

Diagnostic Imaging of Ovarian Masses in Pregnancy: A Systematic Review

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OBJECTIVES

Ovarian masses in pregnancy are common, but few diagnostic models are validated for use in this population.

Conservative management is preferable and so accurate non-invasive diagnosis is imperative to guide decision-making.

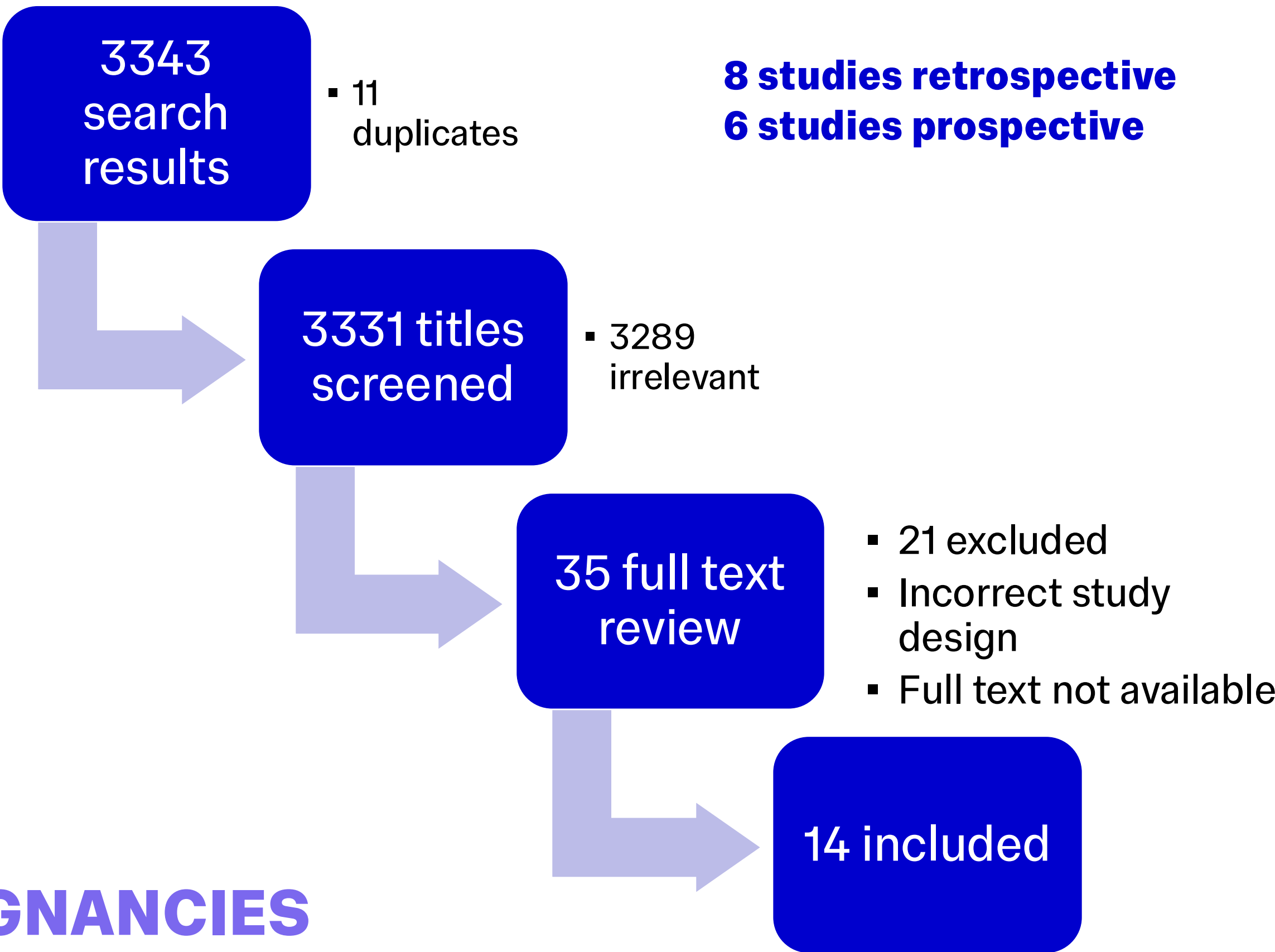
We aim to evaluate the imaging features and performance of current models for risk assessing ovarian masses in pregnancy.

