IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 21, Issue 5 Ser.6 (May. 2022), PP 22-26
www.iosrjournals.org

Technical note: Per-biopsy hydrodissection: No limitation to "hard-to-reach lesions".

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Summary:
Introduction: *Percutaneous radioguided biopsy is an accurate, minimally invasive and safe alternative to surgical biopsy. However, some biopsies of intra-, retro-, or subperitoneal lesions may be difficult to access due to anatomical, imaging, or patient-related factors. They may involve an increased risk of non-target noble organ injury, hemorrhage, or bowel perforation.*
To avoid these complications, several biopsy-assisting techniques have been described in the literature to overcome these challenges: notably, aeroslice or hydrodissection.
In this case report, we describe the interest of using hydrodissection per scannoguided biopsy to facilitate access to a suspicious lesion near the vaginal stump.
The aim of this work *is to evaluate the usefulness and effectiveness of the hydrodissection technique in facilitating the scannoguided biopsy of difficult abdominal-pelvic lesions.*
Conclusion:
Hydrodissection or organ displacement with 0.9% saline or 5% dextrose solution can create safe access routes for targeted abdominal-pelvic biopsies.
Keywords: *Hydrodissection, radioguided biopsy, subperitoneum.*

Date of Submission: 12-05-2022 Date of Acceptance: 27-05-2022

I. Observation:

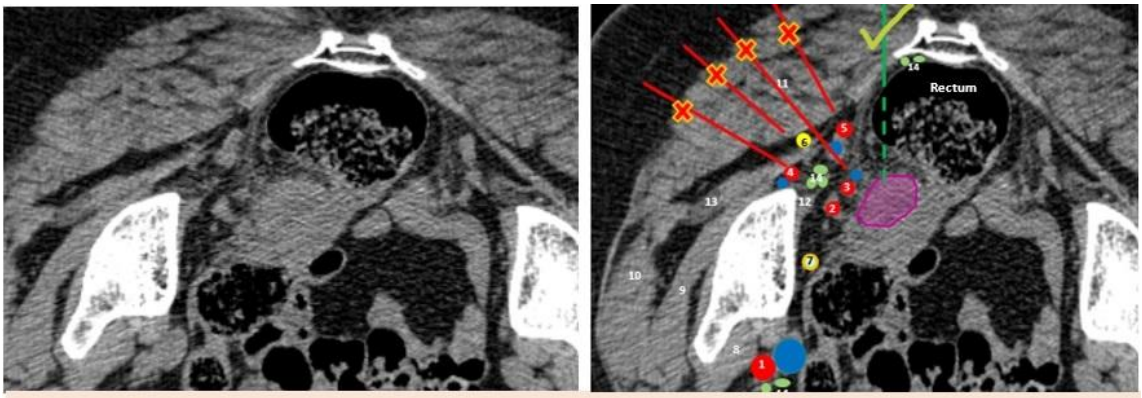
Patient's clinical history:

The authors report the case of a 53-year-old female patient with a history of high-grade serous cystadenocarcinoma of the ovary classified as stage Ib, who underwent total colpo-hysterectomy with bilateral adnexectomy and omentectomy without lymph node dissection followed by adjuvant chemotherapy.

The patient remained under surveillance with a good evolution for two years, until she showed on her follow-up CT scan a tissue nodule opposite the vaginal section, most probably related to a local tumor recurrence.

The tissue nodule was not accessible to clinical examination and thus to a blind percutaneous biopsy, hence the indication for a scan-guided biopsy.

After positioning the patient in the prone position for a possible CT biopsy, the operator was limited by the interposition of the vessels (gluteal, obturator) and the sciatic nerve between the skin and the vaginal stump. The para sacral route was preferred provided that the rectum and its meso were moved medially to free up a safe and precise route to the lesion to be biopsied. (Figure.1)



1- Artère et veine iliaque externe, 2- Artère obturatrice, 3- Artère et Veine pudendale interne, 4- Artère et veine glutéale supérieure, 5- Artère et veine glutéale inférieure, 6- Nerf sciatique, 7- uretère, 8 - Muscle ilio-psoas, 9- Muscle petit fessier, 10- Muscle moyen fessier, 11- Muscle grand fessier, 12- Muscle obturateur interne, 13- Muscle piriforme, 14- Nœuds lymphatiques.

Figure 1 : Pelvic CT scan without contrast in supine position, with location of the lesion in relation to the adjacent vascular and visceral anatomical structures.

