18th International Congress of Anesthesiology, Critical Care and Pain

Ambulatory Anesthesia in IVF:
Adverse Event Management & Clinical Decision-making

Dr. Firoozeh Madadi

Assistant professor of Anesthesiology and Critical care medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

18–20 November 2026 · Tehran, Iran · From Innovation to Resilience

About the Speaker



- Assistant professor of Anesthesiology and Critical care medicine
- SBMU
- AI in perioperative medicine/ Medical Education

Outline

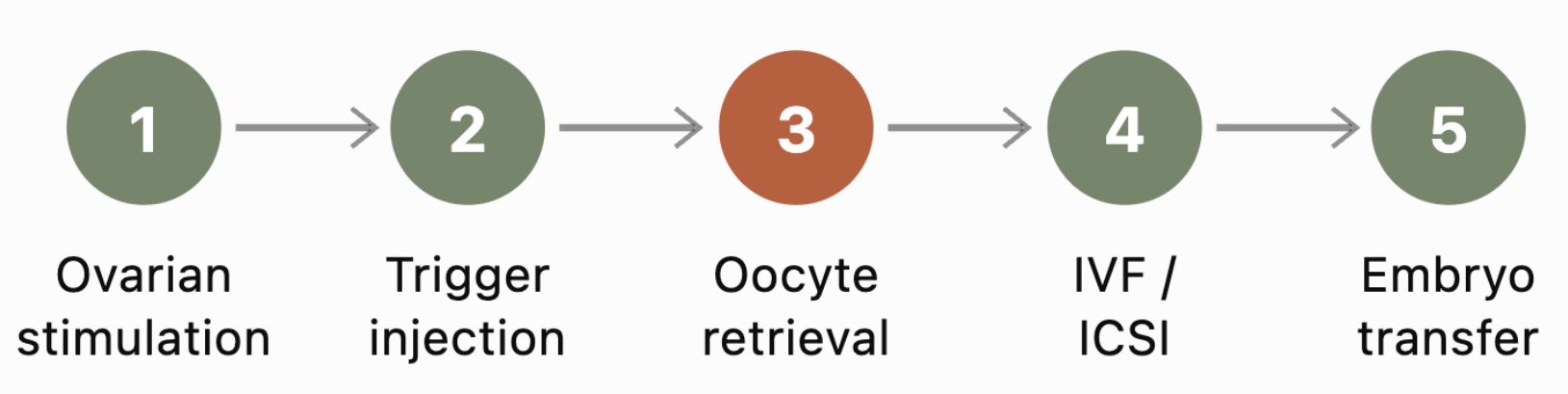
1. IVF Procedures & Anesthetic Considerations
2. Anesthetic Techniques & Pain Management
3. Perioperative Adverse Events & Clinical Decisions
4. Ovarian Hyperstimulation Syndrome (OHSS)
5. Safe Recovery, Discharge & Take-Home Messages

01

Understanding IVF: The Treatment Journey



Understanding IVF



Anesthesia is primarily required for oocyte retrieval.

IVF Procedures and Anesthesia Requirements

Procedure	Typical anesthesia
Transvaginal oocyte retrieval	Deep sedation / Conscious sedation / GA
Embryo transfer	Usually none
Hysteroscopy	Local, sedation or GA
Testicular sperm extraction	Local ± sedation / GA
Operative laparoscopy	GA

IVF Procedures and Anesthesia Requirements

Technique	Main characteristics	Clinical considerations
Deep Sedation / MAC	Propofol ± short-acting opioid	Common approach; rapid recovery; respiratory depression risk
General Anesthesia	TIVA or inhalational anesthesia	Selected patients or complex procedures; airway management
Neuraxial Anesthesia	Spinal or epidural	Effective analgesia; possible hypotension and delayed recovery
Paracervical Block (PCB)	Local anesthetic around the cervix	Reduces pain from vaginal puncture; limited ovarian analgesia
Preovarian Block (POB)	Ultrasound-guided local anesthetic injection near the ovary	Targets ovarian nociception; potential opioid-sparing adjunct

Choosing the Anesthetic: A Clinical Decision

The optimal technique balances 4 priorities:

- Patient safety and airway protection
- Adequate analgesia and immobility
- Rapid recovery and same-day discharge
- Minimal interference with reproductive outcomes?!?

