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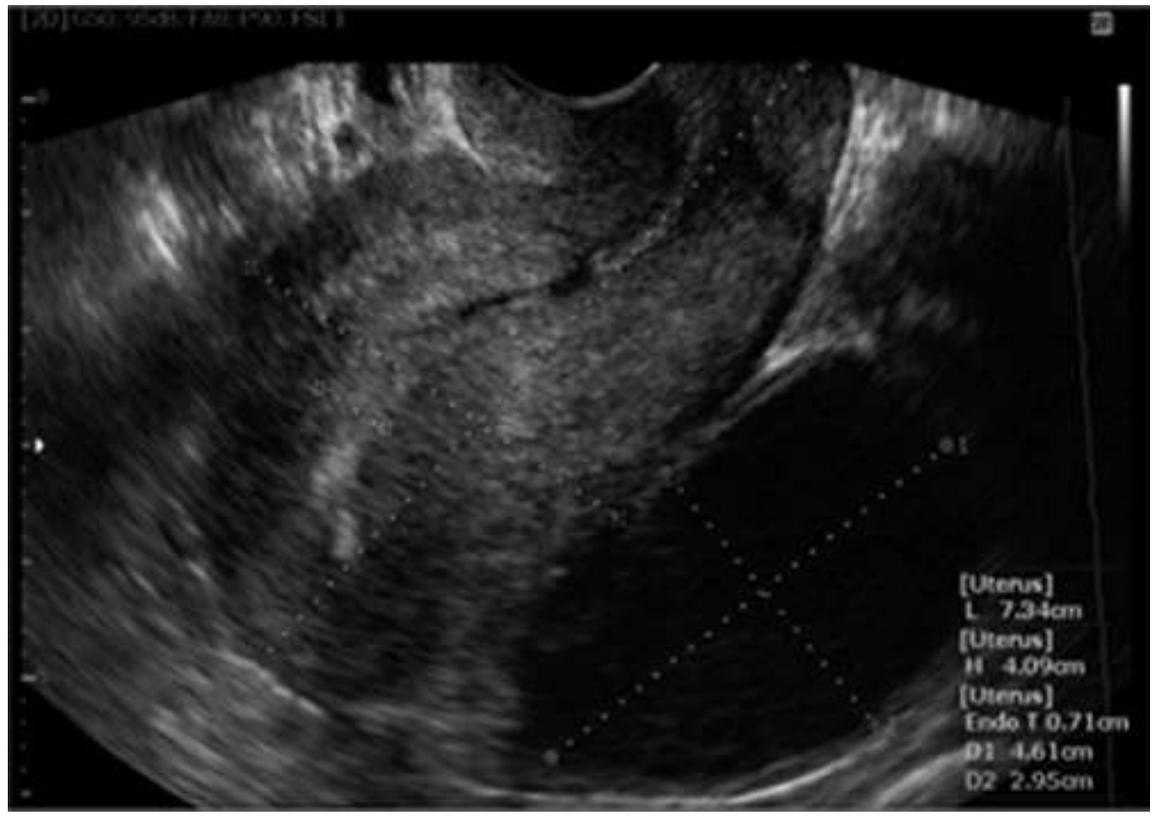
M.B.B.S. (Lady Hardinge Medical College) M.S (Maulana Azad Medical College), D.N.B, Fellowship in Clinical ART (Sir Ganga Ram Hospital)

Affiliations:
Executive Member: Fertility Preservation Society Of India 2024-2025
Co-Convenor: PCOS SIG Indian Fertility Society 2022-2024
Executive Member : Indian Fertility Society 2020-2022
Treasurer of Delhi Gynaecologist Forum (North) 2018-2024
Member of Infertility Committee AOGD 2020-2022
Member of Multidisciplinary Committee AOGD 2020-2022
Member of Adolescent committee 2013-2015
Member of Reproductive Endocrinology Committee 2015-2017
Member of Infertility committee AOGD (2015-2017)

Awards:
Achievers Award by Indian Fertility Society 2023
Dr Subhash Mukhopadhyay ISAR Achiever Award 2022
Appreciation Award by Indian Fertility Society 2022
A.P.J Abdul Kalam appreciation award in 2019 by Delhi Gynaecologist Forum
Best Poster (Clinical): World congress IFFS (International Federation Of Fertility Societies) 2016
Silver Medal in Fellowship in Reproductive Medicine & Infertility
Gold Medal in National level Quiz: Fertivision 2015
Gold Medal M.B.B.S.