METHODOLOGY

- Prospero-registered systematic review CRD42024555115
- Inception – February 2025
- Downs & Black checklist for risk of bias
- Use of Covidence systematic review software
- Performed as per PRISMA guidance

RESULTS

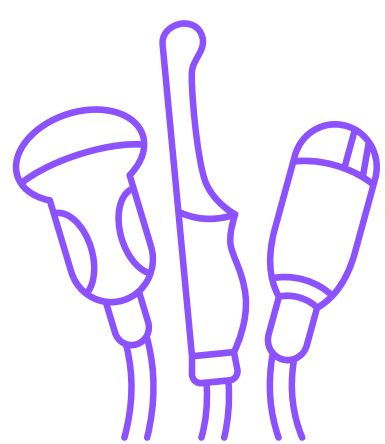
14 STUDIES
1527 PATIENTS
1513 MASSES
67 OVARIAN MALIGNANCIES



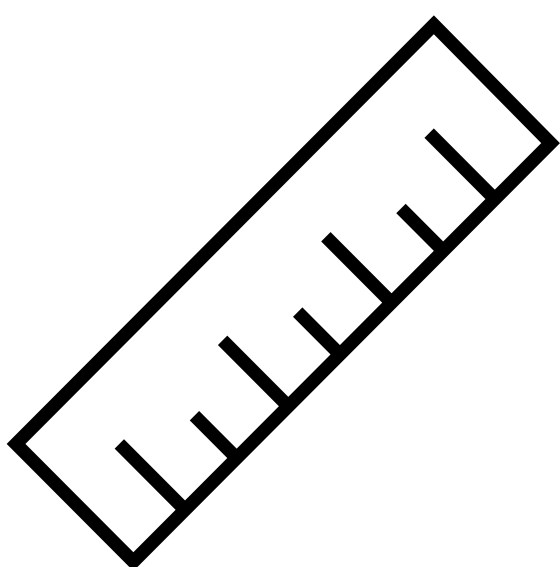
Thirteen studies evaluated US and one evaluated MRI

Most common **benign** lesions were
Simple cysts (34.7%, n = 390/1125),
Endometriomas (25.3%, n = 285/1125)
Mature teratomas (16.1%, n = 221/1125)

Most common **malignant** lesions were
Serous BOTs (23.9%, n = 16/67
Metastases (17.9%, n = 12/67)
Mucinous BOTs 10.4% (n = 10/67).



Data was available for 925 masses (12 studies) described using all or some IOTA terminology



Median diameter **65.5mm**
Most were **unilocular** (58.1%, n = 287/494) or **unilocular solid** (15.2%, n = 75/494)
Content was mostly **anechoic** (49.7%, n = 365/735) or **groundglass** (21.6%, n = 118/735)
Most had a **colour score** of **1** (63.3%, n = 286/452) or **2** (15.3%, n = 69/452).

US FEATURES OF DECIDUALISED ENDOMETRIOMA VS. BOT

- 6 papers described morphology of endometriomas:
- Described as having: ‘**vascular**’, ‘**rounded papillations**’ and ‘**irregular walls**’
 - Three papers described **regression of cyst size through gestation**
 - One paper reported a **decrease in size of solid components** through pregnancy

- Quantitative Data (3 papers):
- Average maximal diameter **62.4mm** (17.0 – 121.0mm)
 - Most **unilocular-solid** (53.4%) or **multilocular-solid** (22.4%)
 - Most had a **single papillation** and 84.4% had vascular flow, with a **colour score of 3**
 - Most had **groundglass** or **low-level content**

The **diagnostic models** applied were: IOTA ‘two step strategy’ with ADNEX (n = 1), IOTA Simple Rules with varying cutoffs (n = 6), IOTA ADNEX alone (n =1), Sassone (n = 1), Lener (n = 1) and a combined model (n = 1). **Models performed better at identifying benign masses.**

CONCLUSION

Ultrasound is an effective tool for assessing ovarian lesions arising in pregnancy. IOTA-based models perform with a high negative predictive value. Decidualised endometriomas had distinct imaging features, with postpartum resolution aiding reassurance. Future research should refine diagnostic models to improve differentiation between benign and malignant cysts with solid components.

- 4 studies applied diagnostic models
- 4 provided longitudinal data
- 6 used descriptive terminology with expert opinion