Steps of the scan-guided biopsy facilitated by hydrodissection:

After positioning the patient in the prone position (Fig. 2) as well as rigorous asepsis, a needle was introduced into the subcutaneous tissue and 10 ml of lidocaine was instilled for local anesthesia.

Organ displacement and biopsy were performed using the following equipment:

- A 20-ml syringe.
- A 17G coaxial needle guide,
- An 18 G internal trocar.

Under CT guidance; and after positioning the marker needles (figure2.a), the 17G gauge coaxial was introduced, placed in the subcutaneous tissue; and advanced into the subperitoneal space with its tip positioned in the close-up between the subperitoneal fascia and the rectum (figure2.b).

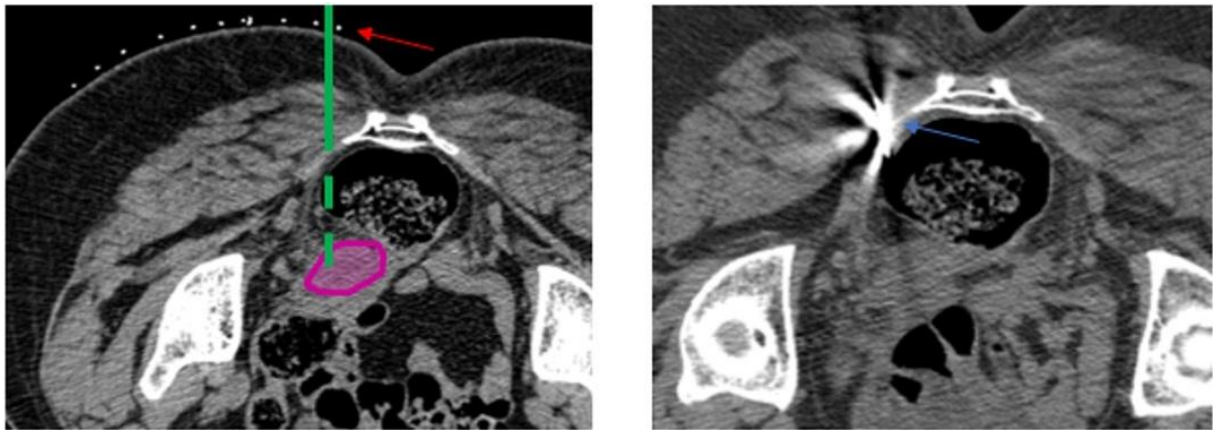


Figure 2 :a-b : scan-guided location and introduction of the coaxial for hydrodissection

Once the position of the coaxial was confirmed by CT scan, a small amount of 0.9% saline was injected, with a CT scan check to ensure that the injection had settled in the subperitoneal space(figure.3).

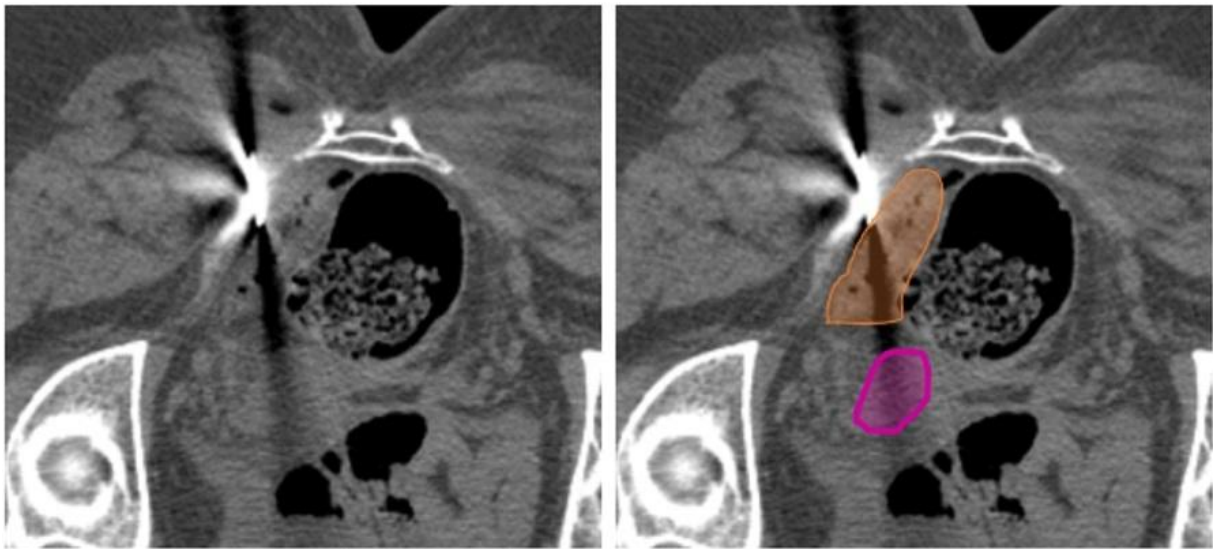


Figure 3 : injection of 0.9% saline into the subperitoneal space (orange space).

