

Video Article

Why and how to proceed to an ultrasound-guided transvaginal drainage of tubo-ovarian abscesses (with demonstrative video)?

Nohuz et al. Transvaginal tubo-ovarian abscess drainage

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Abstract

The treatment of tubo-ovarian abscesses relies on antibiotics associated with surgical management in case of visible abscess, poor clinical tolerance and resistance to medical treatment. The transvaginal ultrasound-guided puncture drainage can be considered as an alternative to the initial laparoscopy and should replace it because of multiple advantages: same success rates, less invasive nature, simple and fast to perform, easy to access, better tolerated by the patient, decreased hospitalization time and less cost. This video article describes and standardizes the essential steps to perform a transvaginal adnexal abscess drainage (step-by-step explanation of the technique in logical sequences) making the procedure ergonomics and easy to learn. Thus, as part of minimally invasive approach, this technique is henceforth considered as an effective alternative and signifies a first-line procedure that can promote a therapeutic de-escalation' strategy.

Keywords: Abscess/surgery; pyosalpingitis; ultrasound-guided; acute salpingitis; adnexal abscess

Introduction

The treatment of the acute phase of complicated tubo-ovarian abscesses relies on antibiotics associated with surgical management in case of visible abscess, poor clinical tolerance and resistance to medical treatment (1). The French College of Gynecologists and Obstetricians (CNGOF) recommended in 2012 that the abscesses greater than 3 cm should be drained, by interventional radiology (preferably by transvaginal) or laparoscopic because of the risk of serious complications in the absence of drainage (2). Transvaginal ultrasound-guided drainage in women without signs of acute abdomen or peritonitis and clinically stable, is henceforth considered as an effective alternative. Indeed, the transvaginal approach combined with antibiotic therapy is efficient for treatment of tubo-ovarian abscess. This combination promotes the effectiveness of antibiotics and therefore, reduces the need for surgical treatment and avoids the potential risks associated with general anesthesia and surgery. It contributes to improve the clinical outcome and consequently, to decrease costs and morbidity (3-4). This video article aims to describe and standardize the essential steps to perform a transvaginal adnexal abscess drainage (step-by-step explanation of the technique in logical sequences) making the procedure easy to learn, ergonomics and safer.

Technique of ultrasound-guided puncture-drainage

The patient, as well as the anesthetic and surgical team, must be warned of the possibility of later iterative punctures or concomitant laparoscopy because of the impossibility of proceeding to the gesture, during the same operative time. Moreover, more than one drainage procedure can be needed due to the tubo-ovarian abscess persistence.

This technique offers a direct route from the vaginal wall into the areas where tubo-ovarian abscesses are usually situated. The procedure is performed under neuroleptanalgesia, local or general anesthesia after the institution of broad-spectrum antibiotics. Thus, it can be considered immediately once the collection is previewed, or be delayed from few hours to few days depending on the clinical context, to "cool" the lesions and allow antibiotic coverage of drainage gesture. This involves tri-antibiotic therapy with cephalosporin, cycline and metronidazole, in the absence of allergy, initially administered intravenously (5).

The patient is installed in a gynecological position. Once the vaginal cleaning with povidone-iodine preparation, a sterile field is set up. The absence of prior urinary catheterization makes it possible, through the ultrasound

identification of the bladder during the procedure, to visualize it. This is important to consider to avoid injury, and have a fixed anatomical landmark. If necessary, a partial emptying, when the bladder is in full repletion, will limit the risk of bladder' injury. A preliminary vaginal touch can palpate the collection, in contact with one of the cul-de-sacs. This makes it possible to feel the abscess and to orientate the ultrasound probe more easily during the puncture' step. An endovaginal ultrasound probe (6 to 10 MHz frequency), covered with a sterile probe cover and gel, is equipped with a guide for follicular punctures (Fig. 1A). Ultrasound scanning is then performed to identify the collection and prepare its puncture (Fig. 1B). Once the collection is visualized (it must be located immediately in contact with the vaginal wall in order to avoid any digestive transfixion), a puncture is performed under permanent ultrasound control (Fig. 2-3 and video). We use a 17 gauge / 1.5 mm puncture-aspiration bevel needle, which distal end is echogenic to follow the path and secure the gesture. A syringe is screwed to the tube connected to the needle. The use of an automatic follicular suction pump allows ergonomics and facilitates aspiration. The aspiration will be performed once the needle has arrived at its destination. If one is dealing with a collection of thick consistency, it may sometimes be useful to instill saline. A catheter can be left in place to permit drainage to continue; however, this possibility appears at risk insofar as the catheter can be displaced. Moreover, it has not been evaluated. That's why we don't use it. At the end of the puncture-drainage, a speculum examination of the vagina and an antiseptic cleaning ends the procedure. The sample is sent for bacteriological analysis in order to possibly adapt antibiotic treatment to identified germs. The limits of this technique lie in the lack of knowledge of a possible adnexal malignant lesion and the impossibility of evaluating the tubal state in patients with a desire for pregnancy, although a laparoscopy performed a few months later and in better surgical conditions, allows the treatment of possible sequelae as adhesions and/or tubal stenosis. Moreover, the interest of this approach compared to that of laparoscopy is not yet established. Thus, a French multicenter randomized trial is in progress (the PACTOL study which aims to demonstrate that the transvaginal way is no less effective than the laparoscopy to treat tubo-ovarian abscesses). This study should be able to answer, in the coming years, questions that are still outstanding as impact on chronic pelvic pain and fertility especially (5).

