

Ileo-vesical fistula secondary to squamocellular bladder carcinoma

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Section: Uroradiology & genital male imaging

Area of Interest: Urinary Tract / Bladder

Procedure: Diagnostic procedure

Imaging Technique: CT

Special Focus: Fistula Case Type: Clinical Cases

Authors: Tonolini Massimo, MD.

Patient: 54 years, female

Clinical History:

Middle-aged woman with chronic kidney disease (glomerular filtration rate ~20 ml/min) from untreated hypertension, currently suffering from dysuria, orange-coloured urine and suprapubic pain. Physically found hypotensive and dehydrated.

Laboratory evidence of anaemia (9 g/dl haemoglobin), leukocytosis (22000 cells/mm³), raised C-reactive protein (32 mg/l) and markedly abnormal urinalysis.

Imaging Findings:

As sonographically suspected by the attending gynaecologist, initial noncontrast CT (Fig. 1) showed marked (1 cm) mural thickening along the right posterolateral and superior aspects of the urinary bladder, closely adherent to non-dilated small bowel loops, and intraluminal air without recent catheterisation.

Cystoscopy revealed markedly irregular right wall, abundant fibrous material and fecaloid urine in the lumen, right wall irregular, fecaloid urines without identifying frank fistulous orifices. After hydration, contrast-enhanced CT (Fig. 2) confirmed marked mural thickening of the urinary bladder consistent with biopsy finding of muscle-invasive poorly differentiated cancer, and contrast injection via Foley catheter opacified a double, wide fistula connecting the bladder dome to the ileum.

Radical cystectomy en-bloc with ileum and uterus, lymphadenectomy and Bricker diversion was performed (Fig. 3). Histology diagnosed a 10x6 cm bladder squamocellular carcinoma with full-thickness mural involvement and infiltration of peritoneal serosa, perivisceral fat and ileum (pT4N2).

Discussion:

Entero-vesical fistulisation refers to the formation of an abnormal communication between the urinary bladder and either the small or large bowel. Its characteristic symptoms include persistent urinary infection, pneumaturia, fecaluria and abnormal urinalysis including haematuria. Sigmoid colon diverticulitis and Crohn's disease (CD) by far represent the most common causes of colo-vesical and ileo-vesical fistulas (IVF), respectively. In elderly patients and adults without CD, an IVF is very uncommon: as described in sparse case reports, causes include ileal (including Meckel's) diverticula, small bowel cancer and lymphoma, previous pelvic irradiation and post-chemotherapy changes. [1, 2]

The hereby reported IVF caused by a bladder cancer is particularly exceptional, due to the rare (below 5% incidence in Europe) squamocellular histology, which is generally related to chronic urinary or Schistosoma infection, and associated with advanced muscle-invasive disease at presentation and unfavourable prognosis. [3, 4]

Currently, most patients are studied using CT and entero-vesical fistulisation is generally suggested by the presence

of air in the urinary bladder without catheterisation or recent instrumentation. Other signs include passage of oral or rectally administered contrast medium, mural thickening of the bladder and of adjacent bowel tract, presence of an air-containing extraluminal mass. Fistulas connecting to the right and anterior aspects of the bladder are mostly originated by ileo-caecal diseases; conversely, rectosigmoid processes tend to track to the posterior, superior and left-sided aspects of the bladder. Furthermore, as in this case vesical fistulisation is easily confirmed by conventional radiographic or better CT cystography using iodinated contrast administered through Foley catheter. From the oncologic perspective, invasion of adjacent organs (such as the bowel, female genitalia, prostate and seminal vesicles) represents T4 stage tumour. [4-6]

Outside the setting of CD, ileo-vesical fistulas generally require surgical intervention to relieve debilitating symptoms and prevent further morbidity. Malignancies generally require en-bloc resection. Palliative radiotherapy, diverting enterostomy and permanent bladder catheterisation are reserved for elderly and inoperable patients. The prognosis is poor, particularly in node-positive tumours. Interestingly, albeit the female gender is less likely to develop urinary bladder cancer than males, women tend to present with more advanced disease and have worse survival rates. [3, 4, 7]

Differential Diagnosis List: Squamocellular bladder carcinoma with ileo-vesical fistulisation., Small bowel carcinoma/lymphoma with bladder invasion, Complicated ileal diverticulitis, Colon carcinoma with bladder invasion

Final Diagnosis: Squamocellular bladder carcinoma with ileo-vesical fistulisation.