Table 1 Safety profile on commonly used medications in ART procedures.

Medication	Safety profile
Benzodiazepines	Safe
Opiates	Safe
Hypnotics	
Propofol	Safe
Volatile anaesthetics	Safe
Antiemetics	
Ondansetron	Safe
Metoclopramide	Avoid
Droperidol	Avoid
Dexamethasone	Safe
Aprepitant	Insufficient evidence
Neuromuscular blocking and reversal drugs	
Suxamethonium	Insufficient evidence
Non-depolarising neuromuscular blocking drugs	Insufficient evidence
Sugammadex	Insufficient evidence

Pain Management: A Multimodal Approach

Table 2 Safety profiles of opiate-sparing medications.

Opioid-sparing medication	Safety profile
Paracetamol	Safe
NSAIDs	Avoid if immediate embryo transfer is planned
Magnesium	Likely to be safe
Dexmedetomidine	Likely to be safe
Ketamine	Safe

Ellis DB, Tsen LC. Anaesthesia for assisted reproductive technologies. *BJA Educ*. 2024;24(7):254-259. doi:10.1016/j.bjae.2024.04.002

02

Complications



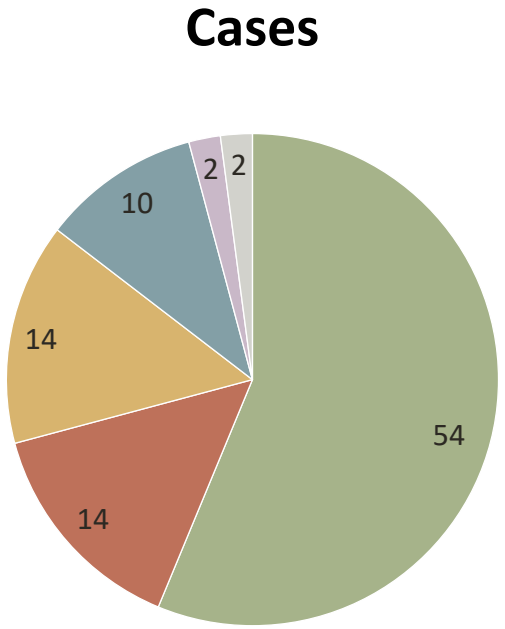
Adverse Events After Oocyte Retrieval

0.40%	Overall complications

0.29%	Hospital admissions

0.10%	Surgical intervention

Distribution of reported complications
(n = 96 out of 23,827 patients)



Complications by category

Hemoperitoneum	**54**	56.3%
Anesthesia-related	**14**	14.6%
Pelvic pain	**14**	14.6%
Infection	**10**	10.4%
Vaginal bleeding	**2**	2.1%
Bladder injury	**2**	2.1%

Anesthesia-related events (14 cases)

12 circulatory shock with nausea; 1 atrial fibrillation;
1 cardiorespiratory insufficiency with agitation/confusion.

Important: OHSS, torsion and thromboembolism were not assessed in this cohort.

Levi-Setti et al. Fertil Steril. 2018;109:1038–1043.e1

INTERACTIVE CASE

Case | Hypotension After Oocyte Retrieval

32-year-old, 25 minutes after retrieval

HR 118/min BP 85/50 mmHg

Increasing lower abdominal pain, pallor, dizziness

Your next decision

More propofol recovery time?

IV fluids only?

