Is bedside ultrasound now a routine part of specialist obstetrics and gynaecology outpatient consultation?

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Abstract

Introduction: Portable ultrasound is extensively used in the delivery suite, and there is anecdotal evidence that ultrasound is increasingly common in routine outpatient gynaecological practice. We could find no published data regarding the prevalence of 'rooms' ultrasound use in outpatient gynaecology.

Methods: A survey instrument was developed containing demographic questions about 'rooms' ultrasound use, and three clinical vignettes regarding dysmenorrhoea in a young woman, bleeding in early pregnancy, and postmenopausal bleeding. For each vignette, respondents were asked whether they would refer for 'formal' ultrasound or rely on their own findings. The anonymous questions were sent to every obstetrician/gynaecologist in private practice in Australia.

Results: 438 surveys were posted and 242 returned (response rate 55%). 226 respondents (93.8%) reported using ultrasound in their consulting rooms, with 201 (88.9%) using transvaginal ultrasound. For the dysmenorrhoea vignette, 59% of respondents would rely on their own ultrasound findings and not refer for additional imaging. For the bleeding in early pregnancy vignette, 91% would rely on their own ultrasound findings and not refer for additional imaging. For post-menopausal bleeding, 54% would rely on their own clinical and ultrasound findings and would not refer for additional imaging.

Conclusion: The majority of practitioners would not refer for tertiary ultrasound if their own imaging revealed apparent normal findings.

Keywords: anonymous survey, gynaecology, outpatient, ultrasound.

Introduction

Ultrasound is a safe and accurate imaging modality that is inexpensive and portable. The portability of ultrasound is indeed a key feature in its popularity, allowing enormous flexibility in the use of ultrasound at the patient bedside and in consulting rooms. Ultrasound is extensively used 'in house' in settings such as the delivery suite, and in reproductive medicine units where ultrasound is indispensable for tracking of ovarian follicle development. There is anecdotal evidence that ultrasound is increasingly common in routine outpatient gynaecological practice, with authors commenting that, "an ultrasound machine is as vital a piece of equipment in routine or emergency gynaecological assessment as the…speculum."[1] This suggests that ultrasound examination may almost be an extension of routine gynaecological examination. There is an established literature regarding the use of ultrasound in Emergency Departments, for assessment of bladder volume after gynaecological surgery, and even as part of obstetric anaesthetic services.[2–5] Yet despite this apparent ubiquity, we could find no published data regarding the prevalence of 'rooms' or 'portable' ultrasound use in routine outpatient gynaecological care.

Materials and methods

A single-page survey instrument was developed and piloted by local specialists. This contained introductory demographic questions: "*Which best describes your practice profile*?" (mainly obstetrics, mainly gynaecology, a mixture of both obstetrics and gynaecology, or, other); and "*How long is it since you qualified as a specialist*?" (within the last 5 years, 5 to 10 years, or, more than 10 years). It then asked about use of ultrasound: "*Do you use 'rooms' ultrasound in your practice*?" (yes, no); and, "*Do you use transvaginal ultrasound in your rooms*?" (yes, no). The referral pattern for non-rooms ultrasound were also sought with the question, "*When referring for 'formal ultrasound,' which is your preference*?" (An obstetrician/gynaecologist sub-specialising in ultrasound, a general medical imaging practice, or, unsure).

The survey then presented three common clinical vignettes:

"A 24 year old woman with secondary dysmenorrhoea. Bimanual examination reveals no abnormality, and speculum examination is normal.

Table 1: Demographic characteristics of respondents and referral patterns.

