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Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>**LITERATURE REVIEW****The Role of Ultrasound in Postoperative Evaluation**

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*Affiliations: Sub Division of Gynecological Oncology, Obstetrics and Gynecology Department, Faculty of Medicine, Andalas University, Dr. M. Djamil Central General Hospital Padang**Correspondence: Andi Friadi, email: andi_friadi@yahoo.com, Hp: 085263076356***Abstract**

The role of ultrasonography (USG) in postoperative gynecology is to assess and evaluate postoperative complications. Ultrasonography are the methods which is noninvasive hence minimize the risk during examination and decrease discomfort the patients. In this literature review, we will explain three main topic role of ultrasound to evaluate postoperative condition such as hematoma, injuries due to the urinary tract and residue mass especially for gynecology oncology cases. Hematoma divided into hematoma on the stump of (the vault is hematoma) and subfascial hematoma. The use of ultrasonography also to evaluate injuries at organ of the urinary tract, especially kidney and ureters. There are two methods which are transabdominally and transvaginally to evaluate the ejection of urine that can confirm that there are no obstruction in the ureter. In addition there is a ultrasound can be used to assess hydronephrosis. In cases of cancer, ultrasound can be used to evaluate residue mass in upper abdomen such as peritoneum (peritoneal carcinomatosis) and liver metastases.

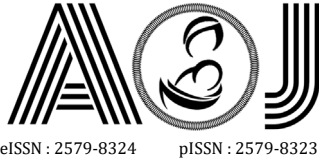
Keywords: *ultrasonography, hematoma, hydronephrosis, residue mass*

INTRODUCTION

Various roles of ultrasound (USG) in post-gynecological surgery conditions, among others, are to assess and evaluate complications that can occur after surgery. This paper will discuss three main topics related to postoperative conditions, namely hematoma, urinary tract organ injury and residue masses.

The problem of stump hematoma (vault hematoma) after hysterectomy is less of a concern. There is still controversy regarding the consequences of a vault hematoma. One literature states that this hematoma is often associated with the incidence of postoperative fever (febrile morbidity).¹ Another form of postoperative hematoma is the subfascial hematoma. This hematoma occurs as a result of tearing (disruption) of the inferior epigastric vessel. Wiener et al also reported that subfascial hematoma was associated with the incidence of postoperative fever.² There is also a literature that refutes the occurrence of postoperative fever associated with vault hematoma. Eason et al. Reported that even large hematomas (more than 35 ml) did not develop postoperative fever. Rosen et al reported the same thing in the case of post-laparoscopic hysterectomy, that there was no relationship between vault hematoma and fever.³

Use of ultrasound to evaluate injuries to urinary tract organs, especially the kidneys and ureters. The use of Color Doppler was reported by Garza et al. To evaluate the ureter.⁴



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Abulafia et al. Used a transabdominal technique to evaluate urinary discharge indicating no obstruction in the ureter.⁵ Rubinstein et al. Used a transvaginal technique to assess ureteral discharge. Hydration in patient preparation is essential in assessing urine flow.^{6,7}

To assess hydronephrosis and hydroureter can use a transabdominal technique. With a transabdominal ultrasound probe, a dilated ureter is followed from the kidney to the pelvis. Hydroureter can be followed by hydronephrosis of various degrees.⁸

Ultrasound is a non-invasive method that minimizes the risk of action and patient discomfort. In the case of cancer, ultrasound can play a role in evaluating the procedure and follow-up if there is a recurrence / residue mass, for example in the peritoneum (peritoneal carcinomatosis) or the liver.⁸

RESULTS AND DISCUSSION

Hematoma

Hematoma that is frequently reported is vault hematoma and subfacial hematoma as one of the postoperative complications. Kuhn et al reported that the incidence of vault hematoma mostly occurred in vaginal hysterectomy. In 50 patients who underwent vaginal hysterectomy, 49 (98%) patients had vault hematoma and 35 (70%) of them had postoperative fever.¹ Wiener et al reported 12 surgery patients with subfacial hematoma, 11 patients had postoperative fever. Rosen et al reported that of the 30 patients who underwent laparoscopic hysterectomy, the mean vault hematoma was 16.3 ml, and only 5 patients had fever.³

Kuhn et al. used a transabdominal probe with a fill bladder technique to assess the vault hematoma (Figure 1). A large vault hematoma is defined when there is a diameter greater than 5 cm.³ Rosen et al. Also used a transabdominal technique, but used three measurements to measure the volume of the hematoma.³ Eason et al. Used the transvaginal technique to assess the hematoma and examined it on days 3-5 postoperatively. This technique can properly assess the size and location of the hematoma.⁹ Antonelli et al. Measured the vault hematoma with a transvaginal technique and did not find an association between the incidence of fever and the hematoma (cut-off exceeding 20 mL).¹⁰