Special Interest: Oncofertility, Poor Ovarian Reserve


[Uterus]
L 7.34cm
[Uterus]
H 4.09cm
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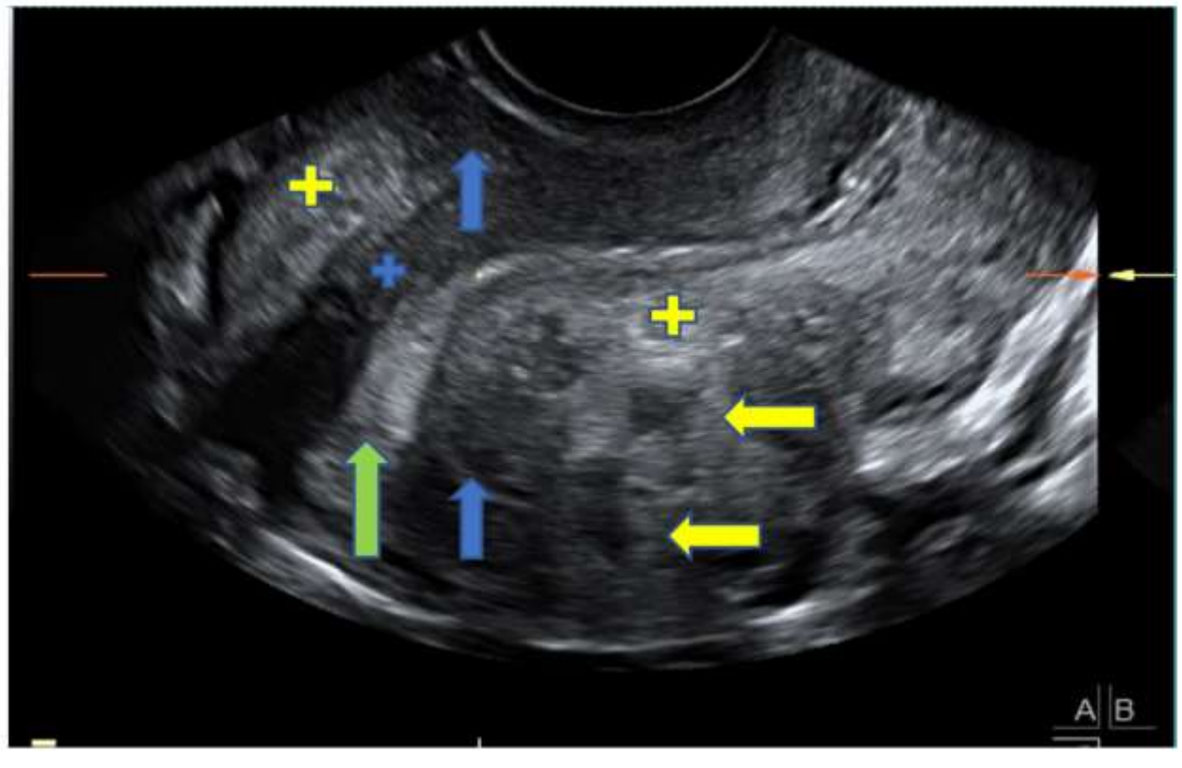
Endo T 0.71cm
D1 4.61cm
D2 2.95cm


A
B

Tips & Tricks of Ovum Pick-Up & Difficult Embryo Transfer in Endometriosis

ergonomics, evidence, and rescue

Objectives

Safe, high-yield OPU strategies in women with endometriosis/endometriomas.

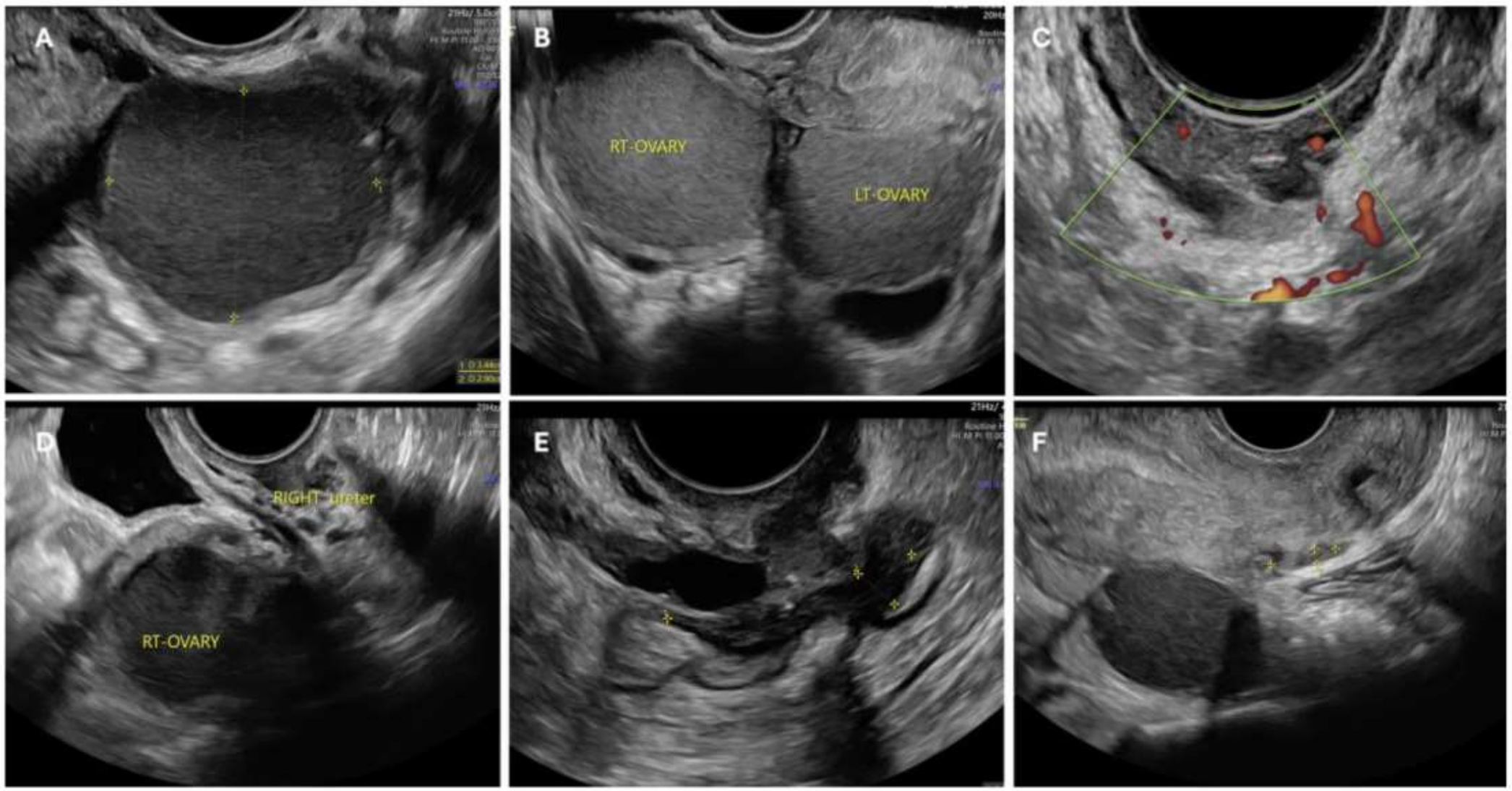
A reproducible algorithm for handling difficult embryo transfers (DET).