Conclusion

This technique appears as an alternative to the initial laparoscopic drainage and should replace it because of multiple advantages: identical success rates, less invasive nature avoiding laparoscopy or laparotomy (which may in some cases prove to be complex and a source of digestive wounds, whether it be a conservative surgery or an excisional procedure), simple and fast to perform (the procedure normally takes only 15-20 min), easy to access, better tolerated by the patient, decreased hospitalization time and less cost (Fig. 4, graphical abstract). Thus, as part of minimally invasive approach, it represents a first-line procedure that can promote the therapeutic de-escalation' strategy.

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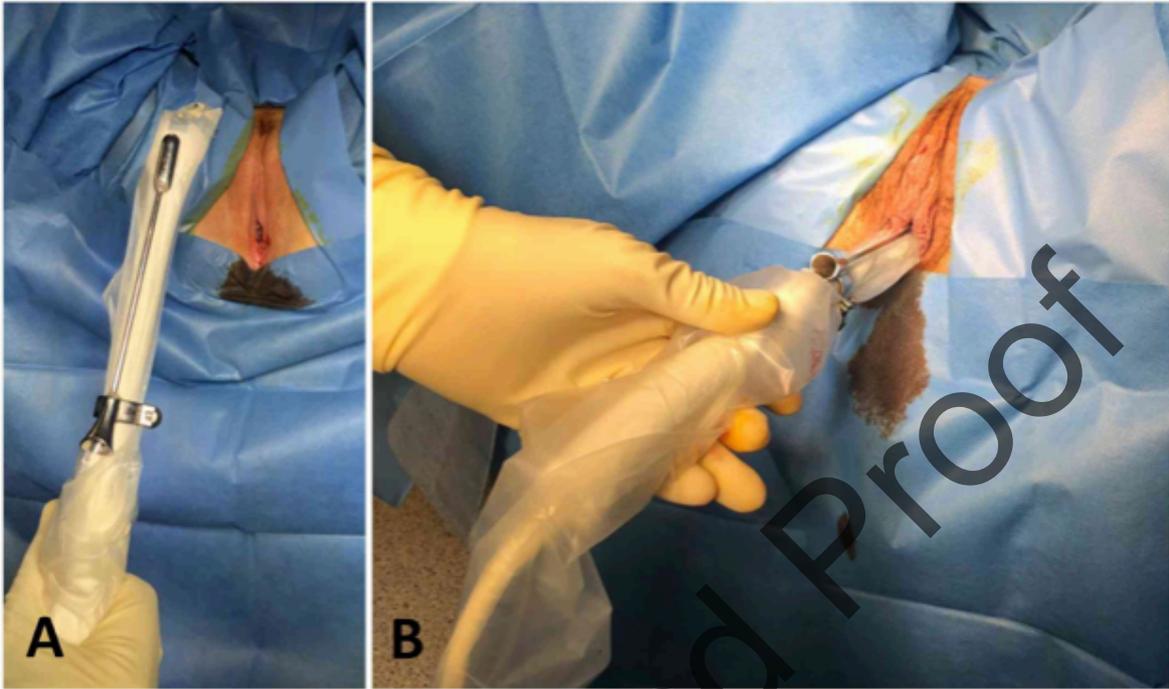


Figure 1. Ultrasound scanning to identify the collection and prepare its puncture.

The endovaginal ultrasound probe is covered with a sterile probe cover and gel and equipped with a guide for follicular puncture (A). Ultrasound scanning permits to identify the collection to be evacuated and located immediately in contact with the vaginal wall (B).