Which best describes your practice profile:		
Mainly obstetrics	41	(17%)
Mainly gynaecology	20	(8%)
Both obstetrics and gynaecology	181	(75%)
Other	0	
How long is it since you qualified as a specialist?		
Within the last 5 years	23	(9.5%)
Between 5 to 10 years	37	(15%)
More than 10 years	182	(75.5%)
Do you use 'rooms' ultrasound in your practice?		
Yes	224	(93%)
No	18	(7%)
Do you use transvaginal ultrasound in your rooms?		
Yes	201	(83%)
No	41	(17%)
When referring for 'formal ultrasound,' which is your preference?		
An obstetrician/gynaecologist sub-specialising in ultrasound	184	(76%)
A general medical imaging practice	44	(18%)
Unsure	14	(6%)

Table 2: The proportions of respondents referring for additional ultrasound, in each of the clinical vignettes, according to the length of time since gaining Fellowship.

Vignette	**Length of time since gaining specialist fellowship**							
	More than 10 years		Between 5 and 10 years			Less than 5 years		
	n (%)	*P** OR (95% CI)	n (%)	*P**	OR (95% CI)	n (%)	*P**	OR (95% CI)
Dysmenorrhoea	40 (21.9%)	ref.	16 (42.1%)	**0.04**†	2.4 (1.1–5.6)	13 (56.5%)	**0.006**†	3.7 (1.4–10.4)
Bleeding in early pregnancy	142 (77.6%)	ref	36 (94.7%)	0.10	1.27 (0.14–29.6)	21 (91.3%)	0.57	0.74 (0.08–17.9)
Post-menopausal bleeding	59 (32.2%)	ref	20 (52.6%)	0.07	2.52 (0.92–7.07)	14 (60.9%)	0.14	1.8 (0.81–4.01)

* *P* values calculated with Fisher's exact test
† Significance level set at a *p*-value of 0.05

Rooms ultrasound reveals a normal, anteverted uterus and normal ovaries with no abnormal findings."

"A 30 year old woman reports painless light vaginal bleeding at 9 weeks of pregnancy. Speculum examination is normal. Rooms ultrasound reveals a viable 9 week pregnancy, with no evidence of haematoma, and normal ovaries."

"A 56 year old post-menopausal woman reports painless light vaginal bleeding. General appearance is normal. Speculum examination reveals atrophy but normal cervical appearance, and a Pap smear is taken. Rooms ultrasound reveals a small uterus with a thin endometrial lining and small ovaries.

For each of these vignettes, respondents were asked, "*please indicate which answer best fits with your practice in referring for 'formal ultrasound.'*" with the response options:

"I would refer for additional 'formal ultrasound.'"

"I would only refer for 'formal ultrasound' if I could not perform rooms ultrasound."

"Other."

Assuming that patterns of ultrasound use and referral would be inflexible in public hospital settings, we searched the '*Find an obstetrician/gynaecologist*' interactive tool on the Royal Australian and New Zealand College of Obstetricians and

Gynaecologists (RANZCOG) website to identify all specialists listed as offering 'private obstetrics,' 'private gynaecology,' or both. A total of 438 practitioners and their addresses were identified and downloaded from the website, and these formed the study group. The survey was posted with a covering letter and stamped addressed return envelope. Results were extracted and entered in an Excel spreadsheet for analysis. Comparisons were made using 2 x 2 tables for odds ratios and 95% confidence intervals, and *p*-values with Fisher's exact test for relatively small sample sizes. The study protocol received prospective ethics approval from the Human Research Ethics Committee of ACT Health.

Results

A total of 242 surveys were returned yielding a 55% response rate. The demographic characteristics and practice profile of respondents is presented in Table 1. Of the respondents, 226 (93.8%) reported using ultrasound in their consulting rooms. Of those using ultrasound, 201 (88.9%) reported using transvaginal ultrasound. In response the question about referral patterns, 185 respondents (76.8%) preferred to refer to an obstetrician/gynaecologist subspecialising in ultrasound, with 45 (18.7%) referring to a general medical imaging practice and the remainder indicating no preference.

