

Modified hydrodissection for percutaneous biopsy of small lesions: the "marshmallow" technique

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Dear Editor,

We appreciate the original article entitled "US-guided core needle biopsy under assistance of hydrodissection to diagnose small lymph node metastases adjacent to cervical large vessels" published in the March-April 2019 issue, in which the author concluded that the hydrodissection can facilitate the core biopsy of small cervical lymph nodes adjacent to vessels, making the procedure safer and more effective (1).

The advances in imaging modalities improves the detection of small suspicious lesions, making tissue sampling increasingly challenging. This context requires a continuous evolution of interventional radiology, including the improvement of the existing techniques or even the development of new ones.

The organ displacement techniques has been widely used to open pathways for percutaneous procedures, creating safe routes to biopsies, drainages and ablations, avoiding nontarget organ injury (2–4). The most commonly used are hydrodissection and pneumodissection. In the first, fluid (0.9% saline solution or glucose solution) is injected and in the second, gas (ambient air) is injected to displace the tissues. But, pneumodissection is avoided in procedures guided by ultrasonography, since gas is a strong artifact generator.

Knowledge of the physical properties of these materials is important prior to their use. The lower density of gas normally leads to its accumulation in the upper region of the injection site, while liquid tends to accumulate in the lower region. However, in both cases, it is quite difficult to control the diffusion of these substances through the tissues, often leading to accumulation in inappropriate places. Other times, it is necessary to inject a quantity beyond what is desired to obtain the expected result, increasing the procedure time and even making it harder.

In this context, we developed a technique, called the "marshmallow technique", that is essentially a variation of hydrodissection. In this approach, we use sterile lidocaine gel instead of traditional liquid (saline or dextrose), which is a more viscous material, providing an effective, controlled, and stable displacement of tissues. When the procedure is guided by tomography, we can add a small amount of iodinated contrast agent, leading to a greater distinction with adjacent structures and better control over the material dispersion and its absorption. It is indicated for lesions that are proximal to vital structures, especially the small ones, where an inadvertent puncture may have drastic consequences. Conversely, it is contraindicated for patients with hypersensitivity to lidocaine and its derivatives. It is also important to respect the dose limit for the substance, including the amount used in local anesthesia.

Normally, we use up to 10 mL of lidocaine gel. A blend with 9:1 lidocaine and iodinated contrast can be made. To perform the injection, the needle can be positioned adjacent to the structure of interest or, in some cases, the biopsy target can be carefully transfixed and the substance injected posteriorly (Fig.). It is important to perform an aspiration before the injection to avoid infusing directly into a vessel.

In our experience, the marshmallow technique increases the applicability of percutaneous procedures, especially for small lesions which are challenging to access due to the limited space, reducing the possibility of complications.

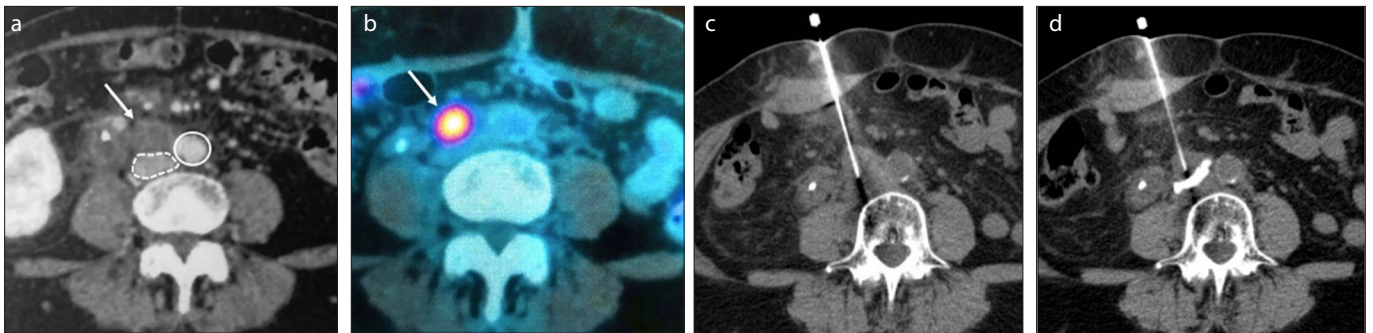


Figure. a–d. A 70-year-old female underwent imaging tests post-chemotherapy for treatment of non-Hodgkin large B-cell lymphoma. Enhanced-CT image (a) shows enlarged retroperitoneal lymph node (arrow) anterior to inferior vena cava (dotted line) and medial to aorta (circle). 18F-FDG PET/CT image (b) shows hypermetabolism of the lymph node (arrow). Unenhanced CT image (c) shows the needle carefully transfixed the lymph node, image (d) shows the result of the blend lidocaine and iodinated contrast agent injection, posterior to the lymph node, increasing the space between the lesion and the vessels. The biopsy was safely performed confirming the diagnosis of tumor recurrence.

Conflict of interest disclosure

The authors declared no conflicts of interest.

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