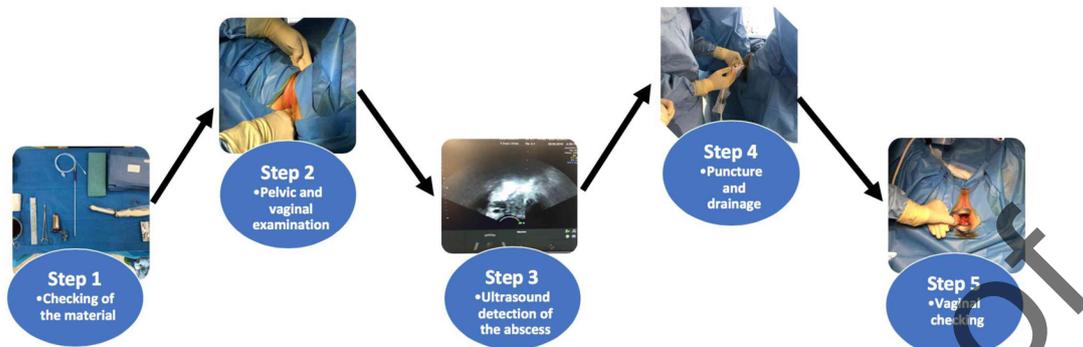


Figure 2: Main steps to perform an ultrasound-guided transvaginal puncture with aspirative drainage
Step 1: Checking of the material.

An endovaginal transducer with an attached biopsy guidance system and needle with a connection tube and syringe are used.

Step 2: Physical examination (vaginal palpation).

Step 3: Ultrasound detection of the abscess and setting of the shooting window.

Step 4: Transvaginal puncture next to the abscess, and drainage-aspiration under ultrasound control.

Step 5: Vaginal checking and cleaning. The aspirated fluid is sent for microbiological analysis.

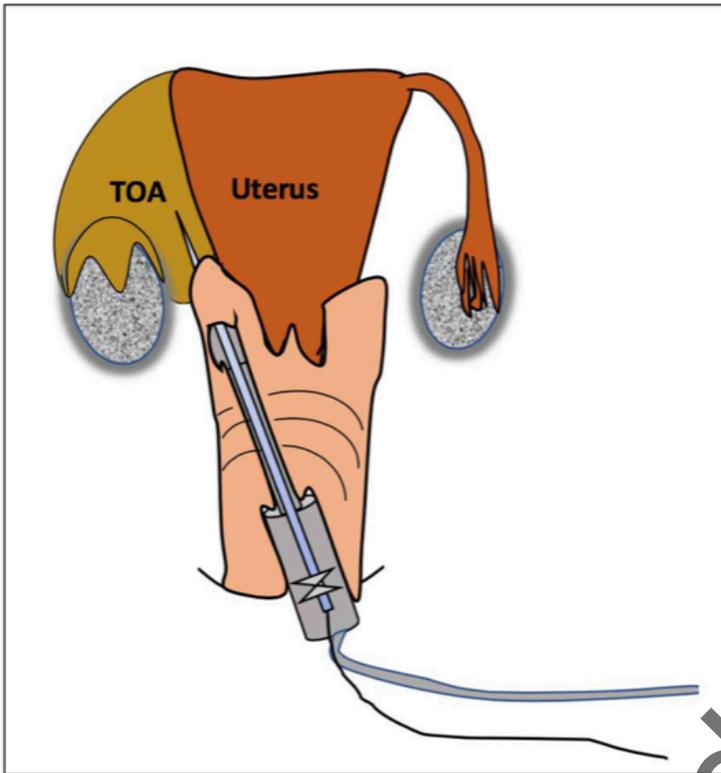


Figure 3: Diagram showing puncture-drainage. Note the proximity of the vaginal cul-de-sac with the tubo-ovarian abscess (TOA).

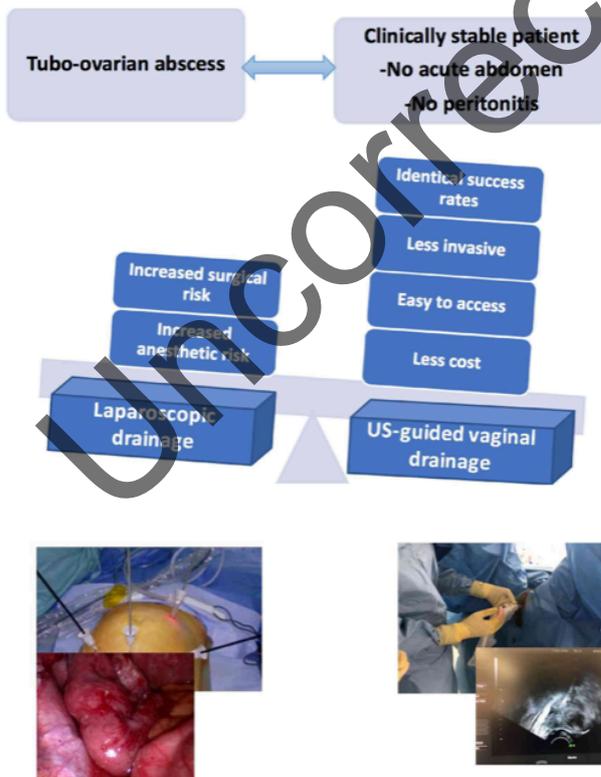


Figure 4: Graphical Abstract

Comparison between laparoscopic and transvaginal approaches of adnexal abscesses.