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LETTER /*Interventional imaging*

Bladder filling to promote subperitoneal hydrodissection during percutaneous thermal ablation of parietal abdominal tumor

Keywords Hydrodissection; Abdominal wall; Cryoablation; Subperitoneal space; Thermal ablation

Dear Editor,

Percutaneous thermal ablation has now multiple indications, including lesions developed in or located immediately beneath the abdominal wall [1—3]. One challenge related to this specific location is the need for safely protect the bowel from thermal damage during thermal ablation of the target [4]. One option is to create a pneumoperitoneum using carbon dioxide or filtered room air to push away the bowel from the target [5]. But with the patient in supine position, the gas has a tendency to move to the supramesocolic compartment, which is not appropriate for lesions located in periombilical or hypogastric areas. The other option is to instillate sterile water in the peritoneum but fluid moves down in the sloping folds of the peritoneum. We herein report an alternative approach, which consisted in filling intentionally the bladder in order to promote the distribution of hydrodissection in the subperitoneal space rather than in the peritoneum.

A 64-year-old woman was referred to us for the curative ablation of a single 3-cm metastasis from ovarian adenocarcinoma located in the anterior abdominal wall, below the ombilicus. The goal was to obtain local tumor control in this patient otherwise free of disease after surgery and adjuvant chemotherapy. Based on imaging features, we thought that it was very unlikely that a hydro or pneumoperitoneum would have successfully displaced the underlying small bowel (Fig. 1). We decided to displace the peritoneal cavity more cranially using bladder filling, in order to perform hydrodissection in the fat of the subperitoneal compartment. Patient gave informed consent for the procedure. Under general anesthesia, an 18-F open-ended Foley Catheter (Coloplast) was introduced in the bladder after proper disinfection. Bladder was then filled with 2 liters of 0.9% saline. Three cryoprobes (IceRod®, Galil Medical Inc) were positioned within the mass under ultrasound guidance. A 22-G spinal needle (Becton—Dickinson) was positioned on the lateral side of the bladder. Hydrodissection was performed using a 5% solution of iodinated contrast material (Visipaque®, GE Healthcare; 270 mg I/mL) in 0.9% saline to assess precisely the diffusion of hydrodissection [6]. Computed tomography (CT) examination showed that saline was located in the subperitoneal space near the injection site. Repeat hydrodissection was performed in the same manner at the posterior and upper pole of the tumor, in order to gain a minimal 15-mm safety distance between the tumor and the small bowel in all planes. A complete double freeze protocol was performed, while injecting continuously saline through both needles. CT examination after completion of the freezing protocol demonstrated a complete coverage of the lesion by the iceball with safety margins, without any unintended congelation of the bowel. The bladder catheter was removed in the recovery room one hour after the end of procedure. Seven months after the procedure, clinical and radiological follow-up did not demonstrate any local recurrence or digestive fistula.

Anatomical spaces of the abdominopelvic cavity are complex entities whose location may vary depending on the position and/or filling of the intra- and extra-peritoneal organs. In particular, the location of the cranial part of the pelvic subperitoneal space is related to bladder filling and can therefore easily be displaced with external maneuvers. This could be helpful when ablating a tumor in the lower anterior abdominal wall.

