

Diffuse peritoneal carcinomatosis and Sister Mary Joseph nodule in ovarian carcinoma — exquisite demonstration of the peritoneal reflections on [¹⁸F]FDG PET/CT

Elizabeth Robinson^{1,2} , Ayah Nawwar¹⁻⁴, Julie Searle^{1,2}, Iain Lyburn^{1,2,5}

¹Cobalt Medical Charity, Cheltenham, United Kingdom

²Gloucestershire Hospitals NHS Foundation Trust, Gloucester, United Kingdom

³University Hospitals Bristol and Weston NHS Foundation Trust

⁴Clinical Oncology and Nuclear Medicine department, Cairo University, Cairo, Egypt

⁵Cranfield Forensic Institute, Cranfield University, Wiltshire, United Kingdom

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Abstract

A case involving a 64-year-old woman with ovarian carcinoma on maintenance therapy who underwent 18-fluorodeoxyglucose positron emission tomography with computed tomography ([¹⁸F]FDG PET/CT) restaging due to rapid cancer antigen 125 (Ca-125) rise. This revealed recurrent disease within the pelvis and large volume, peritoneal carcinomatosis including an avid umbilical deposit, consistent with the rarely seen Sister Mary Joseph nodule (SMJN). This case elegantly demonstrates not only the anatomy of the peritoneal surfaces through avid disease deposition but also highlights the sensitive depiction of disease burden in peritoneal carcinomatosis, including the detection of rare manifestations such as SMJN.

KEYwords: Sister Mary Joseph nodule; peritoneal carcinomatosis; FDG PET/CT

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A 64-year-old woman with a background of recurrent serous adenocarcinoma ovarian cancer underwent half-body (skull base to midhigh) 18-fluorodeoxyglucose positron emission tomography with computed tomography ([¹⁸F]FDG PET/CT) restaging in large part due to her chronic kidney disease and inability to have a contrast-enhanced restaging CT, as might be expected as the standard of care. This was in the context of an asymptomatic rapid rise in cancer antigen 125 (Ca-125) from 18 to 184 units/mL (normal range 0–35 units/mL) over 4 months whilst on maintenance rucaparib therapy. Axial CT, [¹⁸F]FDG PET and fused

[¹⁸F]FDG PET/CT of the pelvis (Figure 1A–C); showed multiple avid tumour deposits close to the vaginal stump from a previous total abdominal hysterectomy (TAH) and bilateral salpingo-oophorectomy (BSO). The deposits were closely applied to the bladder, rectum and mesorectum.

Maximal intensity projection [¹⁸F]FDG PET, axial CT, [¹⁸F]FDG PET and fused [¹⁸F]FDG PET/CT of the upper abdomen (Figure 2A–D) and axial CT, [¹⁸F]FDG PET and fused [¹⁸F]FDG PET/CT of the lower abdomen/pelvis (Figure 2E–G) demonstrate intensely avid peritoneal deposits coating the peritoneal surfaces of the liver, spleen and small bowel respectively, with a heavier burden of deposits in the right of the abdomen. These appearances illustrate the deposition of disease according to peritoneal flow from the pelvis to the upper abdomen with preferential flow on the right, reflected in a higher burden of disease on the subdiaphragmatic surface and pelvic peritoneum here.

Correspondence to: Elizabeth Robinson,
 Cobalt Medical Charity, GL53 7AS Cheltenham, United Kingdom,
 e-mail: elizabeth.robinson51@nhs.net

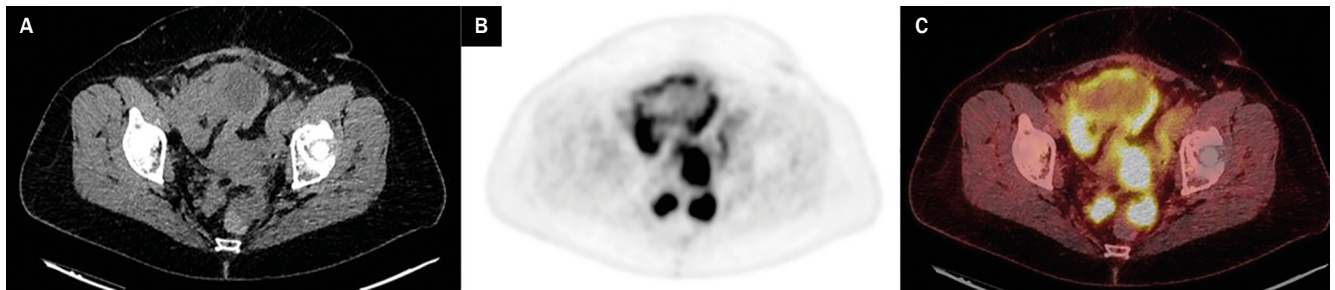


Figure 1. Axial CT (A), [^{18}F]FDG PET (B) and fused [^{18}F]FDG PET/CT (C) of the pelvis show multiple avid tumour deposits close to the vaginal stump from a previous total abdominal hysterectomy and bilateral salpingo-oophorectomy

