



Brief Report

Pelvic examination is unnecessary in pregnant patients with a normal bedside ultrasound

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Abstract

Objective: This study examines the necessity of a formal pelvic examination in patients with early pregnancy-related complaints and an intrauterine pregnancy on bedside ultrasound (US).

Methods: Data were prospectively collected on emergency department (ED) patients presenting with early pregnancy complaints and bedside US evidence of intrauterine pregnancy. All patients received a formal pelvic examination with cervical testing for sexually transmitted pathogens. Disposition decisions based on pelvic examination findings were compared with disposition decisions based on ultrasound findings alone.

Results: Over a 13-month period, 50 patients entered the study. Mean estimated gestational age was 8.6 (± 0.4) weeks. Abnormal speculum examination findings included vaginal blood (19 [38%]) and cervical discharge (3 [6%]). Abnormal bimanual findings included adnexal tenderness (6 [12%]) and uterine tenderness (4 [8%]). One patient (2.5%) had a positive antigen test for *Chlamydia trachomatis*. Emergency department diagnoses were threatened abortion (30 [60%]), intrauterine pregnancy (11 [22%]), abdominal pain (8 [16%]), and ovarian cyst (1 [2%]). Three patients (6%) had incidental urinary tract infections. All patients were discharged from the ED. No management changes were made based on the pelvic examination.

Conclusion: In patients with a US-documented viable pregnancy, the pelvic examination did not contribute to the patient's immediate obstetric treatment. Occult cervical pathogens may be present in these patients.

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1. Introduction

The emergency department (ED) is a common source of care for women with early gestational problems. Between 0.7% and 1.6% of all ED visits are related to first-trimester bleeding and account for almost half a million ED visits

annually in the United States [1,2]. A formal pelvic examination is considered a necessary component of the evaluation of these patients but provides only indirect information about the pregnancy through visualization of the cervix and palpation of the uterus and adnexa. This report examines the premise that direct examination of the pregnancy through bedside ultrasonography (US) is a reliable alternative to pelvic examination in patients with early pregnancy-related complaints.

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2. Methods

To evaluate the study hypothesis, a prospective observational ED study was performed at an urban community teaching hospital with an annual ED census of 53,000 visits. Patient entry criteria into the study included a pregnancy-related complaint along with a pelvic examination and bedside ultrasound evaluation by one of the study authors. Pelvic examination included abdominal palpation, speculum evaluation of vagina and cervix, collection of specimens for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* testing, and bimanual palpation of the uterus and adnexa. Pelvic examinations were performed before ultrasound evaluations.

All ultrasounds were performed by clinicians with more than 2 years of experience in independent bedside pelvic US in the ED. Initial obstetric training was provided by the hospital perinatology section for the ED staff when ultrasound was introduced into the department approximately 5 years before the current study. This included one of the study physician assistants and the study emergency physician. The remaining 2 study physician assistants joined the department after this initial training session and were taught bedside US by the ED staff through clinical encounters. The department's ultrasound performance improvement (PI) program is based on individual adverse outcome referrals or ED return visits and is included in the ED's overall performance improvement activities.

All patients were in their first 16 weeks of pregnancy or less. This age limit is the threshold at which pregnant patients with pelvic-related complaints are evaluated directly in the obstetric unit rather than the ED. Only patients with positive ultrasound evidence of an intrauterine pregnancy (IUP) were entered into the study. Positive ultrasound evidence was defined as visualization of a fetus with positive fetal heart activity or an intrauterine gestational sac with a fetal pole or yoke sac. Patients with negative or nondiagnostic ultrasounds at the time of the ED visit were not included in the study.

Selection of the ultrasound approach was at the discretion of the treating clinician. No formal gestational age was used to direct the clinicians as to which bedside US examination to perform initially. All patients receiving both trans-abdominal and transvaginal examinations underwent a trans-abdominal examination as their initial study followed by a transvaginal examination when no IUP was confirmed. Trans-abdominal studies were performed with a 3.5-MHz probe, whereas transvaginal studies used an 8-MHz endocavitary probe. All clinical data were recorded at the time of the ED visit by the clinician treating the patient. Serum human chorionic gonadotropin levels and culture results were obtained from the department electronic record when completed.

Findings on the pelvic examination were then compared with US findings to determine if performance of a pelvic examination would change the immediate management or ED disposition of the patient.

This study was approved by the hospital's institutional review board.

3. Results

Over a 13-month period, 50 patients were entered into the study. The clinical findings of the study patients are summarized in Table 1. The mean estimated gestational age based on patient interview was 8.6 (± 0.4) weeks, with a mean quantitative human chorionic gonadotropin level of 7,247 IU (± 1025).

All study patients were discharged from the ED.