Minimal-harm rescue options (transabdominal OPU, TM-ET)

What the evidence supports/doesn’t.

Ovum Pick-Up

34 y F, bilateral endometriomas 4–6 cm, “kissing ovaries”, low AMH 1.1, planned IVF



IVF outcomes in endometriosis

Live birth (LBR): Meta-analyses/reviews show Endometriomas reduce *oocyte yield/MII number* but **little or no meaningful reduction in LBR overall**, though implantation can be modestly lower; the **drop is more evident in stage III–IV disease** ***Reprod Biol Endocrinol 2023***

Guideline view: ESHRE 2022: overall LBR after ART is not clearly worse in endometriosis; no specific ART protocol is favored. ***ESHRE 2022***

Horton J, Sterrenburg M, Lane S, Maheshwari A, Li TC, Cheong Y. Reproductive, obstetric, and perinatal outcomes of women with adenomyosis and endometriosis: a systematic review and meta-analysis. Hum Reprod Update. 2019

Endometrioma surgery before IVF

- Avoid routine cystectomy to ‘improve IVF results’: ***ESHRE 2022*** recommends against routine surgery solely to enhance ART outcomes; consider only for **pain, suspicion of malignancy, or difficult follicle access.**

- **Ovarian reserve impact:** Systematic reviews show **AMH declines after endometrioma surgery** (esp. cystectomy; bilateral > unilateral). Some analyses suggest **ablation may spare reserve** relative to cystectomy.

Saito A, Reproductive Biology and Endocrinology, 2023

Xing Zhang Fertil Steril 2022

Mapping & access plan

TVUS (± MRI if deep disease) to plan trajectories

Anticipate “kissing ovaries,” bowel proximity, fixed adnexa;

Pre-fill bladder to mobilize ovaries superiorly if needed

COUNSEL & CONSENT

Risks of puncturing an endometrioma

- Risk of infection
- Contamination of follicular fluid
- Damage to ovarian tissue
- Inflammatory reaction
- Technical difficulty

Infection risk & prophylaxis:

Endometriosis/endometrioma puncture increases pelvic infection/abscess risk—consider **antibiotic prophylaxis** when traversing an endometrioma or vaginal contamination risk is high

No recommendation on choice of antibiotics: cover gram positive+ gram negative + anaerobic

OPU technique

Move 1: Positioning & pressure: Ipsilateral tilt, assistant bimanual fundal pressure; aim for the **shortest avascular route** (use power Doppler judiciously).

Move 2: Needle strategy: Prefer **single-lumen** aspiration; **don’t routinely flush**—RCTs/meta-analyses show **no LBR benefit, longer time** (exception: strictly monofollicular NC-IVF).

Move 3: Suction & passes: steady single pass per follicle; keep sharp needle angle changes minimal to reduce bleeding.

OPU technique: moves that help

Move 4: Endometrioma proximity: Skim the follicle cortex; **don’t traverse cyst** if you can route around; if you must, **change needle/circuit** post-traverse to reduce contamination.

Move 5: Hard-to-reach ovary options: (i) Bladder fill + abdominal pressure; (ii) **Transabdominal OPU** (US-guided) for high, adherent ovaries; (iii) **Transmyometrial OPU** in some cases.

Move 6: Backup pathway: Laparoscopic retrieval (rare, planned), abort-and-re-stim only if risk unacceptable.

If you must traverse the cyst :transfixion

Transfix, don't aspirate. Pass the needle through the cyst **without actively aspirating/aspirating cyst contents**. Position and aspirate the target follicle(s) behind the cyst while avoiding suction from the cyst itself. (transfixion.)

Keep the needle path straight and minimize the time needle tip sits in the cyst space ("minimise dwell"); bring the needle out of the cyst portion as soon as follicles behind it are aspirated. Rapid manipulation reduces exposure of COCs to cyst fluid.

If the cyst is accidentally punctured or cyst fluid is aspirated

1. Stop aspirating immediately
2. Do not flush culture media through the cyst
3. Change the collecting set if possible
4. Flush/clean the needle externally (not through the cyst)
5. Inform the embryology team immediately
6. Consider extended antibiotics and close clinical follow-up