Vignette 1 Dysmenorrhoea in a young woman

For this vignette, 59.1% of respondents reported that they would rely on their own clinical and ultrasound findings and not refer for any additional imaging. Of the remainder, 30.1% indicated they would refer for formal ultrasound, and the balance (24 respondents) were uncertain. However, the responses suggested that the longer the duration since qualification, the less likely respondents were to refer for additional imaging (Table 2).

Vignette 2 Bleeding in early pregnancy

With this scenario, a large majority (90.5%) reported that they would rely on their own ultrasound findings and not refer for any additional imaging. Only 4.5% of respondents indicated they would refer for formal ultrasound, the remainder reporting they were uncertain about what they would do. The duration since gaining Fellowship did not affect referral pattern (Table 2).

Vignette 3 Post-menopausal bleeding

Responding to this clinical vignette, a majority of respondents (53.7%) reported that they would rely on their own clinical and ultrasound findings and would not refer for additional imaging. Of the remainder, 40.5% responded that they would refer, with the balance uncertain. The duration since gaining Fellowship did not affect referral pattern (Table 2).

Discussion

Three commonly-encountered clinical scenarios were presented (threatened miscarriage, post-menopausal bleeding, and secondary dysmenorrhoea), and for all scenarios, the majority of practitioners would not refer for tertiary ultrasound if their own imaging revealed apparent normal findings. Should referral be undertaken, three quarters of respondents reported a preference to refer their patients to an obstetrician/gynaecologist subspecialising in ultrasound rather than a radiologist.

These results suggest that a very large proportion of consultants in private practice rely on their own ultrasound findings to guide practice and management of common clinical conditions. This would suggest that ultrasound has become an extension of clinical examination. The obvious potential benefit for patients is that repeat visits and financial costs are likely to be reduced during care of many clinical conditions.

This evolution of practice has been recognised, but not actually systematically studied, in the past, with authors commenting,

"It may appear efficient that trained gynaecologists complete a vaginal scan themselves while the woman is in the examination chair … rather than have the patient wait for a scan in the radiology department. The clinician should have already formulated a differential diagnosis based on the patient's symptoms and be able to tell or show the woman what is found during the examination."[1]

The potential adverse consequence of such a fundamental change in practice is that medical imaging specialists may become 'disenfranchised' with future radiologists having little incentive to maintain an interest in pelvic gynaecological imaging. Such an outcome might result in, *"loss of any specialist radiology support when a vaginal scan does not give all the answers."*[1]

In view of the evident enthusiasm of specialist obstetricians and gynaecologists for imaging as an extension of clinical examination, and the potential for improved convenience and economic benefits for patients, it seems vital that continued detailed surveillance of practice and referral patterns in gynaecological imaging is maintained.

Conclusion

This study suggests that the majority of specialist obstetrician gynaecologists in Australia would rely on their own ultrasound findings in the very common settings of dysmenorrhoea in a young woman, bleeding in early pregnancy, and post-menopausal, and would not provide secondary referral to subspecialist imaging practitioners.

References

1 Roberts M, Hughes T. Who should perform the ultrasound examinations in gynaecology? *The Obstetrician and Gynaecologist* 2012; 14: 237–42.
2 Al-Shaikh G, Larochelle A, Campbell CE, Schachter J, Baker K, Pascali D. Accuracy of bladder scanning in the assessment of postvoid residual volume. *J Obstet Gynaecol Can* 2009; 31: 526–32.
3 O'Rourke D, Wood S. The early pregnancy assessment project: the effect of cooperative care in the emergency department for management of early pregnancy complications. *ANZJOG* 2009; 49: 110–14.
4 Adhikari S, Blaivas M, Lyon M. Role of bedside transvaginal ultrasonography in the diagnosis of tubo-ovarian abscess in the emergency department. *J Emerg Med* 2008; 34: 429–33.
5 Ecimovic P, Loughrey JP. Ultrasound in obstetric anaesthesia: a review of current applications. *Int J Obstet Anesth* 2010; 19: 320–26.