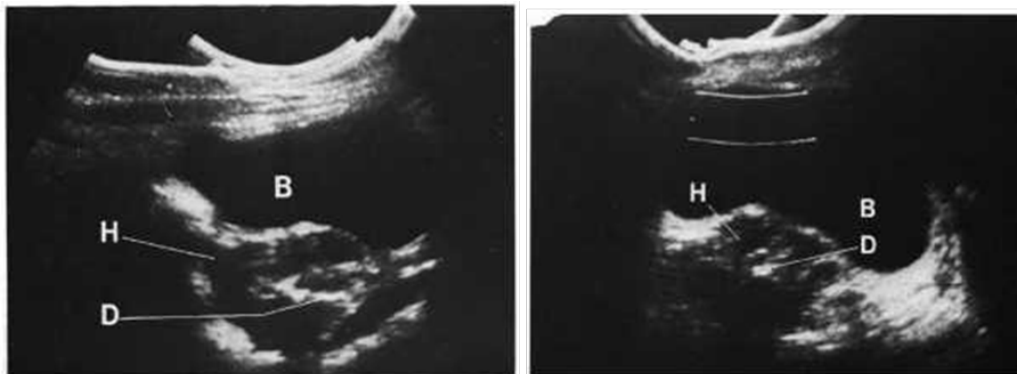


Figure 1. With longitudinal and transverse sections showing a filled urinary bladder (B), hematoma (H), and drain (D)



Figure 2. Vault hematoma, arrow showing location of the hematoma. Haem = haematoma; V.V = vaginal vault; Cath = balloon of indwelling catheter

Wiener et al. Reported that some of the factors associated with subfascial hematoma are vigorous retraction and inadequate hemostasis. The following is the identification of a subfascial hematoma carried out by Wiener et al (Figure 2).²

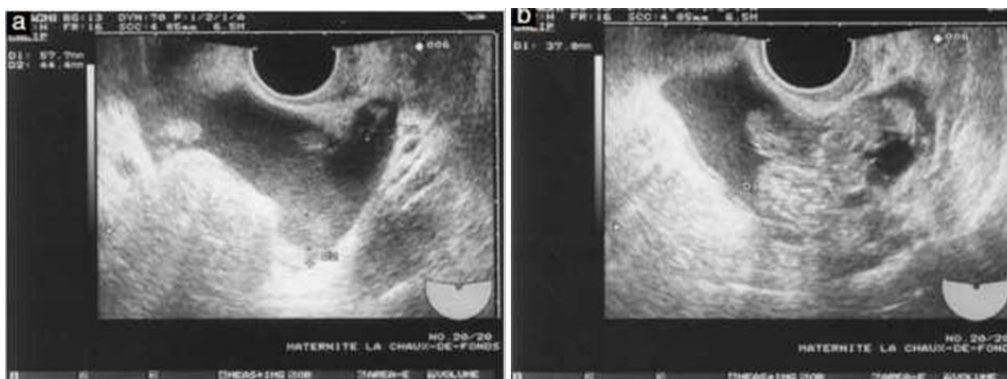


Figure 3. Sagittal and transverse sections of the transvaginal technique showing a large hypoechoic fluid collection in the vaginal stump.

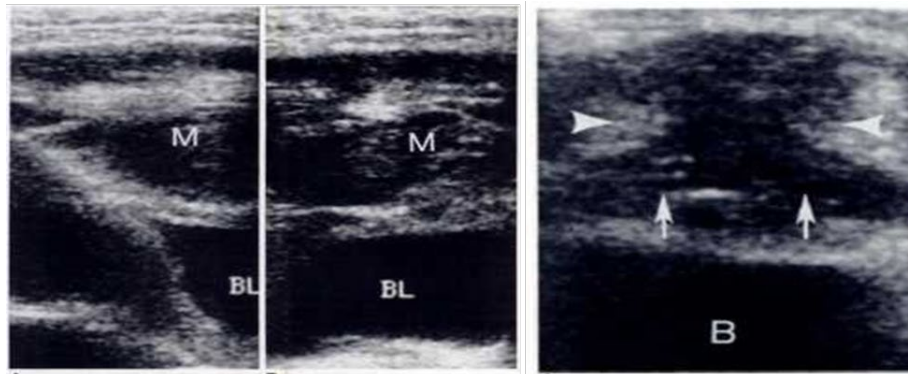


Figure 4. Longitudinal and transverse sections of ultrasound showing a complex mass (M) and bladder (BL). The image shown by the arrow shows a subfacial hematoma extending anteriorly past the rectus abdominis muscle.

Urinary Tract Injury

Color Doppler is used to evaluate the flow of urine (urine / ureteral jets) in the bladder. Normally, urine will appear to come out of both sides of the bladder at intervals of a few seconds. If obstruction occurs in the ureter, there will be no visible flow of urine from the ureter.⁴ Abulafia et al. Used a transabdominal probe by assessing the ureteral jets. If bilateral ureteral jets were seen, both ureters were normal / no obstruction.⁵ Rubinstein et al. Used a transvaginal probe to assess ureteral jets. They reported that the median time for viewing the first burst was 47 seconds (range 13-197 seconds) and 53 seconds (15-156 seconds) for viewing second bursts.⁶



Figure 5. Color Doppler Flow on the transabdominal probe. Curved arrows show bilateral ureteral jets

