55TH GLOBAL CONGRESS ON MIGS

BOSTON, MASSACHUSETTS
NOVEMBER 13-16, 2026

Syllabus

PGSIG-839

Redefining Office Intrauterine Surgery: Pain Science, Technique and Best-Practice Pearls

HONORARY CHAIR
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PGSIG-839: Redefining Office Intrauterine Surgery: Pain Science, Technique and Best-Practice Pearls

Chair: Jovana Tavcar
Co-Chair: Alka Kumar
Faculty: Sergio Haimovich, Alka Kumar, Erica F. Robinson, Jovana Tavcar

Course Description

Office-based intrauterine surgery empowers patients with faster access to care, shared decision-making, and reduced barriers to treatment. Yet procedural pain remains the leading reason for patient refusal, aborted procedures, or conversion to the operating room. This course equips gynecologic surgeons with an understanding of innervation and physiology, surgical technique, and practical tools necessary to minimize pain, improve tolerance, and expand access to office-based care. Faculty will integrate anatomy, innervation, fluid dynamics, and evidence-based analgesia with indications and real-world pearls to transform the patient experience and increase the success of in-office intrauterine surgery worldwide.

Learning Objectives: *At the end of this course, the participant will be able to:* 1) Apply atraumatic intrauterine surgical techniques including vaginoscopy, scope manipulation, and selection of appropriate instruments; 2) Describe the neuroanatomy and innervation of the cervix and uterus relevant to procedural pain; and 3) Optimize distension pressure and fluid strategies to balance visualization, pain control, and safety. 4) Identify appropriate indications for office intrauterine surgery and evaluate current evidence-based pain control approaches. 5) Counsel patients and build workflows that elevate access, autonomy, and surgical success.

Course Outline

10:15 am	Welcome, Introduction and Course Overview	J. Tavcar
10:20 am	Surgical Technique to Reduce Pain in Office Intrauterine Surgery	J. Tavcar
10:45 am	Distension Pressure & Fluid Dynamics: Visualization, Safety & Patient Comfort	A. Kumar
11:10 am	Understanding the Uterus: Landmarks and Innervation of the Cervix & Uterus	S. Haimovich
11:35 am	Indications, Patient Selection & Evidence-Based Pain Control	E. Robinson
12:00 pm	Discussion Questions & Answers	All faculty
12:15 pm	Adjourn	

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Disclosure of Relevant Financial Relationships

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Disclosure information and acknowledgment of any commercial support are provided to learners before the activity to promote transparency and maintain the independence and integrity of the education.

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PLANNER DISCLOSURES

The following members of AAGL have been involved in the educational planning and/or review of this course (listed in alphabetical order by last name).

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SCIENTIFIC PROGRAM COMMITTEE

Nash Moawad, MD, MS, Chairman – Consultant (ended 12/2024): Medtronic, Womed, Integra Life Sciences
Amani Harris, MD*
Ted Lee, MD – Advisory/Consultant: Johnson & Johnson, Regeneron Pharmaceuticals
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COURSE CHAIR DISCLOSURE

Jovana Tavcar, MD*

COURSE CO-CHAIR DISCLOSURE

Alka Kumar, MS – Consultant: Arthrex, Inc.; Speakers Bureau: Richard Wolf Medical Instruments

FACULTY DISCLOSURES

The following faculty have agreed to support their presentations and clinical recommendations with the best available evidence from the medical literature (in alphabetical order by last name).

Sergio Haimovich, MD, PhD*
Alka Kumar, MS – Consultant: Arthrex, Inc.; Speakers Bureau: Richard Wolf Medical Instruments
Erica F. Robinson, MD – Consultant: Hologic
Jovana Tavcar, MD*

MITIGATION OF RELEVANT FINANCIAL RELATIONSHIPS

All relevant financial relationships have been mitigated.

Drs. Lee, Lemos, Mikhail, and Chaudhari's planning decisions, as part of the Scientific Program Committee (SPC), were peer reviewed by other planners on the SPC who had disclosed no financial relationships with ineligible companies, and found to be fair, balanced, and free of commercial bias. Dr. Moawad's financial relationships ended 12/2024, thus mitigating them. For most of his AAGL Professional Education Committee service, Dr. Mourad had no financial relationships to disclose. He recently disclosed a new relationship as a Proctor for Intuitive Surgical. Since then, he has not participated in activities involving control or influence over accredited educational content; therefore, no additional mitigation was necessary.

Dr. Kumar's role as Course Co-Chair was limited primarily to course oversight and moderation, rather than development of educational content. Any planning decisions or content under her influence were subject to independent peer review by individuals without relevant financial relationships.

The presentation content for course faculty, Drs. Kumar and Robinson, has been peer reviewed and found to be fair, balanced, and free from commercial bias.

Redefining Office Intrauterine Surgery

Pain Science, Technique and Best Practice Pearls

Surgical technique to reduce pain – office hysteroscopy

Jovana Tavcar MD
Associate Professor OBGYN, Georgetown University School of Medicine
AAGL Annual Meeting 2026

1

I have no disclosures

2

Patient control is part of the technique

"If you want us to stop, we stop immediately."

Successful office surgery includes a patient who remains willing to continue.

Before entry

Agree a stop signal and discuss analgesia and alternative settings.

During the procedure

Ask about pain. Watch for distress and vasovagal symptoms.

3

Evidence appendix: randomised trials

Study / design	Pain finding	Other reported findings
Smith 2019, VAST [12] Multicentre RCT 1597 women	Mean pain: 42.7 vs 46.4 P = 0.02	Reported success: 89% vs 85% Time: 2 vs 3 minutes Complications: RR 0.26
Garbin 2006 [13] Two-centre RCT 400 patients	Median VAS: 0.5 vs 2 P < 0.0001	No difference in quality, duration or ease of cervical passage

Values show vaginoscopy first, followed by the conventional approach.

Pain scales and success definitions vary across studies.

4

Evidence appendix: systematic reviews

Study / design	Pain finding	Other reported findings
De Silva 2020 [9] 7 RCTs	SMD −0.27 95% CI −0.48 to −0.06	Shorter time Vasovagal episodes: OR 0.35 Similar failure rates
Khoiwal 2024 [10] 7 RCTs, 2723 patients	Reduced intraprocedural pain	Shorter time Side effects: RR 0.37 Similar failure rate
Cooper 2010 [11] 6 trials, 1321 patients	SMD −0.44 95% CI −0.65 to −0.22	No difference in failed procedures

Reviews favour vaginoscopy for pain. Their trials may overlap.

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Vaginoscopy: guidance and pain evidence

Less pain with vaginoscopy

ACOG / AAGL guidance

Vaginoscopy may be considered to reduce procedural pain, with similar efficacy. [2]

De Silva 2020: 7 RCTs

Pain SMD −0.27
95% CI −0.48 to −0.06
No significant difference in failure rates. [9]

A reasonable initial approach, with a plan for difficult access and pain.