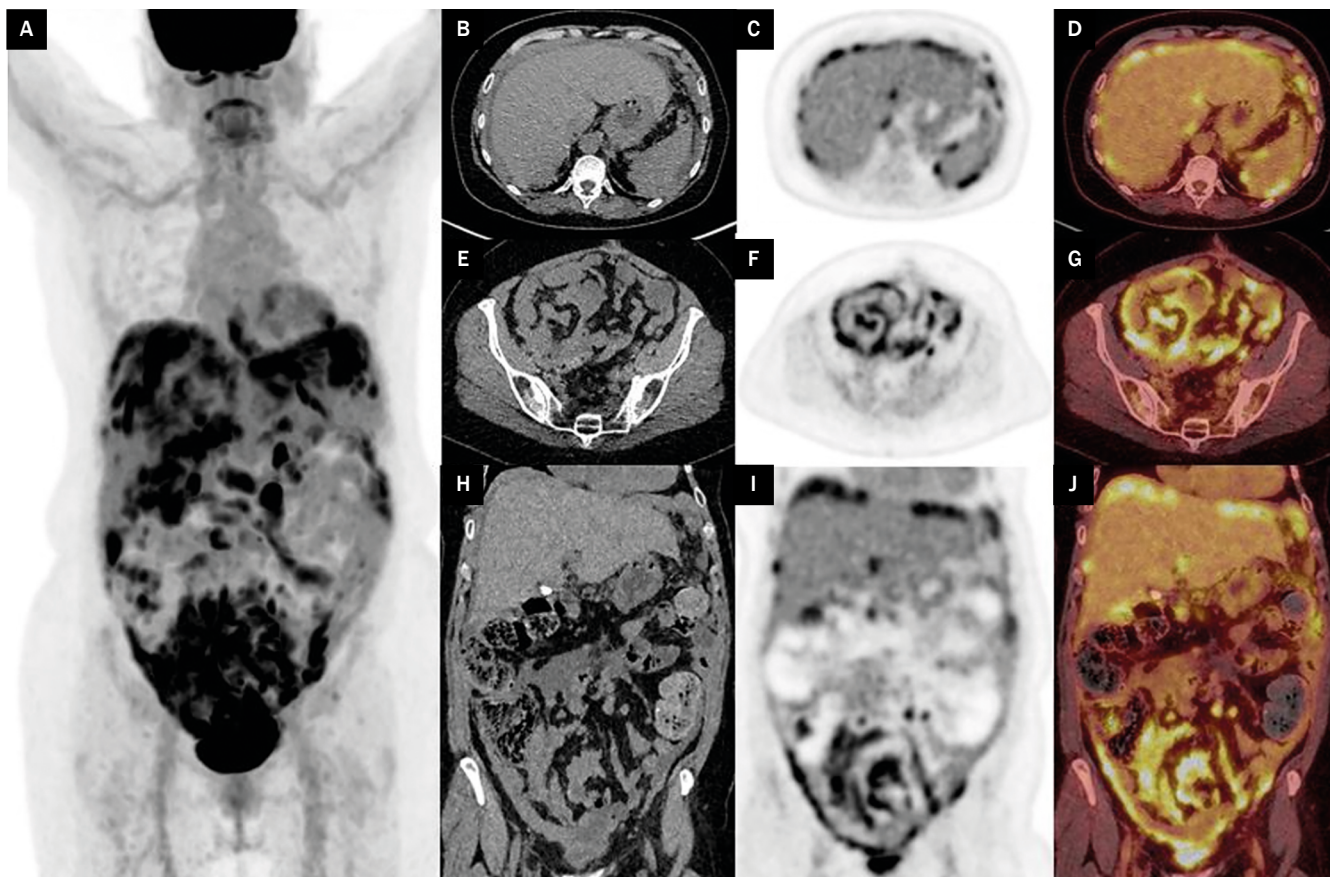


Figure 2. Maximal intensity projection [^{18}F]FDG PET (A), axial CT (B), [^{18}F]FDG PET (C) and fused [^{18}F]FDG PET/CT (D) of the upper abdomen demonstrate intensely avid peritoneal deposits along the peritoneal surfaces with a heavier burden of deposits in the right of the abdomen. Axial CT (E), [^{18}F]FDG PET (F) and fused [^{18}F]FDG PET/CT (G) of the lower abdomen/ pelvis show avid disease coating the small bowel mesentery

In addition, axial CT, [^{18}F]FDG PET and fused [^{18}F]FDG PET/CT of the mid-abdomen (Figure 3A–C) and sagittal CT, [^{18}F]FDG PET and fused [^{18}F]FDG PET/CT of the abdomen (Figure 3D–F); show an avid umbilical lesion in continuity with the diffuse peritoneal carcinomatosis. This illustrates the eponymously known Sister Mary Joseph nodule (SMJN), which is an umbilical nodule resulting from the metastatic spread of an abdominal or pelvic malignancy. These

lesions are comparatively rare, estimated to occur in only 1–3% of abdominopelvic malignancies but are associated with a bad prognosis. Studies and case series have shown that compared to conventional contrast-enhanced CT, [^{18}F]FDG PET/CT offers a higher sensitivity in depicting the disease burden and distribution of peritoneal carcinomatosis, enabling an appreciation of the extent of disease, including rare manifestations such as SMJN as demonstrated in this case.