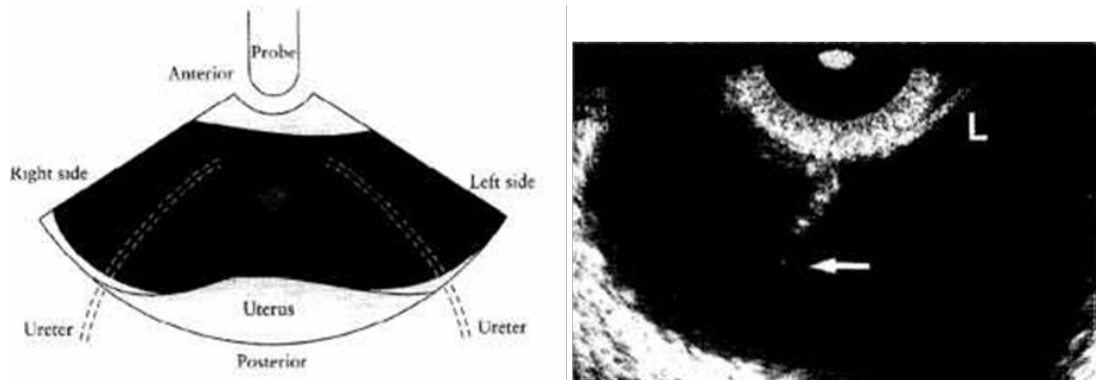


Figure 6. Schematic of the transvaginal technique for assessing urinary flow. Urine bursts can be seen at the top in an anteroposterior direction. Arrows are bursts on the left side.

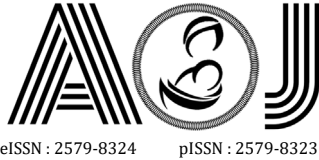
Failure in this examination can occur if hydration is inadequate. The key to this check is adequate hydration to increase the frequency of bursts and accelerate the occurrence of bursts (shorten time detection of the first jet). 500-1000 ml of drinking is given fifteen minutes before the examination. Other investigators even took up to 30 minutes to see the first burst.⁶ The transvaginal method is preferred in cases of abdominal hysterectomy because the use of a transvaginal probe will avoid pressing on the surgical wound area (pain).⁷

Hydroureter and hydronephrosis

With a transabdominal ultrasound probe, a dilated ureter is followed from the kidney to the pelvis. Hydroureter can be followed by hydronephrosis to various degrees. Grade 1 hydronephrosis shows distension in the renal sinuses, grade 2 hydronephrosis shows distension in the renal pelvis and calyces and grade 3 hydronephrosis shows renal parenchymal atrophy.⁸



Figure 7. Grades of hydronephrosis



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Residual Mass

Residues can occur in the peritoneum, lymph nodes and liver. The term "peritoneal carcinomatosis" is used to describe extensive involvement of the pelvic and abdominal peritoneum. Carcinomatosis is usually associated with ascites. The residif image in the liver can be single or multiple and shows infiltration of the liver parenchyma. The difficulty in determining residif in the liver is small size (<10 mm) or the appearance of isoecogenic lesions.⁸

REFERENCES

1. Kuhn R, Crespigny L. Vault Haematoma after Vaginal Hysterectomy: An Invariable Sequel ?. *Ausr NZ J Obstet Gynaec.* 1985;25:59-62.
2. Wiener M, Bowie J, Baker M, Kay H. Sonography of Subfascial Hematoma After Cesarean Delivery. *AJR.* 1987;148:907-10.
3. Rosen D, Cario G. Vault haematoma following laparoscopic hysterectomy. *Aust NZ J Obstet Gynaecol.* 1997;37(2):220-2.
4. Garza R, Dubose T, Hill L, Porter L, Ellzey R. Evaluating ureteral jets with color doppler in adults. *JDMS.* 1991;7:198-200.
5. Abulafia O, Sherer D, Lee P. Postoperative color doppler flow ultrasonographic assesment of ureteral patency in gynecologic oncology patients. *J Ultrasound Med.* 1997;16:125-9.
6. Rubinstein N, Murphy K, Monteagudo A, Tritsch I. Transvaginal grey scale imaging of ureteral jets in the evaluation of ureteral patency. *Ultrasound Obstet Gynecol.* 1997;10:342-5.
7. Tritsch I, Rubinstein N, Monteagudo A, Lerner J, Murphy K. Transvaginal color doppler donography of the ureteral jets: A Method to detect ureteral patency. *Obstet Gynecol.* 1997;89:113-7.
8. Fischerova D. Ultrasound scanning of the pelvis and abdomen for staging of gynecological tumors: a review. *Ultrasound Obstet Gynecol.* 2011;38:246-66.
9. Eason E, Aldis A, Seymour R. Pelvic fluid collections by sonography and febrile morbidity after abdominal hysterectomy. *Obstet Gynecol.* 1997;90:58-62.
10. Antonelli E, Morales M, Dumps P, Boulvain M, Weil A. Sonographic detection of fluid collections and postoperative morbidity following Cesarean section and hysterectomy. *Ultrasound Obstet Gynecol.* 2004;23:388-92.