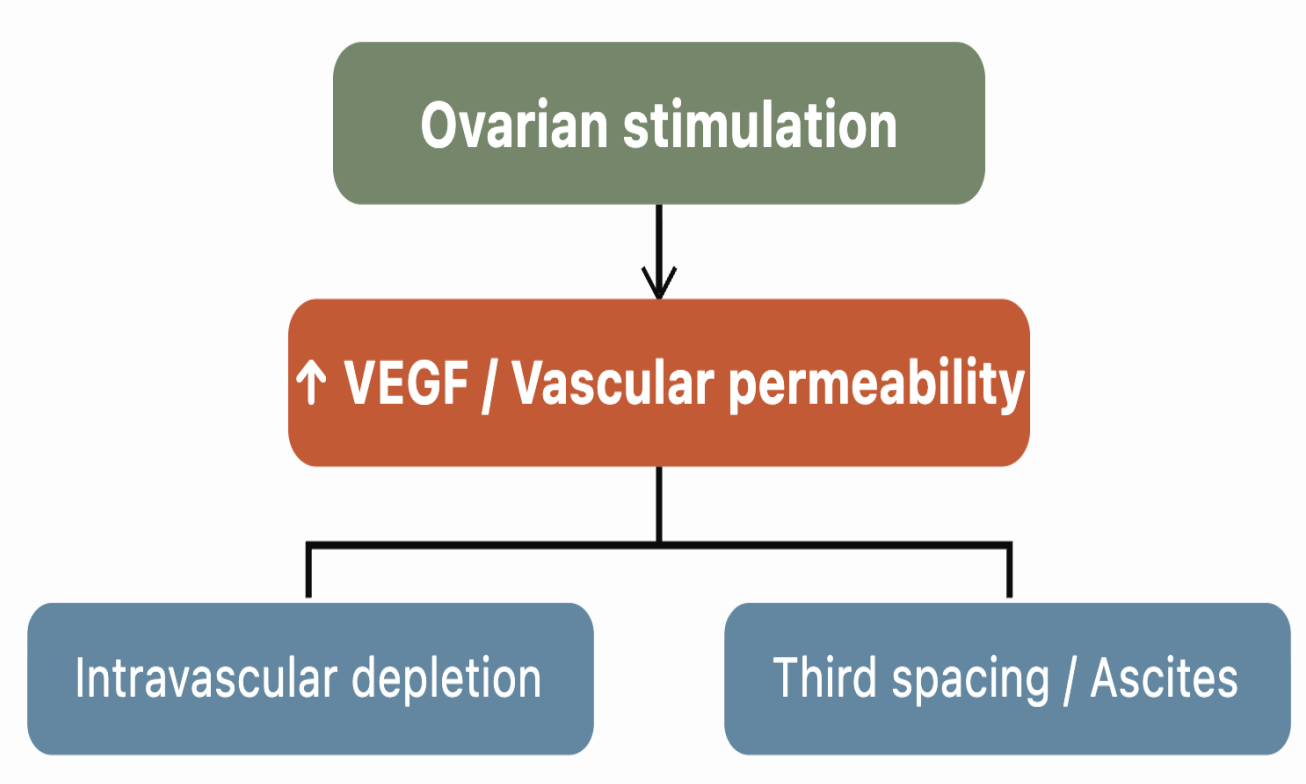
Immediate assessment for intra-abdominal bleeding?

Red flag: persistent hypotension + tachycardia + escalating pain ≠ routine sedation recovery.

OHSS

Why It Matters to Anesthesiologists

- Pathophysiology



RCOG 2026

OHSS | Recognizing Severity

Mild / Moderate

Abdominal discomfort

Bloating, nausea

Enlarged ovaries

Ultrasound-detected ascites

Severe

Clinical ascites

Hemoconcentration

Oliguria / renal impairment

Electrolyte abnormalities

Critical

Tense ascites / large effusion

Anuria or thromboembolism

Respiratory compromise / ARDS

Severe hemoconcentration

Grade using a standardized system; clinical trajectory matters as much as a single measurement.

