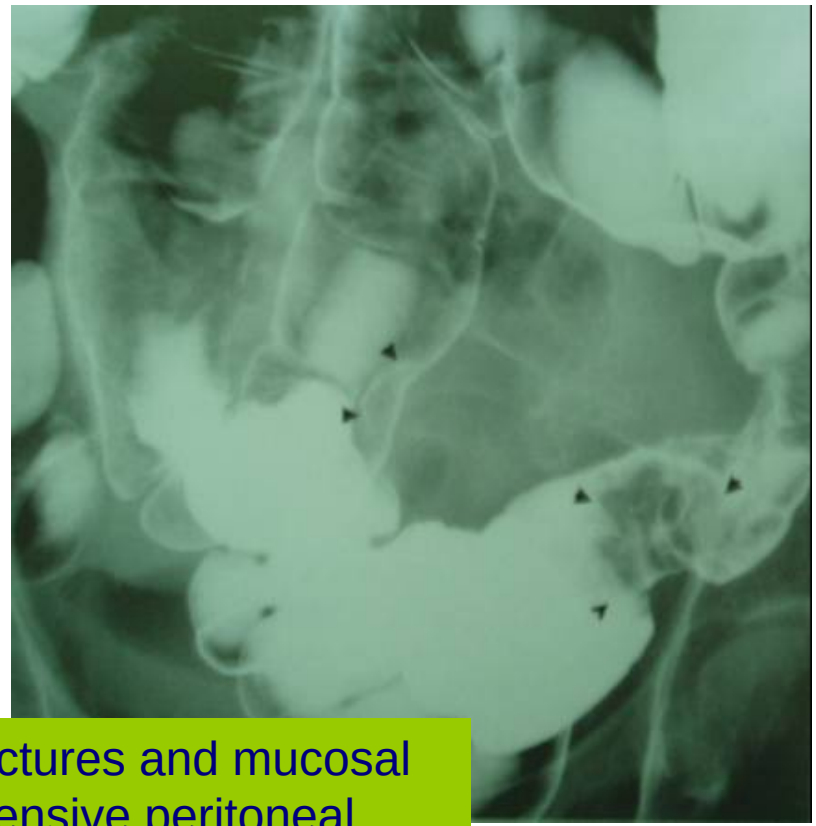
Image (rectal primary)



- “apple-core” lesion
- Infiltrating mass of rectum
- Abrupt, shouldered margin
- Normal mucosal fold cannot be traced

Image (ovarian primary)





multiple bizarre strictures and mucosal pleating with extensive peritoneal carcinomatosis from an ovarian primary

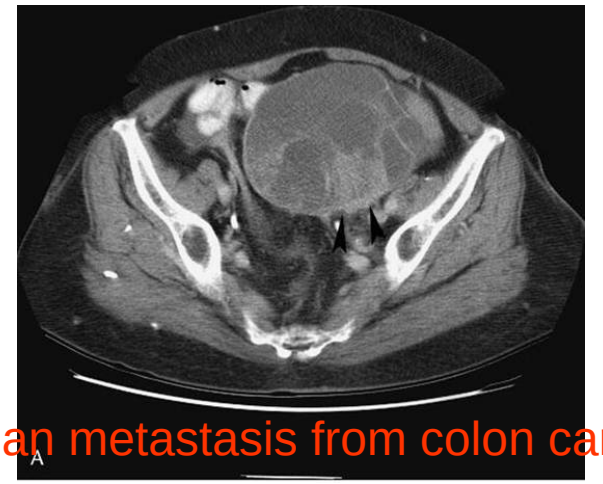
Prognosis

Stage			Pathologic description	Approximate 5yr survival %
Dukes	TNM	Numerical		
A	T1N0M0	I	Limited to mucosa or submucosa	>90
B1	T2N0M0	I	Extends into muscularis	85
B2	T3N0M0	II	Extends into/through serosa	70~80
C	TxN1M0	III	Involves regional LNs	35~65
D	TxNxM1	IV	Distant metastases	5