6

Vaginoscopic entry under continuous vision

01 **Small scope, no speculum or tenaculum**
Rigid or flexible scope. Purge air and establish saline flow.

02 **Distend the vagina and limit leakage**
Gently approximate labial tissue when leakage prevents a clear view.

03 **Identify the external cervical os**
Identify the os toward the posterior fornix, adapting to the anatomy.

04 **Follow the endocervical canal**
Advance into the cavity only while the true lumen remains visible.

7

The internal os: orientation before advancement

A visible lumen guides the next movement

Uterine position and flexion

Know the uterine axis. Withdraw and realign before considering an assisted manoeuvre.

When resistance persists

Pause. Reconsider stenosis, the outer diameter and the need for a different plan.

Loss of the lumen or unexpected pain means no further blind advancement.

8

Optics: viewing angle changes navigation

Optic	Useful view	Operator implication
0°	Straight ahead, along the shaft	Align the shaft with the intended path.
12°	Modestly oblique view	Learn the view and instrument relationship on that system.
30°	Oblique view of walls and cornua	Rotate to survey while limiting broad shaft movement.

Viewing angle differs from field of view and from sheath diameter.

No angle alone guarantees less pain. Familiarity and controlled movement matter.

9

Diameter: the assembled sheath is what passes

Narrower assembly

May reduce the need for dilation.

Useful for access, diagnosis and selected miniature instruments.

Larger assembly

May provide more flow or operative capability.

Requires a deliberate assessment of access and tolerability.

The smallest suitable outer diameter reduces unnecessary dilation.

10

Distension: the lowest pressure that maintains a view

Clear view. Minimal necessary distension.

Poor visibility

Check inflow, outflow, bubbles and bleeding before increasing pressure.

During treatment

Monitor fluid balance and use patient-specific stopping limits.

Persistent pain or inadequate visibility prompts a pause and reassessment.

11

Mechanical and powered instruments: distinct choices

Instrument	Potential advantage	Trade-off to anticipate
Scissors / graspers	Targeted treatment without thermal energy	Repeated traction, bites or retrieval may prolong work.
Powered mechanical tissue removal	Cutting with tissue aspiration	Device calibre, fluid use and tissue suitability matter.
Bipolar instruments	Cutting or haemostasis in saline	Thermal risk and activation control require attention.

Powered mechanical removal uses no electrosurgical energy.

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Operative technique that limits unnecessary movement

01

Before cutting

Map the attachment and plan a short, visible instrument path.

02

During treatment

Keep the active tip visible. Use controlled bites or activation.

03

During retrieval

Release the attachment before traction. Avoid repeated blind pulling.

A rising pain response calls for a pause, even when the lesion looks easy to finish.

13

Cervical stenosis: a planned escalation strategy

Can you identify the true canal?

Visible, traversable lumen

Use a small-calibre scope and direct vision. Selected fine adhesions may permit expert miniature-instrument treatment.

Uncertain or dense stenosis

Avoid force and blind dissection. Consider ultrasound guidance, cervical preparation or a different setting.

Cervical preparation is selective. Routine use is not supported for every patient.

14

Five avoidable operator-induced pain triggers

1	**Routine cervical gripping**	Vaginoscopic entry when feasible
2	**Pushing against resistance**	Withdraw, reorient and reassess access
3	**Overdistension for a poor view**	Check flow and bleeding before raising pressure
4	**Levering or repeated wall contact**	Small controlled movements and visible tips
5	**Repeated traction or prolonged attempts**	Release the attachment, pause and reconsider the plan

Teaching checklist, not a ranked incidence study. Ignoring a stop request is never acceptable.

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Case 1 - vaginoscopy video?

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Case 2: stenosis

CASE VIDEO

Difficult cervical access

Insert your de-identified clip here

PAUSE POINT

What changes the plan?

Visible true lumen?
Safe office options?
Patient still willing?

Decision: pause if the route or tolerance is uncertain.

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Stopping and changing the plan are safety skills

Stop for a patient request, severe distress or concern about injury

Reassess before any restart

Check symptoms, anatomy and visibility. Review analgesia and ask for renewed agreement.

Escalate when needed

Use the local emergency pathway for instability or suspected injury. Arrange a safer setting when appropriate.

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Take-home technique pearls

Vaginoscopy as the initial approach

Smallest suitable assembly, minimal manipulation

A clear view and permission to continue

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Discussion

Which operator habit would you change in your next office case?

Entry and cervical manipulation

Instrument choice or threshold to pause

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[2] ACOG. The Use of Hysteroscopy for the Diagnosis and Treatment of Intrauterine Pathology. Committee Opinion No. 800. 2020.

[3] ACOG. Pain Management for In-Office Uterine and Cervical Procedures. Clinical Consensus No. 9. 2025.

[4] Buzzaccarini G et al. Pain Management during Office Hysteroscopy: An Evidence-Based Approach. Medicina. 2022;58:1132. doi:10.3390/medicina58081132.

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[5] De Vree B. Diagnostic Hysteroscopy: equipment and technique. The Trocar. 2023. doi:10.36205/trocar1.2023003.

[6] Vitale SG et al. Uterine cervical stenosis: from classification to advances in management. Arch Gynecol Obstet. 2024;309:755–764. doi:10.1007/s00404-023-07126-1.

[7] Pain and Operative Technologies Used in Office Hysteroscopy: A Systematic Review of Randomized Controlled Trials. J Minim Invasive Gynecol. 2021;28:1699–1711.

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[9] De Silva PM, Carnegy A, Smith PP, Clark TJ. Vaginoscopy for Office Hysteroscopy: A Systematic Review & Meta-Analysis. European Journal of Obstetrics, Gynecology, and Reproductive Biology. 2020.

[10] Khoiwal K, Zaman R, Bahurupi Y, Gaurav A, Chaturvedi J. Comparison of Vaginoscopic Hysteroscopy and Traditional Hysteroscopy: A Systematic Review and Meta-Analysis. International Journal of Gynaecology and Obstetrics. 2024.

[11] Cooper NA, Smith P, Khan KS, Clark TJ. Vaginoscopic Approach to Outpatient Hysteroscopy: A Systematic Review of the Effect on Pain. BJOG. 2010.

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[13] Garbin O, Kutnahorsky R, Göllner JL, Vayssiere C. Vaginoscopic Versus Conventional Approaches to Outpatient Diagnostic Hysteroscopy: A Two-Centre Randomized Prospective Study. Human Reproduction. 2006.

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DISTENTION PRESSURE & FLUID DYNAMICS VISUALISATION, SAFETY AND PATIENT COMFORT

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1

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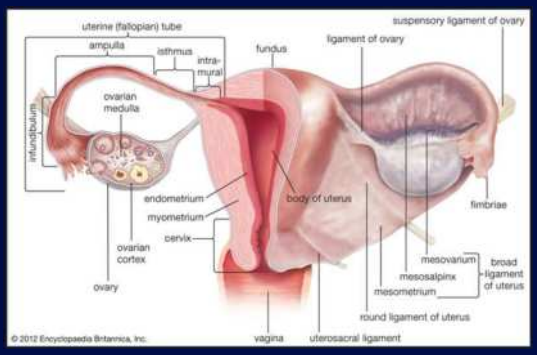
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LEARNING OBJECTIVE

- Optimize Distension, Pressure, Flow Rate and Fluid Strategies to balance visualization and safety.
- To understand fluid dynamics in hysteroscopy in order to get good visualization.