OHSS: Red Flags Before and After Anesthesia

- Progressive abdominal distension or severe pain
- Dyspnea, hypoxemia or pleural effusion
- Tachycardia, hypotension or syncope
- Oliguria and worsening renal function
- Hemoconcentration or suspected thrombosis

Anesthesiologist’s Role in OHSS Management

1. Initial Assessment
- Assess ABCs, oxygenation, hemodynamics and volume status.
- Monitor urine output, hematocrit, electrolytes and renal function.
- Exclude hemorrhage, ovarian torsion and thromboembolism.

2. Hemodynamic & Respiratory Support
- Use individualized fluid resuscitation; avoid fluid overload.
- Provide oxygen and respiratory support when indicated.
- Consider paracentesis for tense ascites with respiratory or renal compromise.

3. Anesthetic Decision-Making
- Defer elective procedures in unstable or severe OHSS.
- If anesthesia is unavoidable, anticipate hypotension, respiratory compromise and aspiration risk.
- Individualize airway management and anesthetic drug dosing.

4. Escalation & Multidisciplinary Care
- Involve reproductive medicine, anesthesia, critical care and renal specialists as needed.
- Assess thrombotic risk and provide thromboprophylaxis when indicated.
- Arrange admission or ICU care for organ dysfunction or deterioration.

MANAGEMENT PRINCIPLES

OHSS | Fluids, Hemodynamics & Thrombosis

Assess and reassess

Vitals, perfusion, urine output

Oral intake and fluid balance

Hematocrit, creatinine, electrolytes

Individualize IV fluid replacement

Avoid preventable harm

Avoid indiscriminate fluid loading

Consider paracentesis for symptomatic ascites

Assess VTE risk; thromboprophylaxis when indicated

Escalate with organ dysfunction

Management is multidisciplinary and guided by severity, not by ascites volume alone.

DISPOSITION DECISION

OHSS | Outpatient Care or Admission?

Outpatient care may be appropriate

Mild / moderate OHSS

Selected stable severe cases

Able to drink and manage symptoms

Reliable follow-up and emergency access

Admit / escalate when

Uncontrolled pain or persistent vomiting

Worsening oliguria or renal dysfunction

Hemodynamic / respiratory compromise

Thrombosis concern or unsafe follow-up

Provide written safety-net instructions and 24-hour contact information.

Safe Recovery & Discharge After IVF

Physiologic recovery:

- Airway patent; stable oxygenation
- Hemodynamically stable
- Alert / returned to baseline
- Pain and PONV adequately controlled

IVF-specific safety check:

- No increasing abdominal pain or bleeding
- No evolving OHSS red flags
- Escorted discharge and clear instructions
- Emergency contact / return precautions

Take-Home Messages

1

Individualize

Match technique and setting to patient risk, procedure and airway rescue capability.

2

Diagnose

Persistent hypotension, tachycardia, hypoxemia or severe pain is not always an anesthetic effect.

3

Disposition

Recognize OHSS early; discharge only after physiologic and IVF-specific assessment.

References

1. Ellis DB, Tsen LC. Anaesthesia for assisted reproductive technologies. *BJA Educ.* 2024;24:254–259.
2. Egan M, et al. Anaesthesia considerations for assisted reproductive technology: a focused review. *Int J Obstet Anesth.* 2024;60:104248.
3. Acharya U, et al. Recommendations for good practice for sedation in assisted conception. *Hum Fertil.* 2020;23:150–158.
4. Levi-Setti PE, et al. Appraisal of clinical complications after 23,827 oocyte retrievals. *Fertil Steril.* 2018;109:1038–1043.e1.
5. Hamoda H, et al. Management of ovarian hyperstimulation syndrome. RCOG Green-top Guideline No. 5. *BJOG.* 2026.

Thank You for Your Attention

Questions and Discussion

Email: fmadadi33@gmail.com
ORCID ID: https://orcid.org/0000-0001-9293-1440