

Introduction

Endometriosis is a complex clinical syndrome characterized by an estrogen-dependent chronic inflammatory process that affects primarily pelvic tissues, including the ovaries. It has a prevalence of 6%–10%, with peak age between 25 years and 35 years. There are three types of endometriosis; ovarian endometrioma, deep infiltrating endometriosis (DIE), and superficial peritoneal endometriosis (SPE).Ultrasound-Based Endometriosis Staging System (UBESS) is a five-domain ultrasound-based technique that asses for the presence of all endometriosis phenotypes in a systematic manner. RCOG recommends on the stratification of complexity of laparoscopic procedures to three levels of training: level 1, level 2 and level 3.

Aim of the work

The aim of this study was to assess the efficacy of a preoperative ultrasound-based endometriosis staging system (UBESS) in prediction of the level of complexity of laparoscopic surgery for endometriosis.

Subjects and Methods

This study was conducted on 50 women of reproductive age who were recruited from the gynecology outpatient clinic in Shatby university hospital and who were assessed pre- operative by TVUS for endometriosis staging and then correlation with laparoscopic findings was done. All patients were subjected to complete history taking , complete general and pelvic examination and also Women were examined by TVUS using IDEA approach to be categorized according to UBESS and then they were blindly set for laparoscopic surgery for diagnosis and to determine complexity of surgery. Correlation between UBESS and laparoscopic findings was done to assess the efficacy of pre-operative UBESS in predicting the level of complexity of laparoscopic surgery for endometriosis.

Results

Table 1: Assessing the correspondence between UBESS and laparoscopic staging.

	UBESS staging			
Term	Stage 1	Stage 2	Stage 3	p-value
	N (%) (n=20)	N (%) (n=18)	N (%) (n=12)	
Level of complexity by Lap				< 0.001***
Level 1	18 (90)	2 (11.1)	0 (0)	
Level 2	2 (10)	12 (66.7)	1 (8.3)	
Level 3	0 (0)	4 (22.2)	11 (91.7)	
$\alpha = 0.05$. $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$				
P-values obtained from Pearson's chi-square test of independence				

Table 1 addresses the correspondence between the final results of the UBESS and the laparoscopic level of complexity (gold standard). Out of the 20 cases regarded as stage 1 per UBESS, 18 cases (90%) are indeed found to be of level 1 complexity per laparoscopy. As for UBESS stage 2 cases, only 12 out of the 18 cases (66.7%) indeed turned out to be of level 2 complexity. Stage 3 UBESS showed excellent correspondence to level 3 laparoscopic complexity (91.7%). The correspondence between UBESS and laparoscopic complexity assessment proved to be of statistical significance (p-value: <0.001).

Table 2: Diagnostic performance metrics for UBESS as predictor of laparoscopic staging of endometriosis.

UBESS predicting	True positive (N)	True negative (N)	False positive (N)	False negative (N)	Sensitivity (%)	Specificity (%)	Prevalence (%)	PPV (%)	NPV (%)
Lap. level 1	18	28	2	2	90	93.333	40	90	93.3
Lap. level 2	12	29	6	3	80	82.857	30	66.7	90.6
Lap. level 3	11	34	1	4	73.333	97.143	30	91.7	89.5

Table 2 answers the main research question as it provides a detailed assessment of the diagnostic performance of UBESS as a predictor of the laparoscopic complexity of endometriosis. Stage 1 UBESS is an excellent predictor of level 1 laparoscopic complexity, with high sensitivity (90%), specificity (93.3%), positive predictive value (PPV; 90%), and negative predictive value (NPV; 93.3%). Although stage 2 UBESS is not as accurate in predicting level 2 complexity, it still provides high diagnostic performance metrics. Among endometriosis cases with level 2 laparoscopic complexity, stage 2 UBESS is a very good predictor with very good sensitivity (80%), specificity (82.8%), acceptable PPV (66.7%), and excellent NPV (90.6%). Moreover, stage 3 UBESS is an excellent predictor of level 3 laparoscopic complexity, with good sensitivity (73.3%), super specificity (97.1%), excellent PPV (91.7%), and NPV (89.5%). In short, regardless of the complexity of the endometriosis, UBESS proved to be of excellent NPV. For both early and advanced cases of endometriosis, UBESS is also of excellent PPV.

Conclusion

In light of the current findings, we can conclude that the stage of endometriosis yielded by the UBESS significantly corresponds to the respective laparoscopic level of RCOG surgical complexity. UBESS has high sensitivity and specificity values for predicting level of RCOG surgical complexity, especially in early or advanced endometriosis. UBESS has excellent negative predictive value (NPV) in endometriosis cases of different stages.US findings can only be achieved by given competent operators.