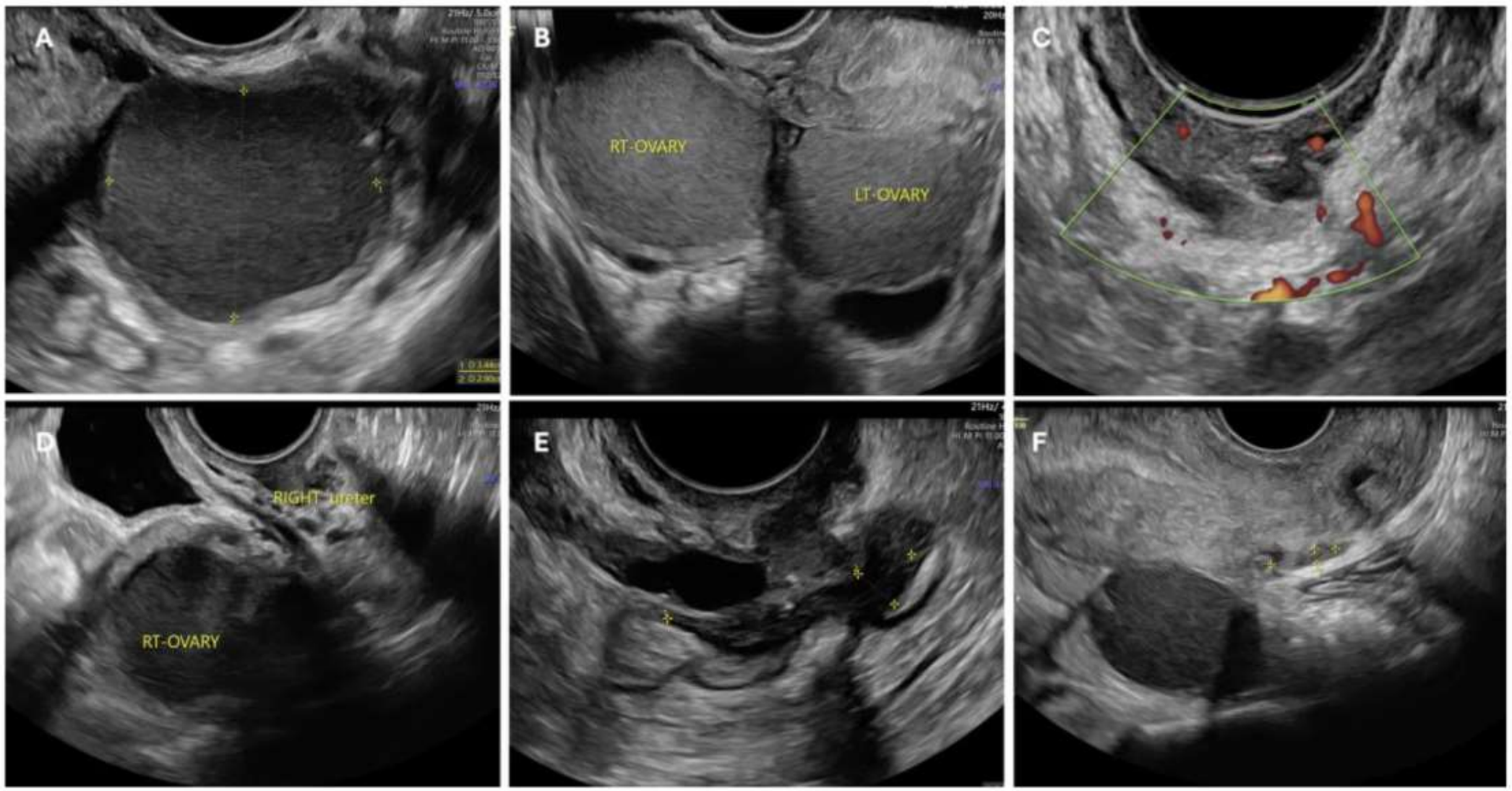
Document

OPU metrics:

- follicles aspirated vs oocytes/MII
- endometrioma traversal (Y/N)
- antibiotics given
- complications

Ovum Pick-Up

34 y F, bilateral endometriomas 4–6 cm, “kissing ovaries”, low AMH 1.1, planned IVF



OPU: Procedure Checklist

Pre-op: ultrasound map + patient consent + consider prophylactic antibiotic.

Try to avoid cyst traversal; use lateral needle path; single pass per follicle.

If transfixion needed: transfix only, don’t aspirate cyst contents; minimise dwell time.

If cyst punctured: stop aspirating → withdraw needle → do **not** flush cyst → change collection tube/tubing (or needle if available) → alert embryology → consider extended antibiotics and close follow-up

Embryo competence, euploidy, and FET strategy

Euploid FET "levels the field": After **single euploid FET**, **implantation and LBR are similar** in endometriosis vs controls.

Euploidy rates: Most controlled PGT-A series show **no reduction in euploid rate** with endometriosis; a few datasets focused on endometrioma report a **lower euploid fraction**—findings are **not uniform**.

Practical implication: A **freeze-all with euploid FET** in a controlled endometrial environment is reasonable; outcomes compare well to non-endometriosis patients.

Capalbo A, Hum Reprod. 2021
Lauren A Bishop Fertil Steril 2021

Difficult Embryo Transfer

37 y F, known case of endometriosis & adenomyosis and 1 failed IVF prior DET; today: ET

