

BACKGROUND

- Infertility is defined as failure to conceive after 1 year of unprotected intercourse. IVF involves fertilising eggs in a lab and placing embryos into the uterus via embryo transfer (ET) using a catheter through the cervix.
- UK live birth rate (LBR) per ET remains low (~27%; HFEA 2023).
- The clinical touch technique (CTT) has largely been replaced by ultrasound-guided ET (USGET). NICE (2004) recommended USGET due to improved outcomes (OR 1.47; 95% CI 1.30–1.65) (Brown 2016, Tyler 2022), though a large RCT found no LBR benefit (Drakeley 2008).
- ET techniques vary across the UK including catheter type and ultrasound approach—transvaginal (TVUSG) versus transabdominal (TAUSG).

RESULTS

Total of 145 ET procedures were analysed.

- 90 were frozen embryo transfer (FET) cycles and 55 were fresh embryo transfer cycles
- Mean age of patients was 34.6 ± 4.5 years.

A chi-square test showed a significant association between ET approach and pregnancy outcome, $\chi^2(2, N = 145) = 7.95, p = .019$.

Post-hoc analysis showed TAUSG with a non-echogenic catheter had a significantly lower positive pregnancy rate compared to both TVUSG and TAUSG with an echogenic catheter.

No significant difference was observed between TVUSG and TAUSG with an echogenic catheter.

AIM: To evaluate whether the USGET approach (TVUSG vs TAUSG) and catheter echogenicity influence positive pregnancy test rates following ET.

In our fertility unit, ET techniques vary among practitioners:

- TVUSG with an echogenic catheter
- TAUSG with an echogenic tip
- TAUSG with a non-echogenic tip
- CTT (without ultrasound)



Fig 1. ET catheter used for TVUSG ETs

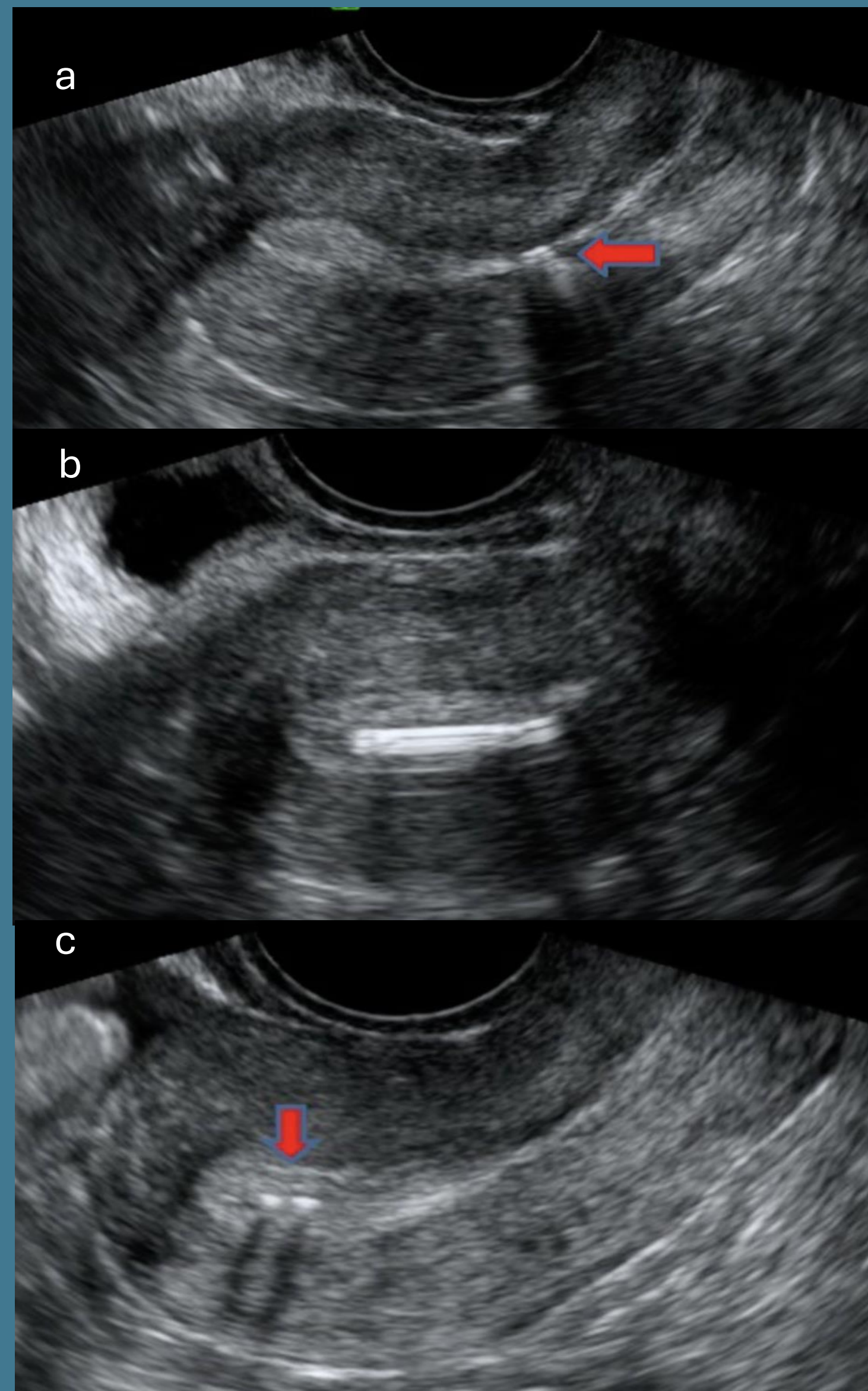


Fig 2. TVUSG ET. a) Echogenic tip of outer guide b) Inner non-echogenic catheter containing embryo c) Post ET view

Ultrasound Method	No of ET procedures	Positive PDT	% Positive
TVUSG	91	49	53.8
TAUSG echogenic	43	20	46.5
TAUSG non-echogenic	11	1	9

Table: Results of positive PDT rates by Ultrasound Guidance Method

METHODS

- Positive pregnancy test rates were examined for all USGETs performed by a single practitioner between March and December 2024 (n=145)
- Including fresh and frozen embryo transfer (FET) cycles
- The three ET approaches used at our clinic were analysed:
 - TVUSG ET
 - TAUSG ET with an echogenic tip catheter
 - TAUSG ET

ETs without ultrasound guidance were excluded. The primary outcome was positive pregnancy detection test (PDT) following the ET procedure

CONCLUSION

The method of ET significantly affects pregnancy rates, with TAUSG ET using a non-echogenic catheter showing a notably lower success rate. TVUSG ET and TAUSG ET with an echogenic catheter have comparable, higher pregnancy rates.

LIMITATIONS

The relatively small sample size may limit the generalisability of the findings.
Lack of randomisation introduces a risk of selection bias.
Other factors, such as embryo quality, patient age, and underlying fertility conditions, could influence results and should be considered when interpreting the findings.



Fig 3. Echogenic ET catheter used for TAUSG ETs



Fig 4: TAUSG ET with an echogenic catheter²

References:
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Images from: 1. Kitazato manufacturers website 2. Cooper surgical Fertility Solutions