IMAGENDO®: Non-Invasive diagnosis of endometriosis using machine learning

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IMAGENDO

1. Background:

Endometriosis
- Causes period pain
- **Normalised** symptoms delay diagnosis
- **Fear** of malignant causes.

- **No accessible** way to diagnose.
- **Barriers** in diagnosis
- Not identified by **standard transvaginal ultrasound**
- **Specialist skills** are needed.

2. Aim:

IMAGENDO aims to remove this surgical diagnostic barrier by developing a novel, accessible, cost-effective, non-invasive diagnostic tool for endometriosis, using an Artificial Intelligence (AI) algorithm.

3. Methods:

- **Expert, interdisciplinary** team
- Deliver **a new diagnostic tool for endometriosis**,
- Create AI algorithm combining diagnostic capacity of endometriosis TVUS and endometriosis MRI scans
- **Determine the probability of endometriosis**,
- Optimising and validating the **diagnostic accuracy** of Imagendo algorithm

4. Results:

- Strong social media recruitment
- **Retrospective:**
- 200 patients (eMRIs), 200 patients (eTVUS)
- **Prospective:** 115 patients (imaging and surgical data)

Area under the curve = 97%
Accuracy = 95%

Table 1: "Sliding sign " test set

	Positive Detection	Negative Detection
Positive by experts	13	7
Negative by experts	2	174

Maicas G, et al. **Deep learning to diagnose Pouch of Douglas obliteration using ultrasound sliding sign**. Reprod Fertil. 2021

5. Conclusions:

IMAGENDO will:
- Reduce hospital admissions and laparoscopic surgery;
- Reduce diagnostic delay,
- Improve mental health by validating patient's pain experience;
- Instigate preventative interventions for chronic pain and infertility;
- Improve compliance with timely, targeted, effective treatments.

https://imagendo.org.au/   **https://www.facebook.com/Endostudy**

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