3

INTRA UTERINE LANDMARKS - HYSTEROSCOPY



- Cervical canal leading into the uterine cavity
- The fundus at the top
- The tubal ostia, which are the openings of the fallopian tubes.

4

IMAGINE THE UTERUS AS A BALOON

- Uterine cavity is collapsed in the natural state
- It needs to be distended / ballooned with continuous flow irrigation fluid (normal saline / glycine) up prior to hysteroscopic visualization
- Uterine distension requires energy and is reported as intra uterine pressure.



Collapsed | Partially inflated | Inflated | Overinflated

Optimal distension is better than over inflation of the uterine cavity.

5

OFFICE HYSTEROSCOPY: AAGL / ESGE / GCH Consensus

- Hysteroscopy performed in a physician's office or office-based procedure room
- No overnight admission; patient is discharged the same day.
- Performed with no anesthesia or minimal anesthesia (oral analgesia, local anesthesia ± minimal sedation).
- Designed to maximize patient safety, comfort, efficiency, and rapid recovery.

6

ABSOLUTE CONTRAINDICATIONS / OFFICE HYSTEROSCOPY

- Suspected or confirmed pregnancy.
- Acute pelvic inflammatory disease (PID) or active genital tract infection.
- Severe vaginal or cervical infection.
- Hemodynamically unstable patient

RELATIVE CONTRAINDICATIONS / OFFICE HYSTEROSCOPY

- Severe pelvic pain or dysmenorrhea requiring anesthesia.
- Marked anxiety, poor tolerance, or inability to cooperate.
- Severe cervical stenosis where office entry is unlikely to be successful.
- Heavy active uterine bleeding causing poor visualization.
- Large intracavitary pathology requiring operative hysteroscopy under anesthesia.
- Significant medical comorbidities requiring anesthetic or perioperative monitoring.

7

PHYSIOLOGICAL UTERINE CONTRACTIONS

Rhythmic muscle movements that occur naturally throughout the menstrual cycle

ENDOMETRIAL WAVES

Endometrial waves / Endometrial Peristalsis are gentle, wave-like muscle contractions in the uterine wall. The occur mostly during the menstrual cycle, particularly around ovulation, helping move sperm toward the fallopian tubes. The waves can change direction based on the cycle phase-moving inward during ovulation and outward during menstruation.

They're subtle, physiological movements, they reflect the uterus's natural, dynamic function.

8

DISTENTION PRESSURE & FLUID DYNAMICS VISUALISATION, SAFETY AND PATIENT COMFORT

THE INTERCONNECTED MODEL

Distension is dependent on

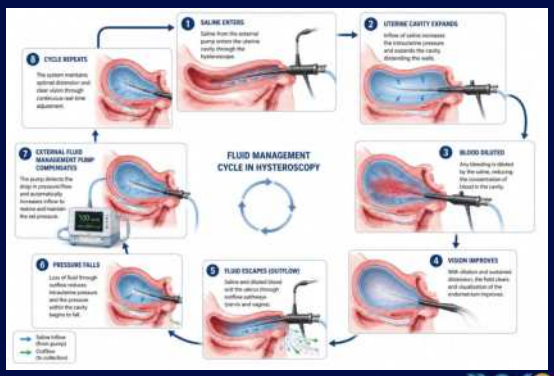
1. Intra Uterine Pressure
2. Flow Rate
3. Fluid Absorption
4. Fluid Leakage

All above are needed for

1. Good Visualization
2. Patient Comfort
3. Pain
4. Surgical Precision

9

HYSTEROSCOPY IS NEVER A STATIC SYSTEM



10

PROBLEMS CAUSED BY INADEQUATE FLUID MANAGEMENT SYSTEMS

Inadequate Visualization leading to complications – Perforation / False Passage / Inability to recognize pathology

- Inadequate Distension leading to
  - Poor Visualization
  - Pain in Office Hysteroscopy
  - Variable mechanical separation of the cavity walls leading to surgical complications.
  - Poor landmarks inside the uterine cavity
  - Unstable intra-uterine Pressure
  - Perforation
  - FLUID OVERLOAD AND FLUID INTRAVASATION
  - Turbulence
  - Bubbles

11

PATIENT COMFORT IN OFFICE HYSTEROSCOPY

- Minimizing pain and procedural discomfort throughout the procedure.
- Avoiding cervical trauma through atraumatic entry techniques.
- Reducing patient anxiety by clear communication and reassurance.
- Using the vaginoscopic "no-touch" approach whenever appropriate.
- Employing the smallest suitable hysteroscope to reduce the need for cervical dilatation.
- Maintaining optimal uterine distension with stable pressure and flow.
- Performing the procedure efficiently while ensuring adequate visualization.
- Creating a positive patient experience that encourages acceptance of future procedures.

12

WHERE DOES PAIN COME FROM?

Pressure stretches uterus

Stretch receptors activated

Erratic Myometrial contractions start resulting in Prostaglandins release thereby causing pain

PRESSURE IS NOT CAUSING PAIN DIRECTLY

STRETCH IS

13

CAN BETTER FLUID MANAGEMETN REDUCE PAIN?

Poor pump

Pressure fluctuations

Erratic myometrial contractions

Repeated Stretching

PAIN VERSUS MODERN AUTOMATED PUMP

Smooth Pressure

No Pressure fluctuations – almost laminar flow

Stable Cavity

NO PAIN

14

HYSTEROSCOPIC APPEARANCES OF CAESAREAN SECTION SCARS IN 15 CASES OF ENDOMETRIAL ABLATION



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MEASUREMENT AND CONTROL OF TRUE INTRA UTERINE PRESSURE IS PROBLEMATIC.

MAINTENANCE OF THE INTRA UTERINE PRESSURE
Calculation of systemic absorption is complicated by 4 factors:

(1) It may be difficult to collect all of the media that passes out of the uterus, including that which falls on the procedure or operating room floor;

(2) The actual volume of media solution in 3-L bags is typically more than the labelled volume;

(3) Difficulties in estimating the volume of media left in a used or "emptied" infusion bag; and

(4) Systemic absorption that in some instances may occur extremely rapidly.

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- Boyd HR, Stanley C. Sources of error when tracking irrigation fluids during hysteroscopic procedures. J Am Assoc Gynecol Laparosc. 2000; 7:472–476 (Evidence II-1).
- Nezhat CH, Fisher DT, Datta S. Investigation of often-reported ten per cent hysteroscopy fluid overfill: is this accurate? J Minim Invasive Gynecol. 2007; 14:489–493 (Evidence II-1).

