

# Comparison of Ultrasound and Laparoscopic Diagnosis in Non-Pregnant Women with Acute Abdominal Pain

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## Introduction:

Computed tomography is frequently employed as the first-line investigation into acute abdominal pain, exposing patients to significant doses of radiation. Yet, ultrasound has no known risks and is widely considered better at evaluating gynaecological abnormalities. This 2019 study examined all laparoscopies performed over a 12 month period of time at Sunshine Coast University Hospital on non-pregnant female patients with acute abdominal pain who underwent a formal ultrasound pelvis performed within one week of surgery

## Methods:

- Inclusion criteria: female, acute abdominal pain <3 months, laparoscopy performed at Sunshine Coast University Hospital between 1/11/2018 and 31/10/2019, and formal ultrasound pelvis performed one week or less prior to theatre.
- Exclusion criteria: current pregnancy.
- Ultrasound diagnosis: taken from the most recent ultrasound prior to surgery.
- Laparoscopic diagnosis: taken from surgeon's operation report.
- Out of 404 laparoscopies, 36 cases met the inclusion criteria. The mean age was 29 (range 14 – 50).
- On laparoscopy, 27 patients were diagnosed with an ovarian cyst, 7 had pelvic inflammatory disease, 3 adhesions, 9 endometriosis, 2 appendicitis and 5 ovarian torsion.

Percentage of cases when:	%
A primary diagnosis was given on ultrasound	75%
Primary ultrasound diagnosis confirmed on laparoscopy (when primary diagnosis given)	57%
Primary ultrasound diagnosis confirmed on laparoscopy (all cases)	42%
Ultrasound findings are concordant with findings on laparoscopy	86%
Correct side of ovarian cyst/mass is identified	81%
Bilateral pathology on ultrasound but unilateral on laparoscopy	6%
No or incorrect side of pathology given on ultrasound	13%

## Results:

This study found that ultrasound findings were concordant with laparoscopic diagnoses in 86% of cases and correctly identified the side of an ovarian mass in 81% of cases. The highest accuracy was with non-torted cysts, which were identified on 96% of ultrasounds, although a cyst was correctly identified as haemorrhagic in only 56% of cases. In patients with pelvic inflammatory disease, ultrasound findings were consistent with the condition in 100% of cases but the diagnosis was only specifically suggested on the ultrasound report in 57% of cases. In this study ultrasound was less effective at identifying pelvic adhesions (0%), appendicitis (0%) and endometriosis (44%).

## Conclusion:

The accuracy of ultrasound in diagnosing the cause of acute abdominal pain varies considerably depending on the pathology. This study suggests that ultrasound should be employed as a first line investigation in women with acute abdominal pain, especially when an ovarian cyst, torsion or pelvic inflammatory disease is suspected. Other studies, however, have found an even higher sensitivity of ultrasound for torsion,<sup>1</sup> but less correlation in the case of pelvic inflammatory disease.<sup>2</sup> A future study could improve the utility of this data by including a larger cohort and by also comparing CT findings when available.

Laparoscopic Diagnosis	Ultrasound Diagnosis Identical (Concordant)
Haemorrhagic or other benign ovarian cyst (not torsion)	52% (96%)
Ovarian torsion	40% (80%)
Pelvic inflammatory disease	57% (100%)
Pelvic adhesions	0% (33%)
Appendicitis	0%
Endometriosis	11% (11%)

## References

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