Iterative CT checks were necessary to validate that the fluid had sufficiently displaced the digestive structures including the rectum from the vaginal stump, creating a direct pathway to the suspect area to be biopsied.
We used the minimum volume of saline solution necessary for the proper passage of the trocar through the space created by hydrodissection, which is 25 ml.
We chose the modified trajectory between the skin and the vaginal stump to be biopsied, which was the shortest and safest after displacement.
Then, we adjusted the angle of introduction of the coaxial needle, the tip of which was positioned next to the suspected vaginal nodule. The internal guide was then removed and replaced by a cutting trocar used to obtain core samples (Figure.4).

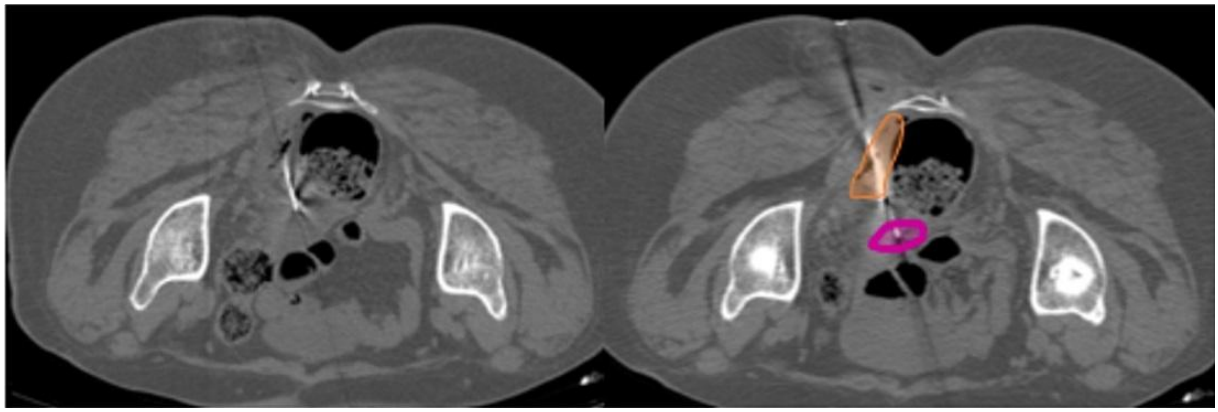


Figure 4 : placement of trocar, and obtaining five good biopsied fragments.

As a result, 03 fragments were obtained of which each sample was generally taken at a different angle of inclination. The biopsied samples were placed in a formalin solution and subjected to histological evaluation.
Once the specimens were obtained, the trocar was removed, and a post-procedure CT scan was performed to assess immediate procedural complications (Figure.5).