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INTRA UTERINE PRESSURE - TITRATION

Pressure must be interpreted with:

- Flow rate
- Type of surgery
- Size and vascularity of lesion
- Duration of procedure

Dynamic pressure control (not fixed pressure)

- Lower pressure during diagnostic phase
- Brief, controlled increases:
  - For bleeding control
  - During active resection
- Immediate reduction once visualization improves

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LOW INTRAUTERINE PRESSURE

- Pressure below venous pressure -> inadequate cavity distension
- Visualization failure leads to:
  - Prolonged operative time
  - Increase manipulation
  - Increased cumulative fluid exposure
- Poor visualization due to
  - Collapsed cavity
  - Inadequate tamponade of endometrial bleeding
- Increased risk of:
  - Mechanical trauma
  - Uterine perforation
  - Incomplete resection

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RELEVANCE OF INTRA UTERINE PRESSURE

Aspect	Low Intrauterine Pressure	High Intrauterine Pressure
Uterine cavity	Poor / collapsed distension	Over-distended, tense cavity
Visualization	Inadequate, obscured by bleeding	Excellent initially (may be misleading)
Bleeding control	Poor tamponade	Good tamponade
Operative precision	Unstable field, inaccurate cuts	Stable field but unsafe physiology
Operative time	Prolonged, stop-start Surgery	May shorten surgery initially
Fluid absorption	Lower initially, rises with time	Markedly increased Intravasation
Major risks	Perforation, incomplete surgery	Fluid overload, hyponatremia, pulmonary edema
Hidden danger	Loss of orientation	False Passage/perforation
Overall impact	Ineffective surgery	Potentially life-threatening

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INTRAUTERINE PRESSURE AND VISUALISATION IN HYSTEROSCOPY – "The Sweet Spot"

In hysteroscopy, intrauterine pressure is key to getting a clear view. If the pressure is too low, the uterine cavity might collapse, making it harder to see. On the other hand, if the pressure is too high, it could distort the anatomy or even cause fluid absorption risks.

So you want to hit that "sweet spot"-just enough pressure to gently distend the cavity for a crisp, panoramic view.



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FLOW IS THE REAL HERO

- When Blood appears Fresh saline washes it away
- Smoke disappears with increase in flow rate
- Bubbles disappear with increase in flow rate
- Debris leaves cavity with increase in flow rate and saline washes it away

PRESSURE OPENS

FLOW CLEANS

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TYPES OF DISTENSION MEDIA IN HYSTEROSCOPY

- DISTENSION MEDIA :
  - Gas – CARBON DIOXIDE
    Highly diffusible in blood. Flow rate 30-40 mL/min and pressure 60-70 mm hg
  - Fluids
- FLUID MEDIA ARE OF TWO TYPES:
  - Low viscocity – Ionic and Non Ionic
  - High viscocity – Non Ionic
- LOW VISCOSITY MEDIA ARE THE MEDIA OF CHOICE:
  - Ionic: 0.9% NaCl (Normal Saline), Ringer Lactate solution
    Normal Salaine is iso-osmolar (at 280 milli osmol/L) and metabolically inert
    Presence of electro light makes surgery safer preventing Hyponatremia
  - Non Ionic: 1.5% Glycine, 5% Mannitol, 3% Sorbitol
    Hypo-osmolar and causes hyponatremia

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SAFEST DISTENTION MEDIUM

- Isotonic electrolyte-containing distension media such as NORMAL SALINE should be used.
- Hypotonic, electrolyte-free distension media such as glycine and sorbitol should only be used with monopolar electrosurgical instruments
- Fluid deficit should still be closely monitored when using either hypotonic or isotonic distension media.

SAFE LIMITS FOR FLUID OVERLOAD IN OPERATIVE HYSTEROSCOPIC SURGERY

- A maximum fluid deficit of 1000 ml should be set when using a hypotonic solution in a healthy woman and surgery immediately stopped on reaching this limit
- A maximum fluid deficit of 2500 ml should be set when using an isotonic solution in a healthy woman and surgery immediately stopped on reaching this limit
- Lower thresholds for fluid deficit should be considered in the elderly and women with cardiovascular, renal or other co-morbidities. Suggested upper limits are 750 ml for hypotonic solutions and 1500 ml for isotonic solutions although these limits may need to be reduced depending upon the clinical condition of the woman during surgery.

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FLUID MATTERS

Poor Visualization

Crystal-clear Visualization



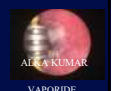
The difference is simply the balance between pressure, flow, resistance and tissue mechanics.



ROLLER CYLINDER



ROLLER BALL CYLINDER



VAPORIDE

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FLUID MANAGEMENT SYSTEM (pump / distending system) is the heart and soul of operative hysteroscopy.

A Basic Understanding Of The Physics Related To The ' Pump / Distending System' Goes A Long Way In Enhancing Patient Safety and Surgical Efficiency

- Closed-loop pressure control
- Real-time intrauterine pressure sensing
- CONTINUOUS INTRAVASATION PREDICTION
- Smart hysteroscopy platforms
- AI-guided pump algorithms

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METHODS USED FOR DELIVERING DISTENSION MEDIA IN TO THE UTERINE CAVITY

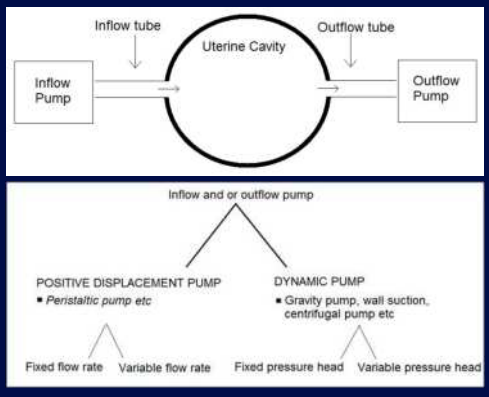
- SIMPLE GRAVITY
- PRESSURE BAGS
- AUTOMATED FLUID MANAGEMENT SYSTEMS

MONITORING FLUID DEFICIT

The incidence of fluid overload with LARGE diameter resectoscope is reported to be less than 5 percent in operative hysteroscopy

- Closed fluid management systems should be used
- Draped that contain measured fluid reservoir
- Automated fluid management systems
- More accurate fluid deficit
- Measurement of fluid deficit should be done at 10 minutes intervals

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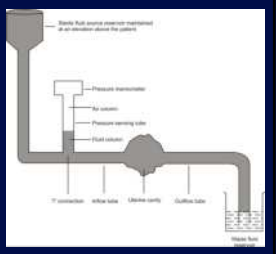
27

TECHNIQUES AND EQUIPMENT FOR UTERINE DISTENTION

GRAVITY

Gravity is the simplest method of instilling fluid under constant hydrostatic pressure. The container of fluid is generally hung from an intravenous (IV) pole, and should be initially placed at a height above the patient's uterus that creates an intrauterine pressure that is just below the patient's mean arterial pressure.