Findings on speculum and bimanual examination were consistent in all cases with the ultrasound diagnosis of an

Table 1 Clinical characteristics

Clinical data	Study results	Number (%)
Basis for estimation of duration of pregnancy	Calculated from reported LMP	29 (58%)
	Estimated from unknown LMP	21 (42%)
Physician estimation of duration of pregnancy	4-6 wk	13 (26%)
	7-9 wk	21 (42%)
	10-12	10 (20%)
	13-16	6 (12%)
Findings on lower abdominal palpation	Nontender	36 (72%)
	Diffuse pelvic tenderness	6 (12%)
	Isolated suprapubic tenderness	5 (10%)
Speculum examination	LLQ tenderness	3 (6%)
	Normal	28 (56%)
	Blood	18 (36%)
	Discharge	3 (6%)
Clot		1 (2%)
Bimanual examination		
Uterine tenderness	Nontender	46 (92%)
	Tender	4 (8%)
Adnexal Tenderness	Nontender	44 (88%)
	Unilateral tenderness	4 (8%)
	Bilateral tenderness	2 (4%)
Adnexal mass	No mass	50 (100%)
Bedside US Study Performed	Abdominal only	25 (50%)
	Transvaginal only	17 (34%)
	Abdominal followed by transvaginal	8 (16%)
US findings	IUP with FHT	42 (84%)
	Gestational sac with fetal pole	8 (16%)
ED diagnosis	Threatened abortion	30 (60%)
	IUP	11 (22%)
	Abdominal pain	8 (16%)
	Ovarian cyst	1 (2%)
Additional diagnoses	Urinary tract infection	3 (6%)
<i>N gonorrhoeae</i> ^a	Positive	0 (0%)
<i>Chlamydia</i> ^a	Positive	1 (2.5%)

LMP, Last Menstrual Period; LLQ, Left Lower Quadrant; FHT, Fetal Heart Tones.

Clinical information on study patients.

^a Specimens only obtained on 40 patients.

IUP. In each patient the ED disposition determined by the physical examination was the same as that supported by the ultrasound examination.

One cervical specimen was positive for *Chlamydia*.

4. Discussion

A pelvic examination has traditionally been considered an integral part of the physical evaluation of female patients with gynecologic complaints [3]. More recently, the value of pelvic examinations in obstetric patients has been called into question [4-6]. The examination itself may be both uncomfortable and embarrassing while providing only indirect evidence of the status of a pregnancy. Two British reports felt the speculum examination in particular was unnecessary in women with antepartum hemorrhage leading to a change in management in only 1.3% of cases [5,6]. The accuracy of the bimanual examination in these patients is also of questionable value. Studies comparing physician findings on pelvic examination to ultrasound findings have found discrepancies up to 36% in uterine size and 32% in evaluation of the ovaries [4,7]. In contrast, the diagnostic accuracy of emergency physician-performed obstetric ultrasounds range from 93% to 96% [8].

In the present study, direct evaluation of the pregnancy by bedside US was found to be equivalent to the physical examination in determining the ED disposition of patients with first and early second trimester complaints. Bedside ultrasound provided all the information required by the ED clinician to determine the immediate management of the patient. More important, few findings on either the speculum or bimanual examination are likely to alter the obstetric management of a patient with a viable IUP demonstrated on US. Even if a cervix is found to be dilated on examination, watchful waiting and not a therapeutic evacuation will be the management course if the ultrasound demonstrates a viable pregnancy.

Ultrasound evaluation also provides immediate feedback to the mother on the status of the pregnancy and fetus. In a direct comparison of clinical evaluation and US in threatened abortion patients, US demonstrated a 0.96 correlation with patient outcome compared with only 0.57 for physical examination [9]. Although the possibility of a heterotopic pregnancy still might exist, the direct visualization of an IUP provides strong evidence for the absence an acute obstetric emergency.

The selection of the initial ultrasound technique in this study was left to the discretion of the treating clinician. Observations exist describing the various gestational ages at which an IUP can be documented using either the trans-abdominal or a transvaginal approach. However, variability in equipment, user skills, patient body habitus, and accuracy of historical gestational age make it impractical to make recommendations as to the initial approach for bedside obstetric US in ED patients. A trans-abdominal ultrasound

should be considered as the initial approach in any patient in whom it is clinically expected that it will provide an accurate view of the pelvic structures. The option of a transvaginal approach always exists if the trans-abdominal study is indeterminate. Similarly, a transvaginal approach may be the first choice in those patients in whom clinical characteristics would argue against the success of a trans-abdominal view.

To the best of our knowledge, this study is the first to report the independent clinical application of bedside US in the ED by physician assistants.

The present study only applies to obstetric problems and does not specifically address non-obstetric sources of pelvic complaints in pregnant patients. In particular, appendicitis and ovarian torsion would be 2 clinical conditions in which a bimanual examination could help define the diagnosis. However, in both these conditions, other clinical findings such as tenderness on abdominal examination or severe pain would prompt the clinician to pursue a non-obstetric source to the problem.

Elimination of the physical examination in the study patients would not have impacted immediate patient care but would have missed the opportunity for cervical screening for other potential problems such as occult sexually transmitted diseases. In the present study, one patient was identified with unrecognized chlamydial colonization, which would have been missed with only an ultrasound examination. If a formal pelvic examination is omitted, then an alternative screening procedure such as vaginal swabs or urine testing will be needed to evaluate patients for sexually transmitted pathogens [10].

5. Limitations

No long-term follow-up was attempted on these patients so the accuracy of either the pelvic examination or the bedside US was not evaluated. However, the purpose of the study was to directly compare the examination and the ultrasound in the immediate care of ED patients, not the predictive value of either.

6. Conclusion

Pelvic examination of patients with first or early second trimester problems do not require formal pelvic examinations to exclude an obstetric problem if a bedside ultrasound demonstrates an IUP. Omission of the pelvic examination will miss the opportunity to screen for occult sexually transmitted diseases.

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