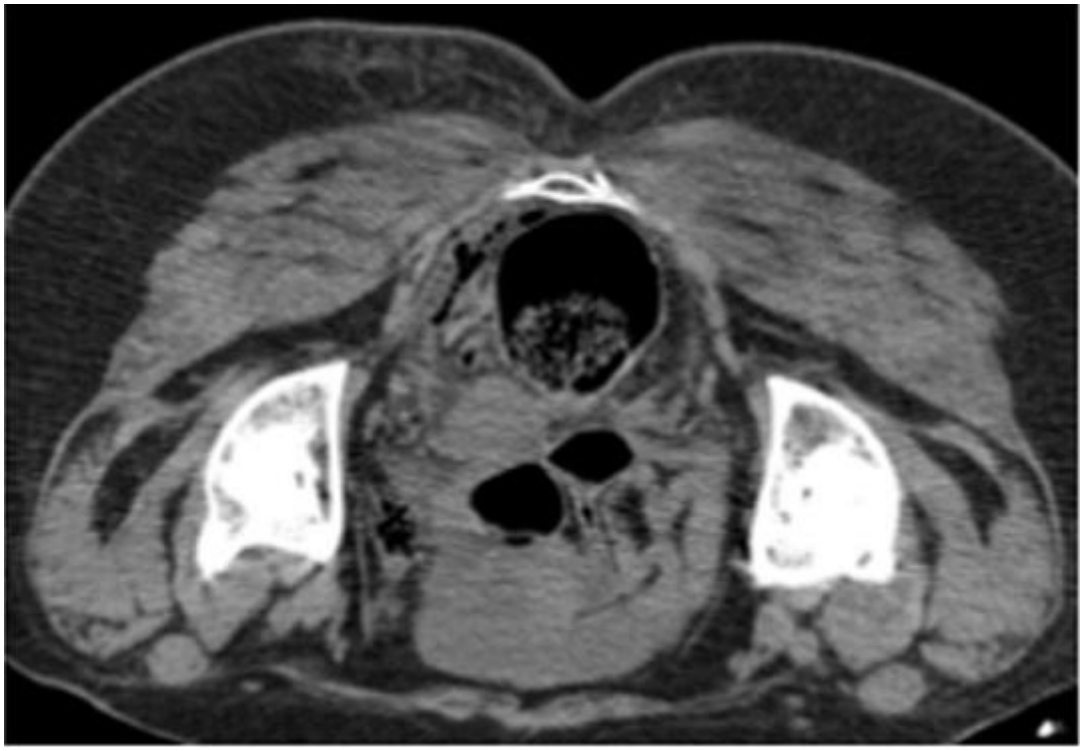


Figure 5 : satisfactory control at the end of the biopsy of the vaginal stump assisted by hydrodissection.
The procedure had taken approximately 30 minutes from patient positioning to trocar removal.

II. Results:

The results of this experiment show that injection of 0.9% saline fluid into the subperitoneal space is highly effective in moving digestive structures away from small lesions that would otherwise be inaccessible for percutaneous biopsy.
The use of the per-biopsy hydrodissection technique has the **following potential advantages**:
- It requires inexpensive equipment available in interventional services ;
- And adds little time to the biopsy procedure.

Technical success was defined as successful displacement of adjacent organs resulting in successful placement of the biopsy device, with a sample obtained without incidental events.
Clinical success was defined as a biopsy sample of diagnostic quality. The biopsy returned in favor of a secondary location of a poorly differentiated carcinoma of ovarian origin.

III. Discussion:

Scannoguided percutaneous biopsy is a widely accepted and commonly performed minimally invasive procedure that allows tissue samples to be obtained for a variety of diagnostic purposes. Although most abdominal masses are readily amenable to percutaneous biopsy, some may be technically challenging for several reasons, including interposition of the lesion with adjacent digestive or vascular structures [1]

There are various procedures that have been described to target inaccessible lesions: these are non-invasive means that can change the position of the organ in the abdomen and thus contribute to safe trajectories as a radioguided biopsy [2].
1- Changes in patient positioning: (supine, prone, oblique): Changing the patient's position may displace mobile structures, such as the bowel, revealing an appropriate window for percutaneous access.
2- The choice of ultrasound or scan-guided modality.
3- The use of anatomical landmarks and intravenous contrast medium,
4- Tilt of the CT tube.
5- A trans-organ approach: Organs considered safe to be crossed: liver, stomach, and vagina.
Several organs should be avoided and not crossed during biopsies or drainage; these organs include the pancreas, spleen, gallbladder, small and large intestine, bladder, uterus and ovaries, prostate, and most blood vessels.
6- Organ removal by Aero, or hydrodissection: Several authors have described various methods using sterile water, 0.9% normal saline, 5% glucose serum, and CO2 to physically move vital structures away from the

lesions to be biopsied by creating windows of access for percutaneous abdominal or pelvic scannoguided biopsies of inaccessible lesions [3.4.5.6.7].

The technical success rate of creating a percutaneous access window after injection of 0.9% saline solution reached 100% in the series of Levis D. [5]

IV. Conclusion:

Knowledge of techniques that allow the interventional radiologist to expand the use of percutaneous scan-guided biopsy in clinical practice is paramount. In particular, the technique of organ displacement by hydrodissection. The latter offers a secure access with a high precision and a minimum of complications.

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Chaymae Hajjar, et. al. "Technical note: Per-biopsy hydrodissection: No limitation to "hard-to-reach lesions ." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(05), 2022, pp. 22-26.