Difficult embryo transfer (DET): why it matters

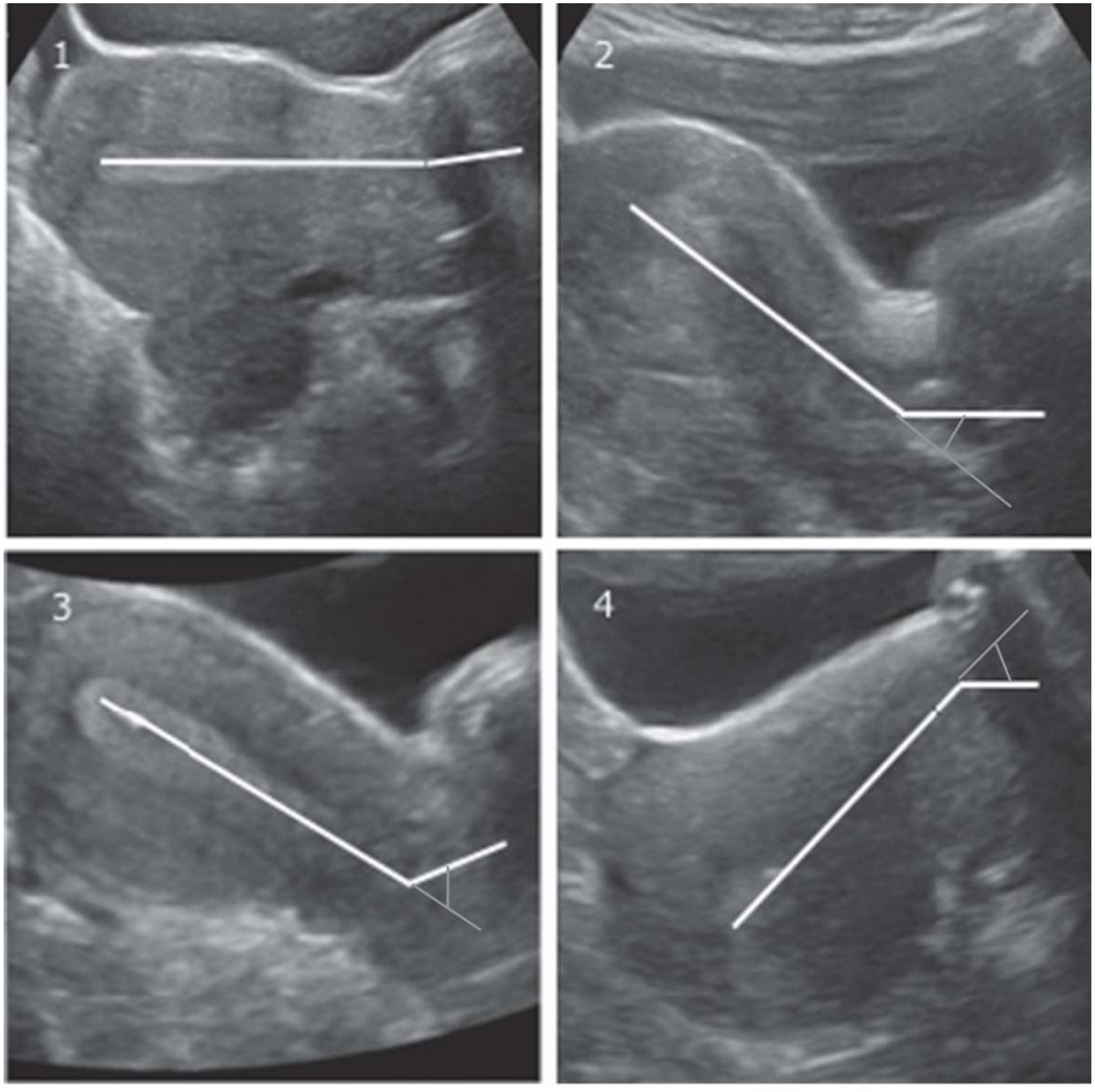
Difficult/traumatic ET → more uterine contractions, endometrial trauma, blood/mucus → lower CPR/LBR

Need for advanced planning in anticipated difficult cases

Torky HA et al. Reprod Biomed Online. 2021

Predictors of DET

- Cervical stenosis or tight cervical canal
- Marked uterine retroversion or anteversion
- Presence of fibroids (near cervix)
- History of previous difficult HSG/ IUI/embryo transfer
- Cervical anomalies or congenital Müllerian anomalies
- Previous cervical or endometrial surgery
- Narrow or tortuous endocervical canal
- **Presence of endometriosis** or chronic pelvic inflammation
- Postmenopausal or hypoestrogenic cervix
- Operator-related and equipment-related factors



(1) UCA = 0°, (2) UCA > +45°, (3) UCA > +60°, (4) UCA > –45°

Pre cycle preparation

Review history and prior transfer notes

Review Hysteroscopy notes if already done

Ultrasound Mapping (TAS/ TVS)

Perform mock/practice embryo transfer (trial transfer)

Cervical preparation (softening/dilation if needed)

Order special catheters

The DET algorithm

A. Weeks before transfer

- **Hysteroscopic assessment** if stenosis suspected; selective **cervical dilation** 1–3 months pre-ET improves outcomes in prior-DET cohorts; osmotic dilators as needed.

- Document the direction of cervix with hysteroscopy/ mock ET

Paul Serhal, Human Reproduction, Volume 18, Issue 12, 1 December 2003
Prapas N, Hum Reprod. 2004

The DET algorithm

B. Day-of ET setup

- Anaesthesia & Consent

- **Ultrasound guidance (2D is enough):** Improves CPR vs “clinical touch” (ASRM guideline & meta-analyses). Use **soft catheter**. Aim **1–1.5 cm below fundus**; avoid fundal touch.

- **Atraumatic mantra:** change speculum/ No tenaculum unless essential; minimal attempts; avoid blood/mucus in the outer catheter; confirm air-bubble placement.

ASRM Practice committee opinion 2017

The DET algorithm

C. If the cervix won’t comply

1. Try malleable obturator or stiffer outer sheath under US; gentle ante/retroversion.

2. Can shift to TVS mode after emptying bladder

3. Single tenaculum pinch with uterine straightening; pause if contractions start.

4. **Transmyometrial ET (Towako)** as last resort—outcomes acceptable when used selectively in “impossible” cervices.

REVIEW ARTICLE

Difficult Embryo Transfer

A Systematic Review

Arora, Puneet; Mishra, Vandana

Author Information

Journal of Human Reproductive Sciences 11(3):p 229-235, Jul–Sep 2018. | *DOI:* 10.4103/jhrs.JHRS_59_18