The pressure is approximately 70 to 100 mm Hg when the bag is 1to 1.5 m above the uterus. Gravity system is the simple pressurized delivery system that is created by positioning a pressure cuff around the bag filled with the distending media.

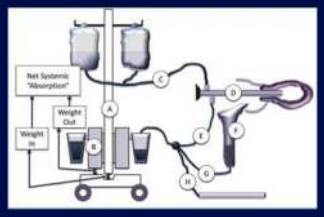


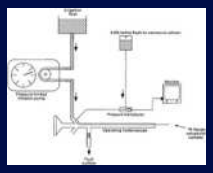
The most basic fluid management system – Gravity

Indman PD, Brooks PG, Cooper JM, Loffer FD, Valle RF, Vancaillie TG. Complications of fluid overload from resectoscopic surgery. J Am Assoc Gynecol Laparosc. 1998;5:63–67 (Evidence R5, Review).

28

AUTOMATED FLUID MANAGEMENT SYSTEMS





Inflow = Outflow

Inflow – distension media entering the uterus
Outflow – fluid collected in suction, drapes, floor
Fluid deficit - Fluid absorbed by the patient

Unaccounted fluid = intravasation

AAGL Practice Guidelines for the Management of Hysteroscopic Distending Media. Journal of Minimally Invasive Gynecology. Vol 20. No 2. March/April 2013

29

REAL TIME RATE OF INTRAVASATION

- Real time rate of intravasation in millilitres per minute known all through the procedure

DIFFERENCES BETWEEN INTRAVASATION RATE AND FLUID DEFICIT

Intravasation rate	Fluid deficit
Measured in mL/min	Measured in mL
Relates to fluid flow rate	Relates to fluid volume
It reflects the rate at which fluid is still entering into the patient	It reflects the total volume of fluid that had entered into the patient in an initial phase of surgery
It is real time event	It is not a real time event
It establishes active intravasation	It does not establish active intravasation
INTRAVASATION RATE PARAMETER IS AVAILABLE ONLY IN THE KUMAR HYSTEROSCOPY PUMP	

New hysteroscopy pump to monitor real-time rate of fluid intravasation. Kumar A, Kumar A. J Minim Invasive Gynecol. 2012 May-Jun. 19(3):369-73.

30

FLUID INTRAVASTAION

Critical drivers of fluid absorptions

1. Intra Uterine Pressure
   - Absorption when intrauterine pressure > MAP (Mean Arterial Pressure)
2. Time
   - Longer surgery = higher deficit
3. Tissue disruption
   - Deep myometrial resection opens vessels

The principal mechanism of systemic absorption of distention media is directly related to surgical disruption of the integrity of venous sinuses in the deep endometrium and the myometrium. When these vessels or sinuses are transacted, the media is intervasated into the systemic circulation if the intrauterine pressure is greater than the pressure in the sinus or blood vessel.

Systemic absorption will be low in diagnostic hysteroscopy and other hysteroscopic interventions that do not have a risk of vessel transection.

Higher the pressure, the greater the degree of systemic absorption.

31

FACTORS PRE-DISPOSING TO SYSTEMIC FLUID ABSORPTION

- High intrauterine distension pressure
- Low mean arterial pressure
- Deep myometrial penetration
- Prolonged surgery
- Large uterine cavities increase the likelihood of systemic fluid absorption
- Severe complications are more likely with hypotonic (low osmolality) electrolyte free solutions, women of pre-menopausal status and those with cardiovascular or renal disease
- These include morbidity and mortality arising from cardiovascular complications (pulmonary oedema and heart failure)
- Neurological complications (cerebral oedema, neurological impairment and seizures)



32

FLUID LOSS

- TUBAL
  - Intrauterine pressure >70mmHg
- INTRAVASATION
  - Intra Uterine Pressure vs Mean Arterial Pressure Mean Arterial Pressure (MAP) is the average pressure throughout one cardiac cycle, systole and diastole.
  - Deep Resection
  - Intramural extension - Fibroids
  - Time
- CERVICAL
  - Do not over dilate (will not allow complete distension)
- PERFORATION
  - Excess fluid loss over a short time
  - Collapse cavity

Emanuel MH, Hart A, Wamsteker K, Lammes F. An analysis of fluid loss during transcervical resection of submucous myomas. Fertil Steril. 1997;68(5):881

33

MANAGEMENT OF COMPLICATIONS FROM EXCESSIVE SYSTEMIC ABSORPTION OF FLUID DISTENSION MEDIA PRESENT

Surgeons should be cognisant of cardiovascular and neurological symptoms associated with systemic absorption of fluid distension media complications to allow timely recognition and treatment.

- Strict fluid balance monitoring
- A urinary catheter
- Serum electrolytes to be measured
- If the patient develops signs of cardiac failure or pulmonary oedema a cardiac echocardiogram and chest X-ray should be undertaken.
- The management of symptomatic hypervolemic hyponatraemia requires multidisciplinary involvement including anaesthetists, physicians and intensivists in a high dependency or intensive care unit. Initial treatment with 3 % hypertonic sodium chloride infusion is indicated to restore serum sodium concentrations to safe levels.

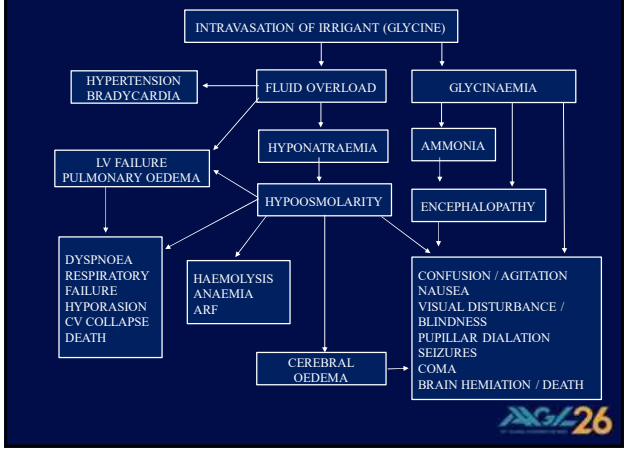
34

EXCESS FLUID INTRAVASATION

- HYPONATREMIA
- FLUID OVERLOAD
- PULMONARY EDEMA
- CEREBRAL EDEMA

1. Do Not Use High Pressures Unnecessarily
2. Do Not Resect Deeper Than Required
3. Keep Surgical Time As Short As Possible
4. Keep a close watch on the fluid intravasation (preferably have a dedicated fluid management system and nursing staff)