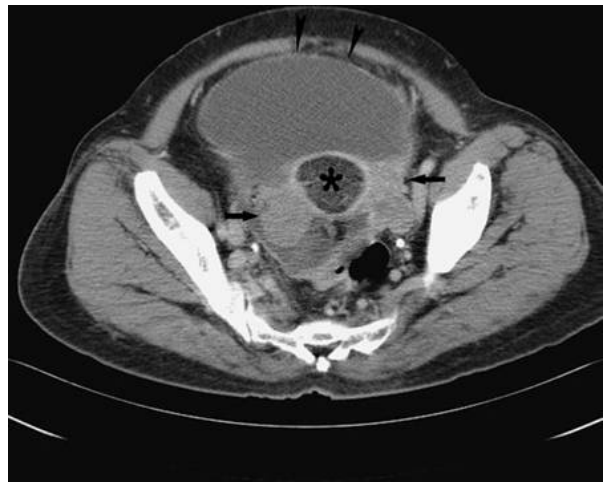
Pelvic mass in CT

- Primary or secondary ? (rectum v.s ovary)
- Ovarian cancer: 38%, metastases
- Most of these studies reported that the differentiation between metastatic tumors and primary tumors is almost ***impossible*** on the basis of imaging findings
- Some studies reported suggested findings of Krukenberg tumors (from stomach not colon)

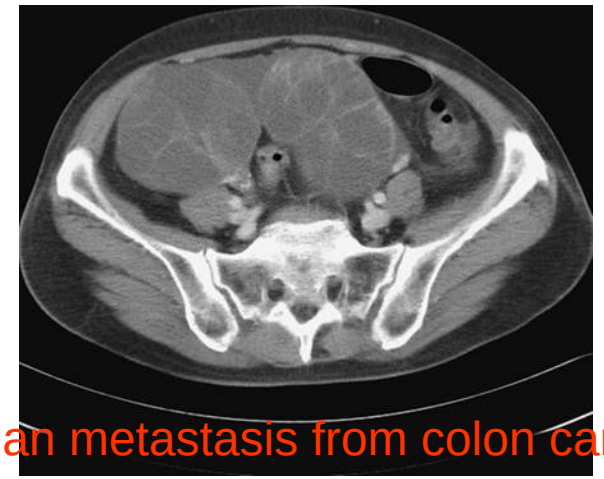
Image



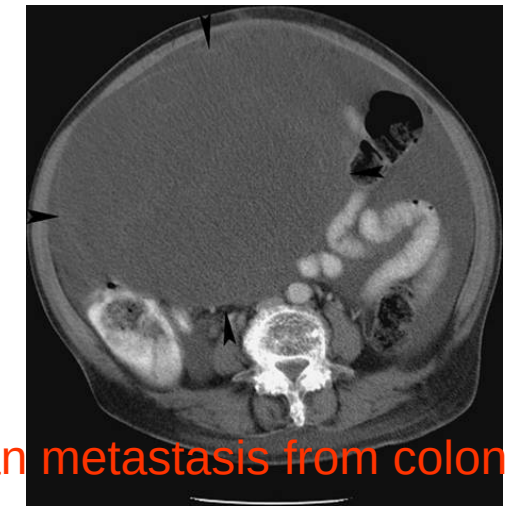
Ovarian metastasis from colon cancer



Primary ovarian tumor (serous adenocarcinoma)



Ovarian metastasis from colon cancer



Ovarian metastasis from colon cancer

Comparison

- **Ovarian metastases from colon ca. / primary colon ca. (in CT)**

1. smooth margin of tumor (92% / 45%)
2. cystic nature (86% / 36%)
3. bilaterally (37.5% / 55%)
4. oval-shaped (more common findings / less)

~ ***Journal of Computed Assisted Tomography***:
Computed Tomography Findings of Ovarian Metastases From Colon Cancer: Comparison With Primary Malignant Ovarian Tumors, Jan/Feb 2005

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- University of Toronto Medical Journal, Volume 79, May 2002