Figure 1: Included studies

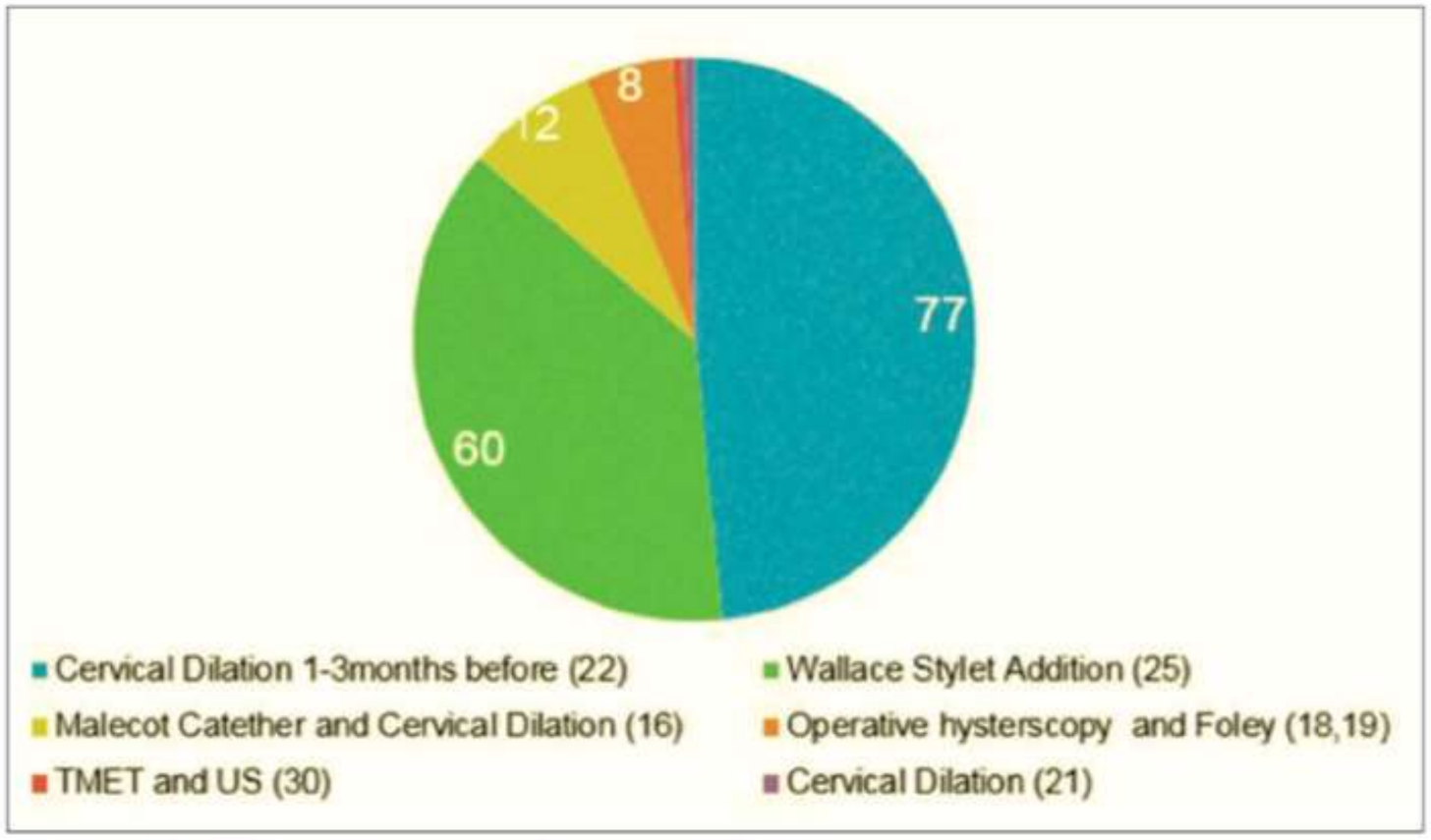


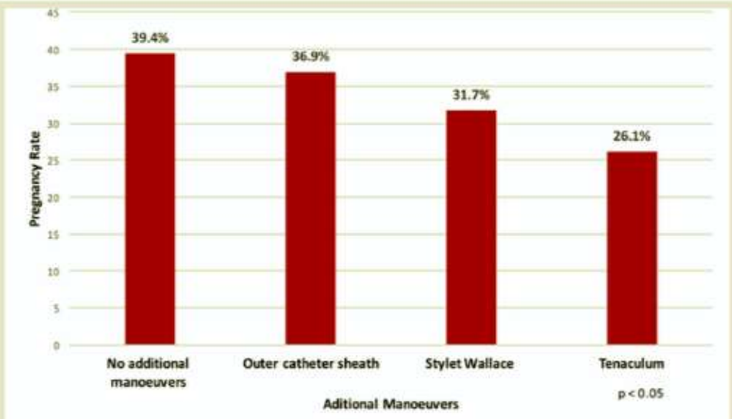
Figure 2: The techniques that provided pregnancy

What is a difficult transfer? Analysis of 7,714 embryo transfers: the impact of maneuvers during embryo transfers on pregnancy rate and a proposal of objective assessment

Alejandro Kava-Braverman, M.D., Francisca Martínez, Ph.D., Ignacio Rodríguez, B.Sc., Manuel Álvarez, M.D., Pedro N. Barri, Ph.D., and Buenaventura Coroleu, Ph.D.

Servicio de Medicina de la Reproducción, Department of Obstetrics, Gynecology and Reproduction, Hospital Universitario Dexeus, Barcelona, Spain

FIGURE 1



	CPR (%)	OR (95 CI)		Adjusted OR* (95 CI)	
No additional manoeuvers	39.4	1	-	1	-
Outer catheter sheath	36.9	0.87	(0.77 - 0.99)	0.89	(0.79 - 1.01)
Stylet Wallace	31.7	0.68	(0.59 - 0.78)	0.71	(0.62 - 0.81)
Tenaculum	26.1	0.47	(0.32 - 0.71)	0.54	(0.36 - 0.79)

Clinical pregnancy rate and OR of CPR with additional maneuvers. *Adjusted OR for ART (IVF/ICSI in fresh embryo transfer or frozen–thawed embryo transfer), number of transferred embryos, the day of ET, physicians who performed the ETs, embryo quality, and the interaction between age and technique.

Kava-Braverman. Maneuvers in difficult ETs. Fertil Steril 2016.