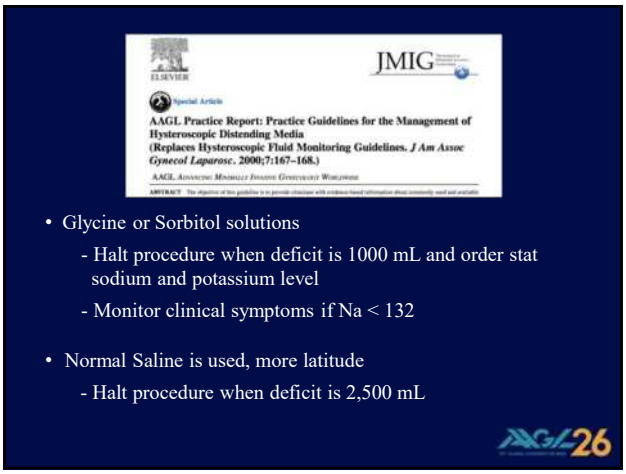
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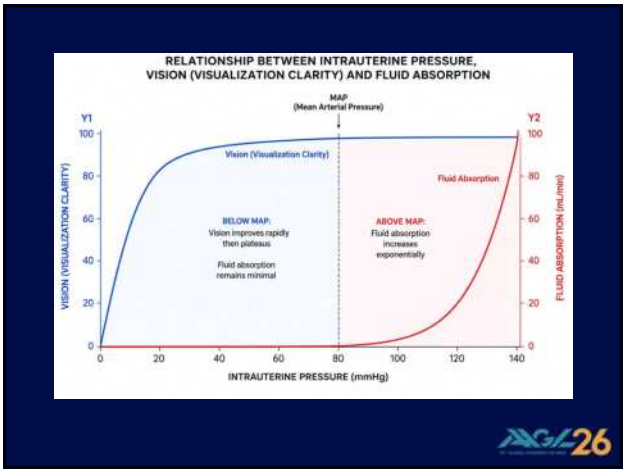
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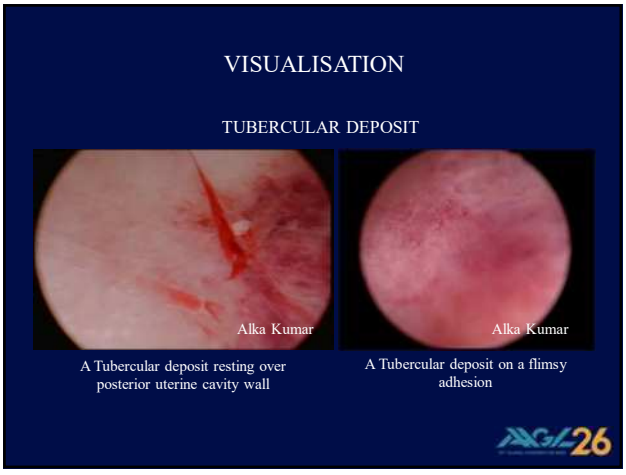
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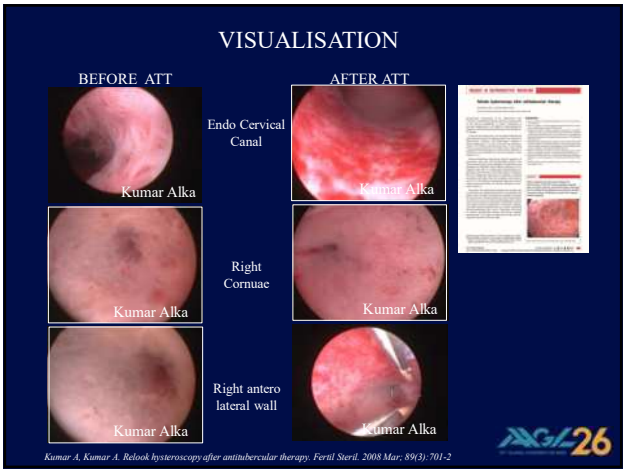
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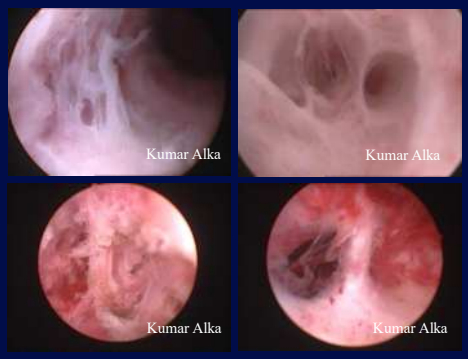
VISUALIZATION - HYSTEROSCOPIC MARKERS AND CHRONIC ENDOMETRITIS

STRAWBERRY APPEARANCE, MICROPOLYPS, UNDULATING ENDOMETRIUM



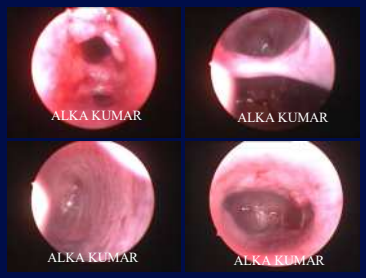
43

ADHESIONS IN ENDOMETRIAL TUBERCULOSIS



44

FALSE PASSAVE / PERFORATION





45

INSTANT DETECTION OF UTERINE PERFORATION

- ANY AUTOMATED PUMP SHOULD DETECT UTERINE PERFORATION
- The perforation is detected with:-
  - Sudden increase in real time rate of fluid intravasation
  - Loss of pressure
  - Loss of visualization
  - Loss of mechanical distention



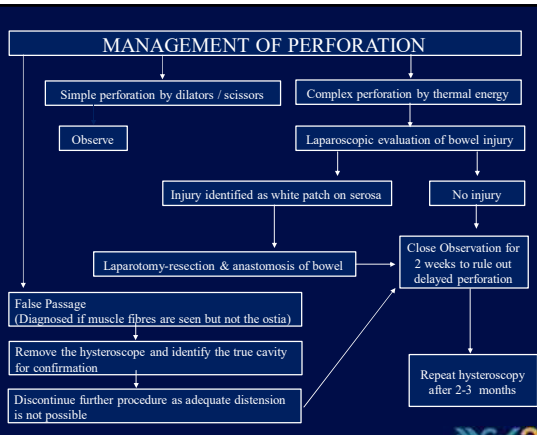
46

"DOUGHNUT TECHNIQUE" OF CORNUAL RESECTION



47

MANAGEMENT OF PERFORATION



48

THE FIVE ENEMIES OF VISUALIZATION

1. Blood
2. Bubbles
3. Debris
4. Wall collapse
5. Fogging

49

WHY IS VISUALIZATION IMPORTANT?

