IMAGENDO®: Combining ultrasound and magnetic resonance imaging using artificial intelligence to reduce diagnostic delay.

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

IMAGENDO

3. Methods:

- **Expert,** international **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 diagnosis**,
- Optimise and validate the **diagnostic accuracy** of Imagendo algorithm

4. Results:

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

Table 1: "Sliding sign " test set

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

Area under the curve = 97% **Accuracy = 95%**

- Strong social media recruitment
- Community engagement with health professionals and consumers
- Translation
- **Retrospective data:**
  - Private: 200 eMRIs, 1000 eTVUS
  - Public: 8984 MRIs
- **Prospective data:**
  - 125 patients (imaging and surgical data)

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.

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