References:

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Witjes JA, Comperat E, Cowan NC, et al (2014) Guidelines on muscle-invasive and metastatic bladder cancer. *Eur Urol* 65(4):778-92 (PMID: [24373477](#))

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Figure 1

a



Description: The urinary bladder contained abundant nondependent air (without recent catheterisation) and showed marked (1 cm) mural thickening (arrowhead) along its right posterolateral aspect. Note uterus (*). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



Description: The same pronounced mural thickening (arrowheads) involved also the bladder dome, closely adherent to non-dilated small bowel loops. No ascites was present. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

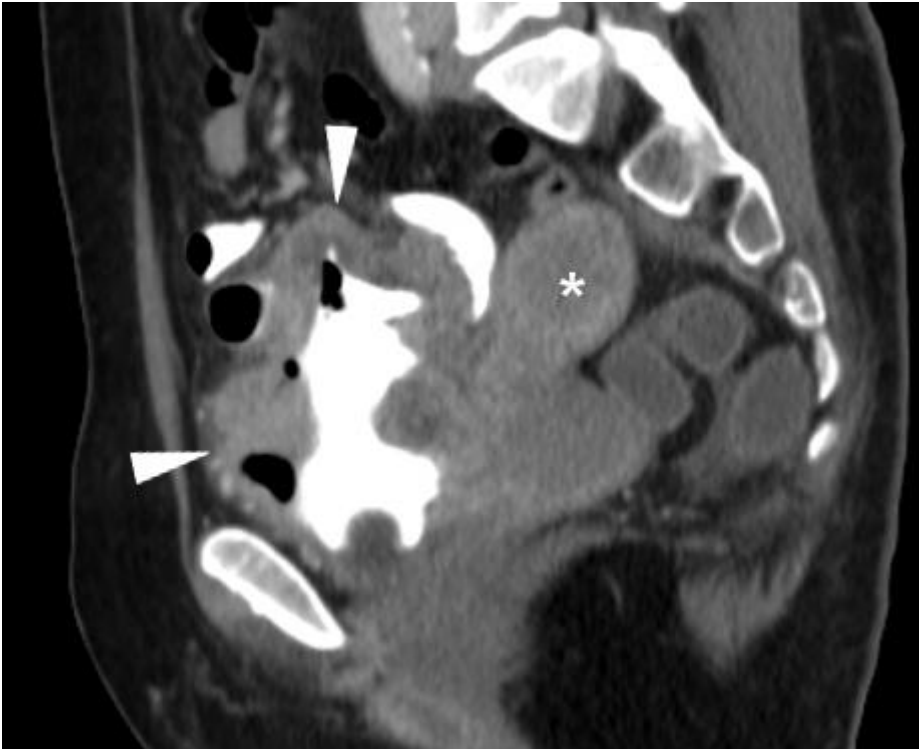
Figure 2

a



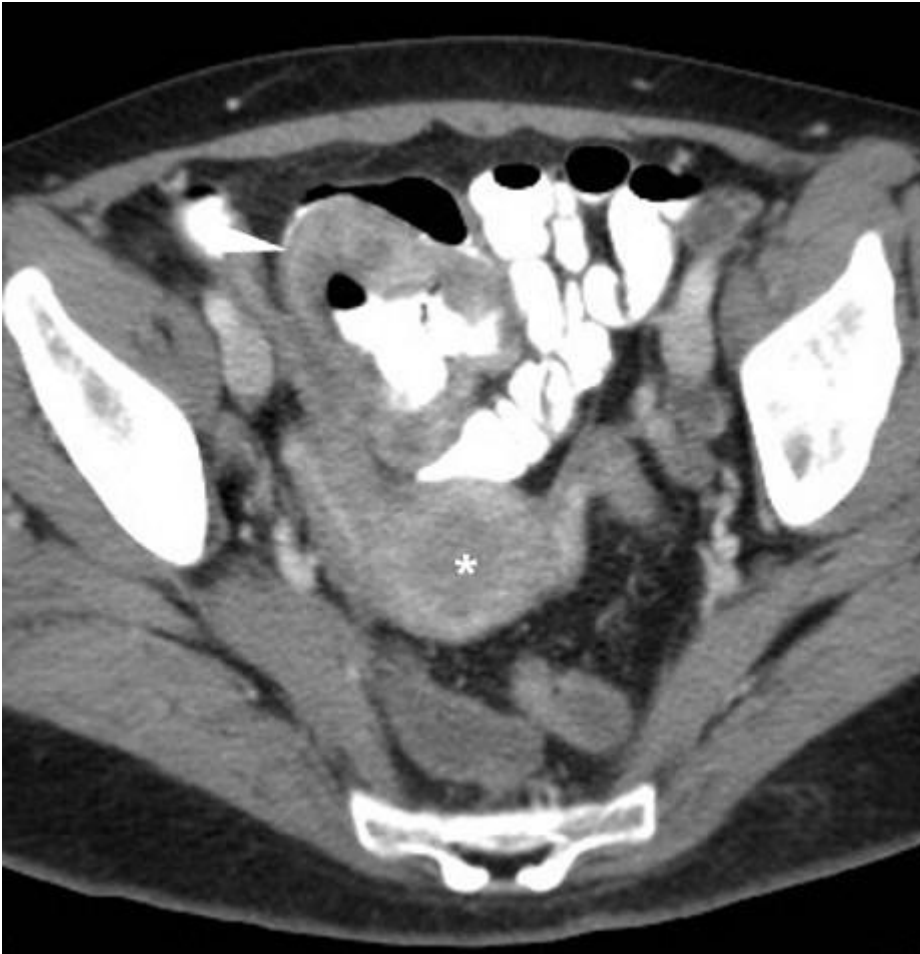
Description: Filled by iodinated contrast medium via Foley catheter, the urinary bladder showed marked mural thickening (arrowheads) along its right and superior aspects. Additionally, contrast was seen also in adjacent ileal loops. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



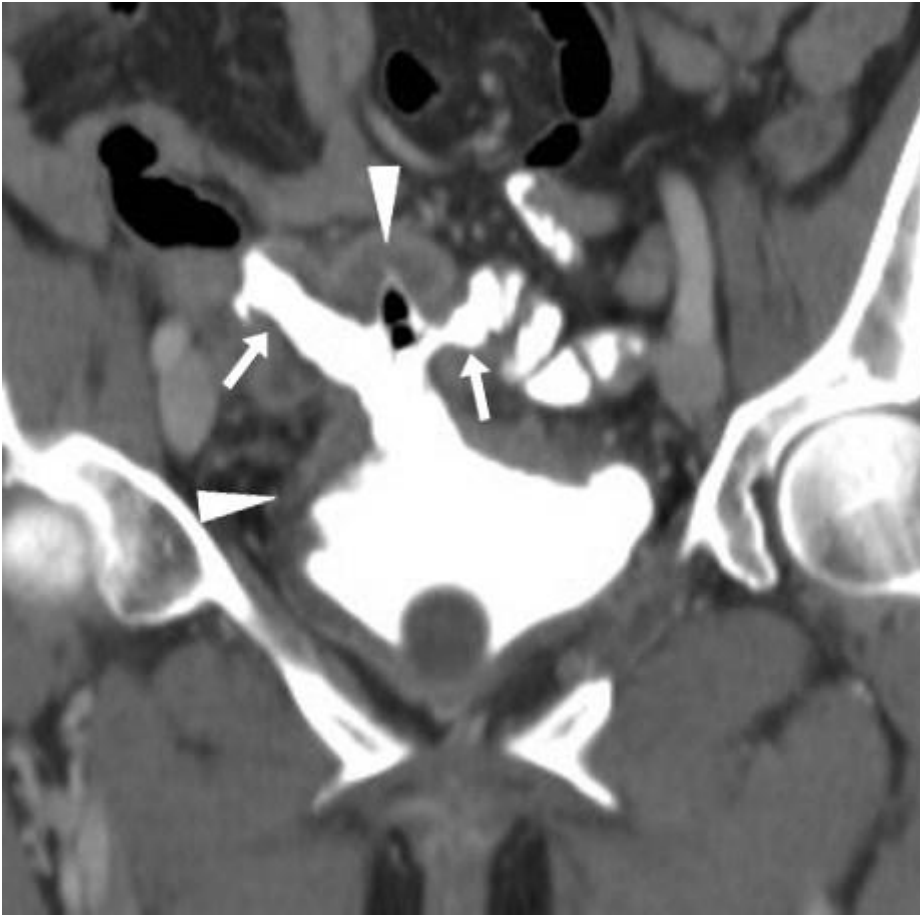
Description: Filled by iodinated contrast medium via Foley catheter, the urinary bladder showed marked mural thickening (arrowheads) along its right and superior aspects. Additionally, contrast was seen also in adjacent ileal loops. Note uterus (*) **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