1. Suboptimal view slows procedural progress
2. Increased frustration with repeated attempts to resolve the situation
3. Poor visualization increases potential for adverse events

50

POOR VISUALISATION

- Low distension pressure – Increase the distension pressure

  Low intra uterine pressure will result in inadequate visualisation of the anatomical landmarks
- insufficient suction pressure
- Slow clearance of debris/blood
- Blocked outflow in the sheath
- Bubbles on the anterior wall fibroids

Operative Hysteroscopy

- Cervical incompetence
- Fluid intravasation
- Hemorrhage
- False passage
- Uterine perforation

51

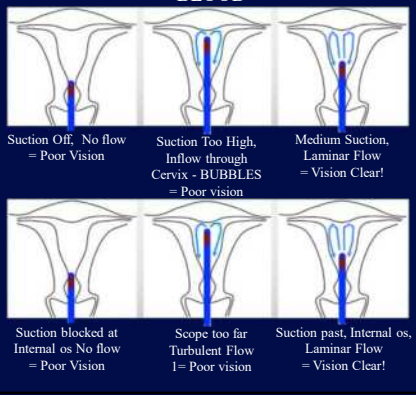


Tubal Ostium as seen using the pump

52

VISUALIZATION PROBLEMS IN HYSTEROSCOPY

BLOOD



1. Blood
2. Bubble
3. Floating tissue
4. Collapsed wall
5. Poor outflow
6. Blocked inflow

MOST PROBLEMS ARE ACTUALLY FLOW PROBLEMS.

53

POOR VIEW - HYSTEROSCOPY

POOR VIEW ?
Is Cavity Collapsed? - INCREASE PRESSURE SLIGHTLY
Still Poor? - INCREASE FLOW RATE
Still Poor? - CHECK OUTFLOW
CHECK BUBBLES
CHECK BLEEDING
CERVICAL LEAK

RATHER THAN SIMPLY INCREASING PUMP PRESSURE

54

GOOD VISUALISATION GETS RESULTS



1. *Mirror Lesion at hysteroscopy | Kumar A, Kumar A.| J Minim Invasive Gynecol. 2008 | Nov-Dec. 15(6):662.*
2. *Intraluminal tubal adhesions | Kumar A, Kumar A. | Fertil Steril. 2008 Feb. 89(2):434-5.*
3. *Atrophic endometrium | Kumar A, Kumar A. | J Minim Invasive Gynecol. 2012 Mar-Apr. 19(2):148-9.*
4. *Surface Architecture in Endometrial Tuberculosis | Kumar A. Kumar A. | J Minim Invasive Gynecol. 2014 Jan 28. 21(5):727-8.*
5. *IJGO Cover page | Kumar A. Kumar A. | The Journal of Obstetrics and Gynecology of India. 2014 May-June.*
6. *Endometrial Tubercular Abscess | Kumar A, Kumar A. | J Minim Invasive Gynecol. 2017 Feb 3. 24(7):1067-1068.*
7. *A false passage created during hysteroscopy | Kumar A, Kumar A. | J Minim Invasive Gynecol. 2007 Mar-Apr. 14(2):143.*

55

CLINICAL PRINCIPLE

- Patient safety always takes precedence.
- Patient comfort determines whether the procedure should remain an office hysteroscopy or be deferred to the operating room.
- A failed or painful office hysteroscopy is not a failure – it is an indication to choose a safer and more appropriate setting.

The ideal candidate for office hysteroscopy is one in whom the procedure can be completed safely, comfortably, and with high diagnostic and therapeutic success.

56

PERFECT HYSTEROSCOPY

"The best hysteroscopist is not the one who uses the highest pressure-but the one who understands the physics behind every image."

Visualization =

- Optimal Pressure
- Optimal Flow
- Adequate Distension
- Efficient Outflow
- Resistance
- Bleeding
- Intravasation
- Pain

57

LEARNING POINTS

1. Distension is essential, but excessive pressure is harmful.
2. Pressure and flow are distinct physiological variables.
3. Visualization depends on the interaction of pressure, flow, and outflow.
4. Patient comfort improves when using the lowest effective pressure.
5. Be familiar with forces which influence fluid balance
6. Monitor intra-op fluid balance closely
7. Adhere to fluid management guidelines strictly
8. Suspect uterine perforation when sudden excessive fluid absorption occurs
9. Do not cut / reset too deep
10. Dangerous areas include the cornue and isthemic regions
11. Intelligent, adaptive fluid management represents the future of hysteroscopy.

58

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63



Dexeus mujer

Navigating the Uterine Cavity

S. Haimovich MD, PhD

1

No conflicts of interest



2



Our journey begins with a voyage...

...using a hysteroscope



3





Cystoscope Hysteroscope

Every **gynecologist** should know how to perform a **hysteroscopy** in the same way that every **urologist** knows how to perform a **cystoscopy**

4

Hysteroscopy is primarily a procedure for **diagnosis.**

If any intervention is needed, the patient will require **intrauterine surgery.**

5



Before starting our journey...

...we must understand the geography!

6

The Innervation



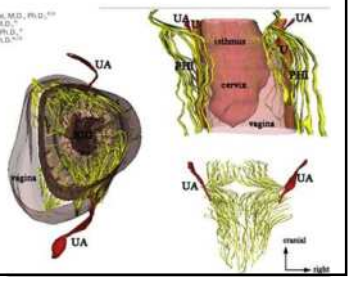
7

ORIGINAL ARTICLE: GYNECOLOGY
Fertil Steril 2022;117:1279–88.

Anatomic and functional mapping of human uterine innervation

Nerve fibers follow a **centripetal course**, entering the uterus laterally at the isthmus and extending **from the serosa** (outer layer) inward toward **the endometrium** (inner layer).

The **myometrium is densely innervated**, while the **endometrium has almost no innervation**, especially in its functional layer.



8

Innervation I

Which are the **pain receptors** involved during a hysteroscopy?

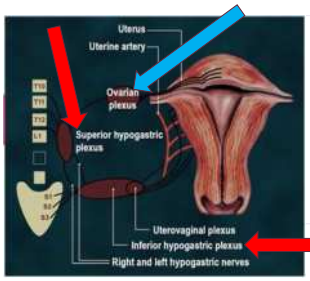
1. **Mechanical nociceptors**: Stimulated by **dilation of the cervix** and **distension of the uterine cavity**.

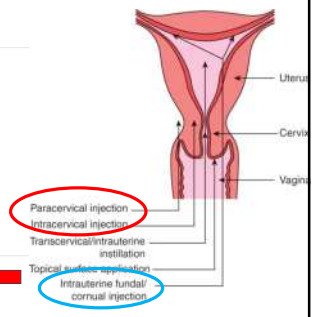
2. **Polymodal nociceptors**: Activated by **insertion of the hysteroscope and distension of the uterus**.