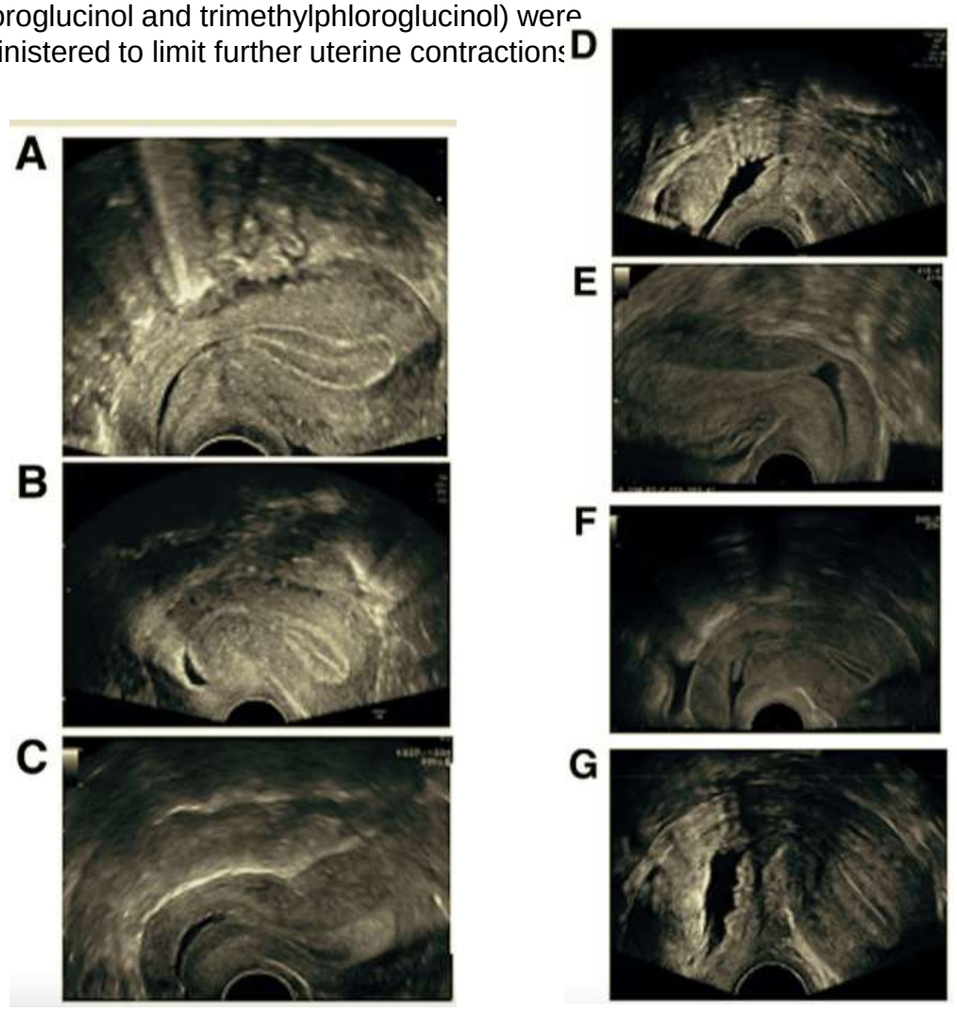
2017

Evaluation of a strategy for difficult embryo transfers from a prospective series of 2,046 transfers

Lionel Larue, M.D., Ph.D.,[a] Laure Bernard, M.D.,[a] Julie Moulin, M.D.,[a] Anne Massari, M.D.,[a] Nino-Guy Cassuto, Ph.D.,[b] Dominique Bouret, M.D.,[b] and Gwenola Keromnes, M.D.[a]

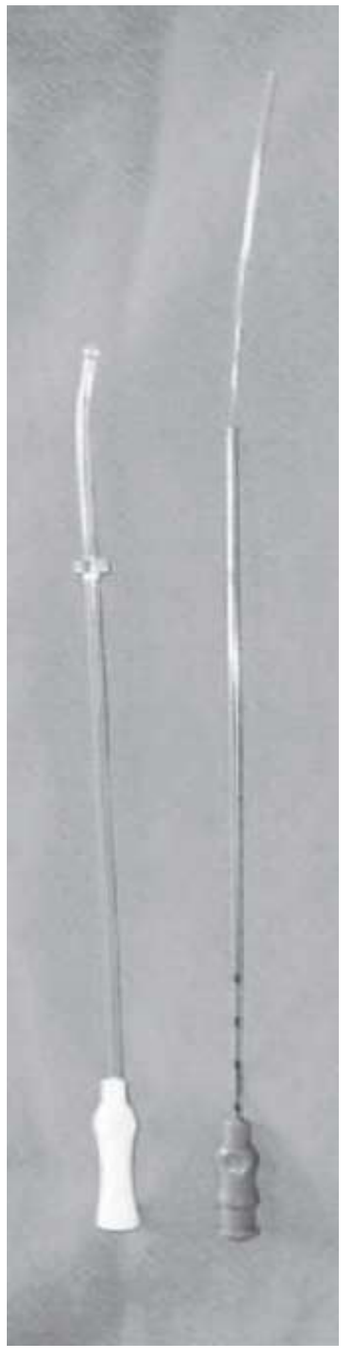
[a] Centre de Fertilité - Groupe Hospitalier Diaconesses Croix Saint Simon, Paris, France, and [b] Laboratoire Drouot, Paris, France

The 2 key innovations were the adaptation of the transfer procedure based on a rigorous analysis of the anatomical characteristics identified by transvaginal ultrasound and the division of the transfer into 2 stages. The first stage involved passage through the cervical canal, with the degree of difficulty encountered varying among patients. This step was followed by a rest period to allow any uterine contractions to subside before the precise deposition of the embryo in the optimal region of the uterine cavity. In addition, antispasmodics that act on the smooth muscle (phloroglucinol and trimethylphloroglucinol) were administered to limit further uterine contractions



2021

CATHETERS



Tenaculum

KITAZATO®

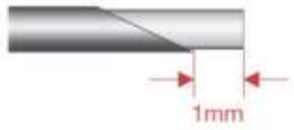
Product Update

TOWAKO® Method

Now available

For transferring embryos to the endometrium by piercing the myometrium with a needle and embryo transfer catheter.