c



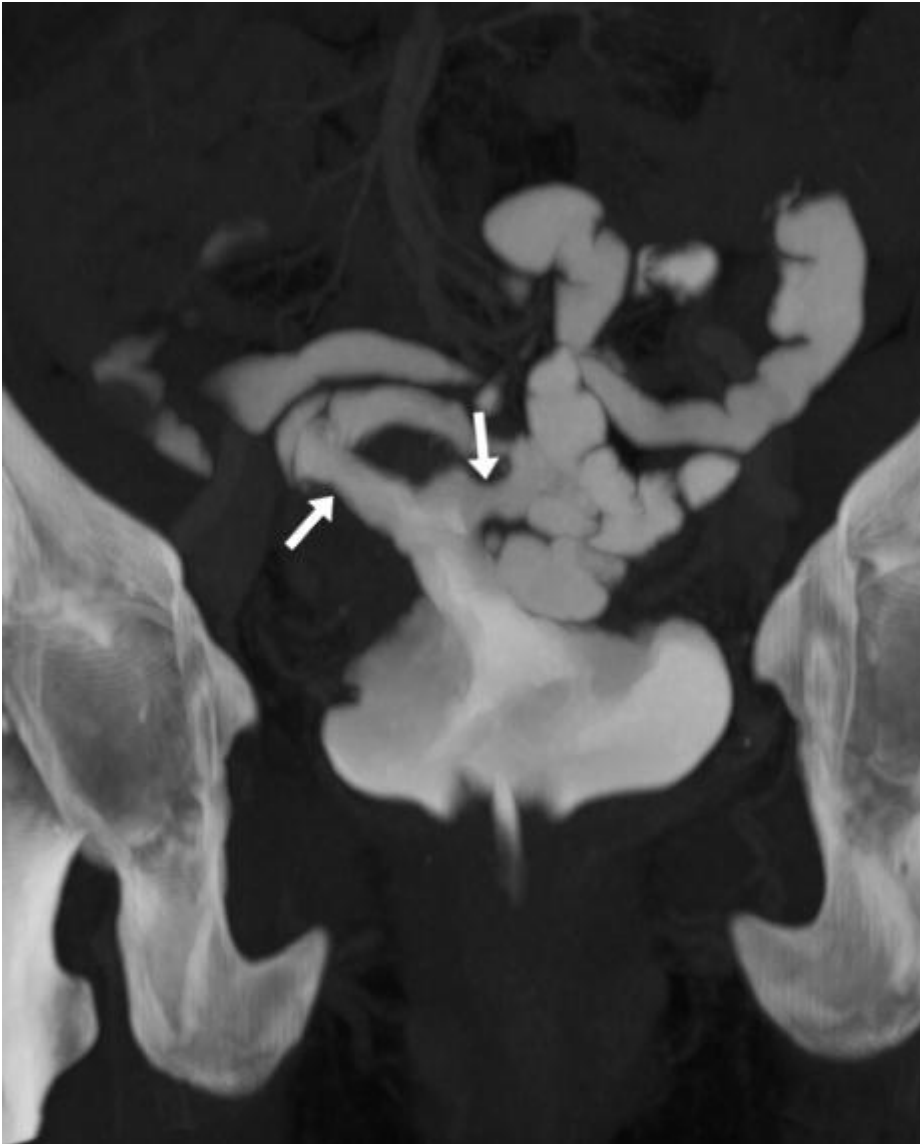
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d