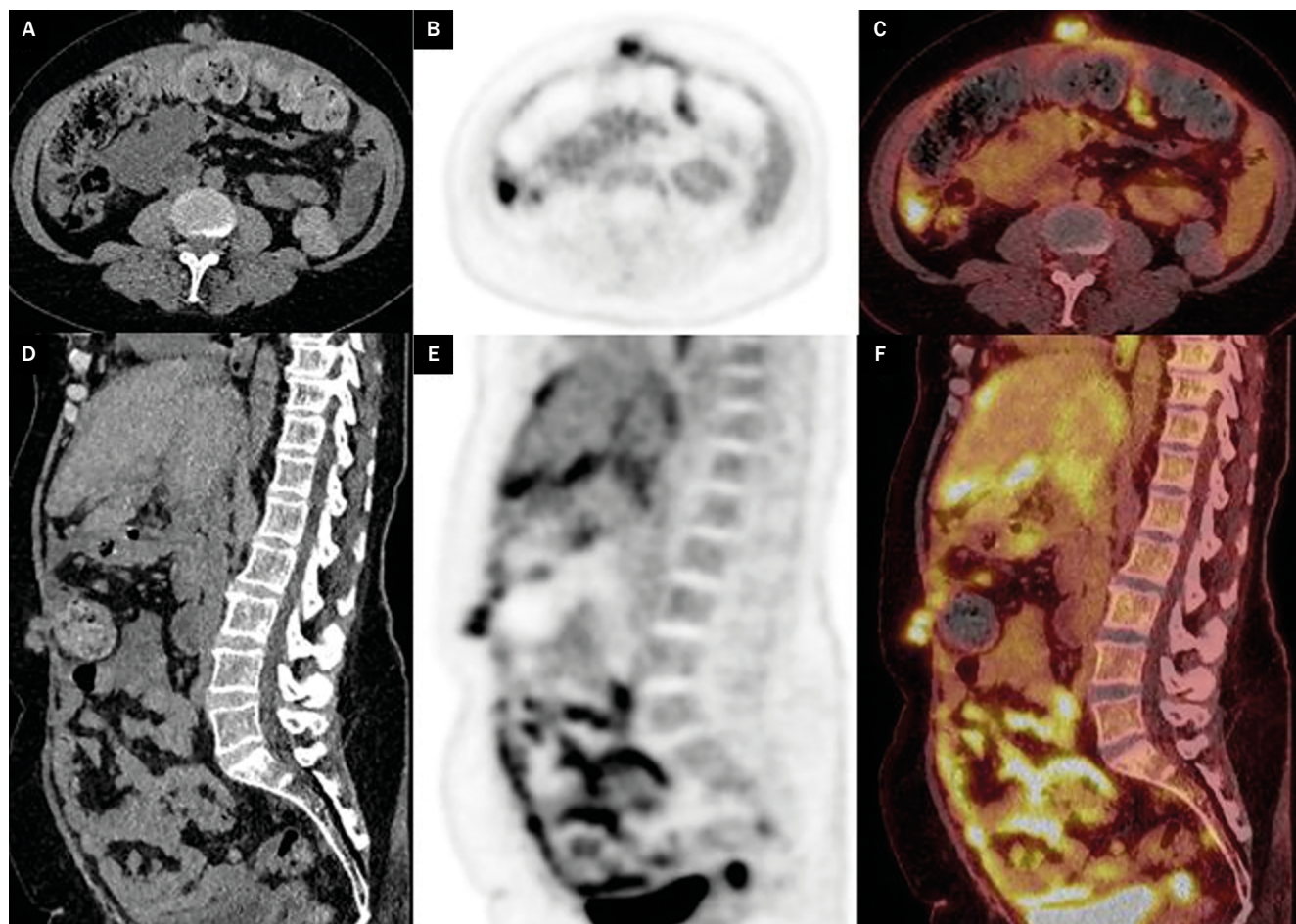


Figure 3. Axial CT (A), [¹⁸F]FDG PET (B) and fused [¹⁸F]FDG PET/CT (C) and respective sagittal images (D–F) show an avid umbilical eponymously known Sister Mary Joseph nodule (SMJN)

Article information and declarations

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Author contributions

ER — drafted the manuscript and revised the manuscript; AN — conceived the design, revised the manuscript; JS — PET/CT reading, conceived the design and revised the manuscript; IL — PET/CT reading, conceived the design and revised the manuscript.

Conflict of interest

All authors disclose no conflict of interest.

Ethics statement

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Supplementary material

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