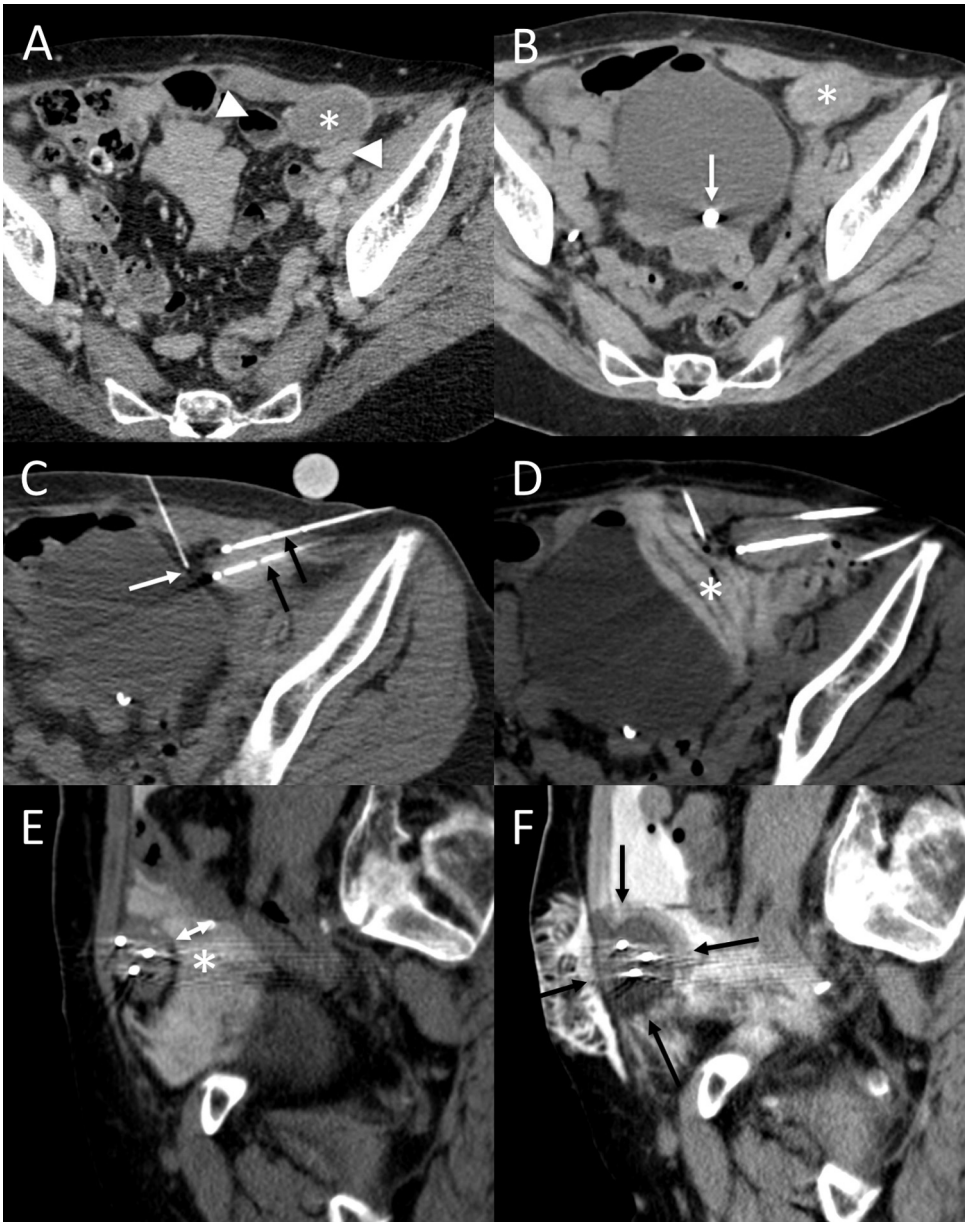

Figure 1. 64-year-old woman with a single 3-cm metastasis from ovarian adenocarcinoma. A. Computed tomography (CT) image in the transverse plane shows a metastasis (asterisk) from ovarian carcinoma located in the anterior abdominal wall. The posterior part of the lesion is in close contact with small bowel loops (arrowheads). B. CT image in the transverse plane shows that filling of the bladder using an open-ended Foley catheter (arrow) has displaced the bowel loops, which are now far away from the metastasis (asterisk). C. CT image in the transverse plane shows a 22-Gauge spinal needle placed in the subperitoneal fat (white arrow) and the cryoprobes (black arrows) inside the metastasis. D and E. CT images in the transverse (D) and sagittal (E) planes show that hydrodissection (asterisk) is diffusing into the subperitoneal space, thereby creating easily a safety distance between the metastasis and the small bowel loops (arrow on E). F. CT image in the sagittal plane shows a complete coverage of the lesion by the iceball (arrows), without any unintended freezing of the small bowel loops.

Disclosure of interest

Julien Garnon is a proctor for BTG Galil and received fees for oral presentations for Medtronic and Canon. Roberto Luigi Cazzato received fees for oral presentations for Medtronic. Afshin Gangi is a consultant for BTG Galil. All other authors declare that they have no competing interest.

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