Description: Detail coronal (d) and maximum-intensity projection (e-f) images showed contrast medium flowing through double, wide fistula (arrows) connecting the bladder dome to the ileal loops. Note neoplastic bladder wall thickening (arrowhead). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

e



Description: Detail coronal (d) and maximum-intensity projection (e-f) images showed contrast medium flowing through double, wide fistula (arrows) connecting the bladder dome to the ileal loops.

Origin: Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

f



Description: Detail coronal (d) and maximum-intensity projection (e-f) images showed contrast medium flowing through double, wide fistula (arrows) connecting the bladder dome to the ileal loops.

Origin: Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

Figure 3

a



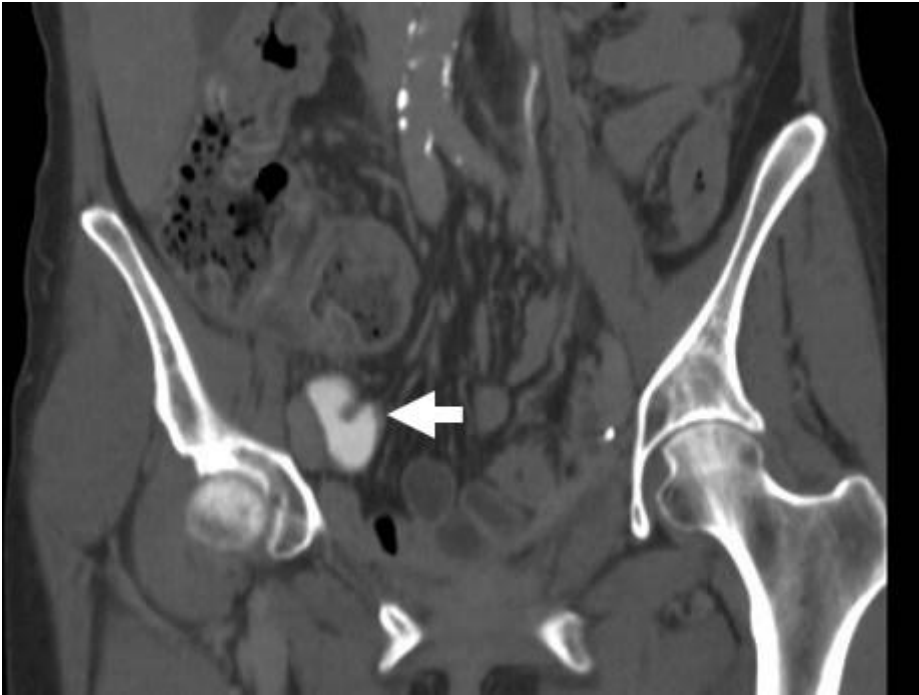
Description: Portal venous (a,b) and excretory (c) acquisitions showed post-surgical status after radical cystectomy en bloc with ileum, lymphadenectomy and Bricker reconstruction. Note ileal conduit (thick arrows). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



Description: Portal venous acquisition showed post-surgical status after radical cystectomy en bloc with ileum and Bricker reconstruction. Note ileal conduit (thick arrow), left-sided lymphocele (+) adjacent to lymphadenectomy staple (thin arrow). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

c



Description: Excretory acquisition showed post-surgical status after radical cystectomy en bloc with ileum, lymphadenectomy and Bricker reconstruction. Note ileal conduit (thick arrow) with opacified urine.

Origin: Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)