This set is used for a transvaginal ultrasound guided embryo transfer to the endometrium. An 18G needle with a stylet is inserted into the endometrium through the myometrium using the guidance of an ultrasound. The stylet is removed and the catheter containing the aspirated embryo is inserted through the echo marked needle. When the 2Fr catheter is pushed firmly into the Luer lock, it will protrude 1mm from the tip of the needle for implantation.



Needle:

Outer Diameter	1.25mm (18G)
Length	325mm
Echo Mark	10mm

Catheter:

Outer Diameter	0.7mm (2.0Fr)
Length	325mm

This product was developed by Dr. Osamu Kato from the Kato Ladies Clinic, Japan.

If you have any questions, please contact us at info@dibimed.com

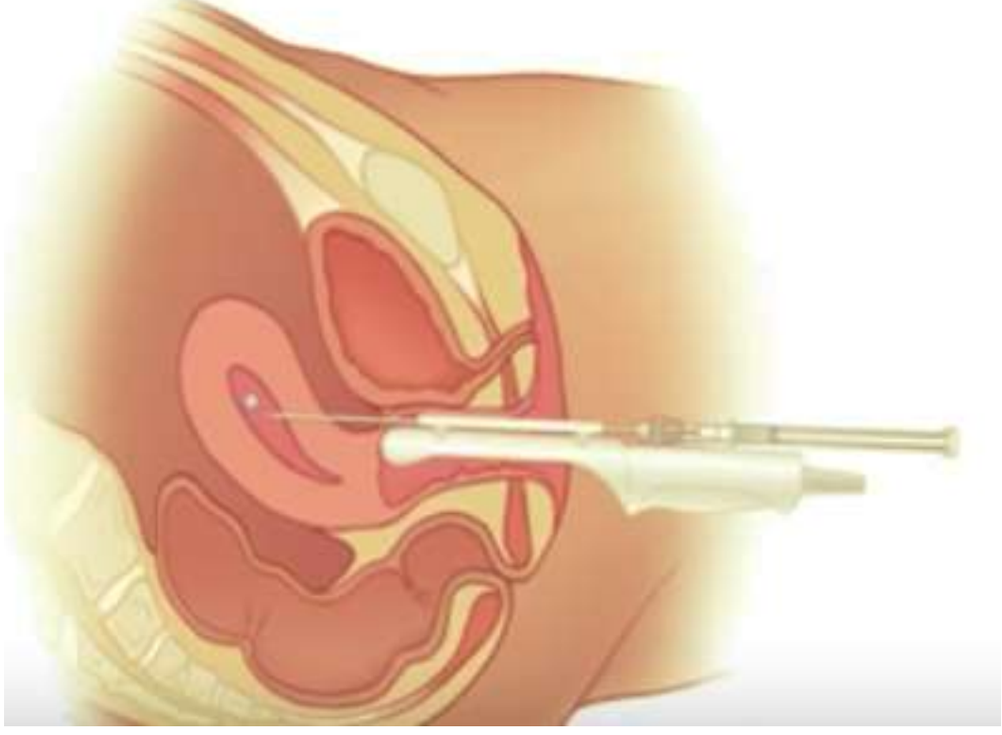
April 2021

www.kitazato-ivf.com

EXCEL IVF

• TMET

TCET is very difficult or impossible



Reproductive BioMedicine Online (2016) 32, 513–517

www.sciencedirect.com
www.rbmonline.com

ARTICLE

Transmyometrial versus very difficult transcervical embryo transfer: efficacy and safety

Mohammed Khairy *, Hany Shah, Madhurima Rajkhowa

Abstract A difficult and traumatic embryo transfer can negatively impact on embryo implantation. This study retrospectively compared the outcomes of "very difficult transcervical embryo transfer" (vdTCET) versus transmyometrial embryo transfer (TMET) in a single centre over 10 years, reporting on 128 patients with vdTCET and 46 patients with TMET. The definition of vdTCET was a procedure rated by an experienced practitioner (with more than 100 transfers per year for >2 years) as very difficult and required two or more of the following: use of tenaculum, change of embryo transfer catheter and use of a stylet, reloading of the embryos or cancelling the procedure and freezing the embryo to transfer after cervical dilatation. The clinical pregnancy rates for TMET and vdTCET were 32.6% and 25%, respectively and the live birth rates were 26.1% and 16.4%, respectively. There was only one case of minor bleeding in the TMET group (2.2%). This study showed that TMET is a good alternative option in cases of vdTCET where it is impossible to achieve transcervical embryo transfer and may benefit cases with repeated failed cycles after vdTCET. Its superiority over vdTCET however could not be demonstrated.

What I measure & improve in the lab/OT

Operator metrics: attempts, time from speculum-in to embryo-out, fundal distance at deposition, blood/mucus presence, patient discomfort score.

Difficult Embryo Transfer

37 y F, known case of endometriosis & adenomyosis and 1 failed IVF prior DET; today: ET

Difficult Embryo Transfer – Checklist ✅

Pre-Procedure

Review past ET notes, cervical issues, mock transfer, Hysteroscopy, documented cervical canal direction

Instructions for anesthesia & Consent & IVf fluids

Equipment

Prepare soft & firm catheters/ Stylet / metal catheter option

Dilators, tenaculum, USG guidance probe ready

During Transfer

Always under ultrasound guidance

Gentle, avoid fundal touch & uterine contractions

Use stylet if needed

Cervical traction if angulated canal

Transmyometrial ET = last resort

Post-Procedure

Document catheter used, ease/difficulty, blood/mucus

OPU

ET


RAO, HABIBA 15.08.1998
17893
GNH EXCEL HOSPITAL
Tis 0.1
Tib 0.1
MI 1.1
Change

Take Home points

OPU (endometriosis): Avoid cyst traversal; no routine flushing; single-lumen is efficient; have transabdominal/TM OPU as backups.

ET: US-guided, soft catheter, 1–1.5 cm below fundus, fast and atraumatic; use a pre-planned rescue ladder

Thank you