9

Innervation II





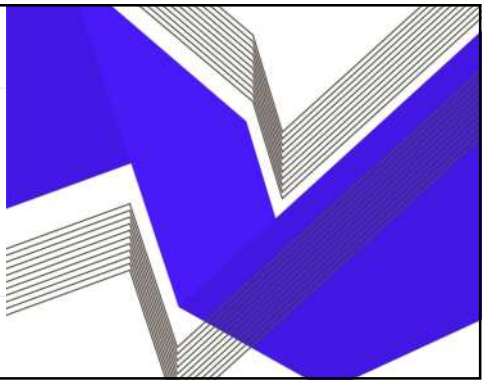
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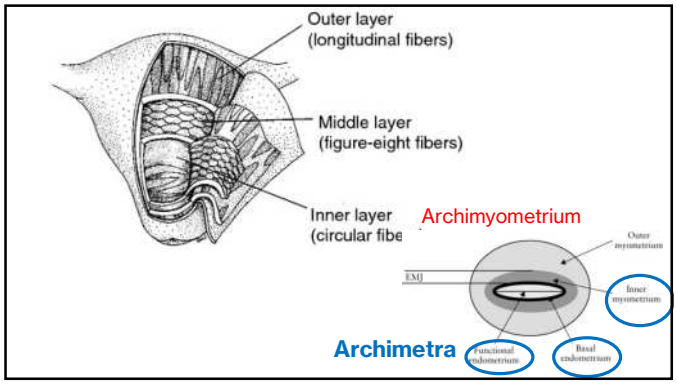


11

The myometrium



12



13

Now is when you will see how alive the cavity is!!!



14

The wave-like motion of the ARCHIMETRA represents uterine peristalsis



15

Uterine contractility or uterine peristalsis

Uterine contractility was first described by Heinricius in 1889 using recordings obtained using an intrauterine balloon device.[27] Since the first description, various methods have been developed to assess uterine contractions.

My name is Gustaf Heinricius. I published the first study that demonstrated uterine contractility by measuring the pressure gradients with the help of an intrauterine balloon.



16

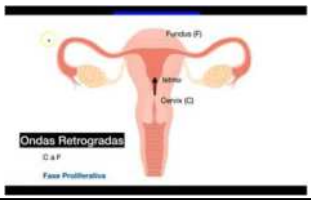
4D ultrasound as a method to assess uterine peristalsis

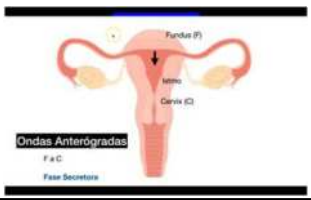


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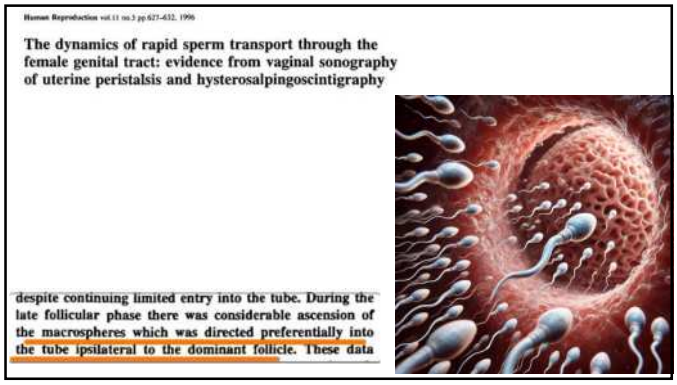
Uterine peristaltic activity during the menstrual cycle: characterization, regulation, function and dysfunction

cervico–fundal contractions (type A), fundo–cervical contractions (type B) and isthmical contractions (type C) (**Figure 1**). While contractions of type A and B travel as peristaltic waves over the whole distance from the cervix to the fundal region and from the fundus to the cervical region, respectively, type C contractions extend only from the uterine isthmus to the lower mid-corporal region.





18



19



20

Which conditions affect uterine peristalsis?

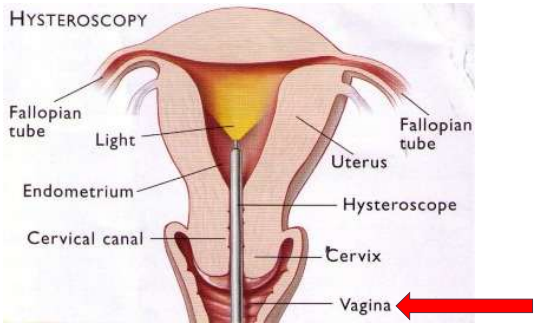
1. Adenomyosis
2. Endometriosis
3. Fibroids
4. Chronic Endometritis
5. Isthmocele
6. Uterine Malformations (Septate, Dysmorphic...)

21

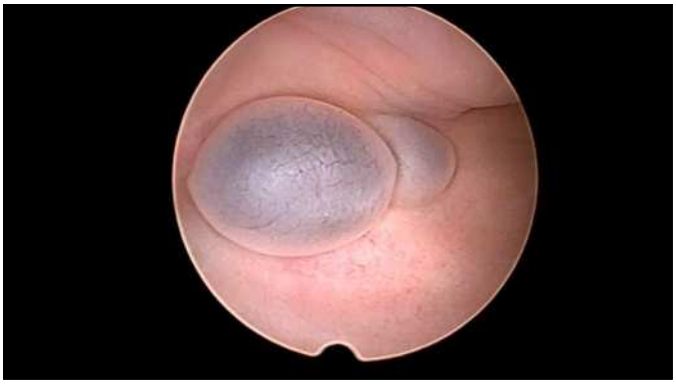
We start moving...



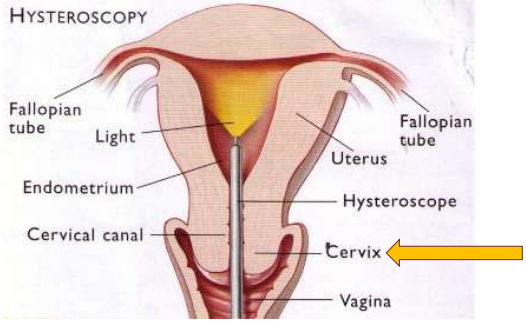
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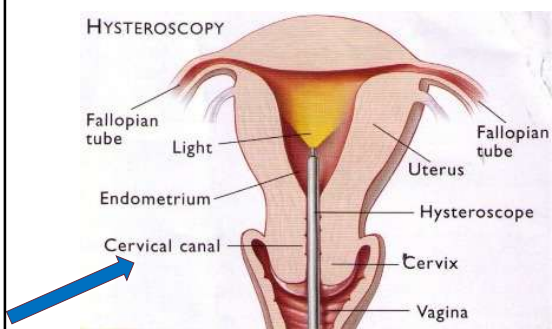
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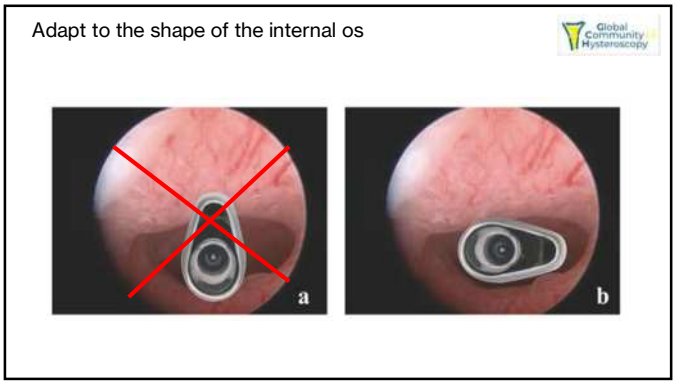
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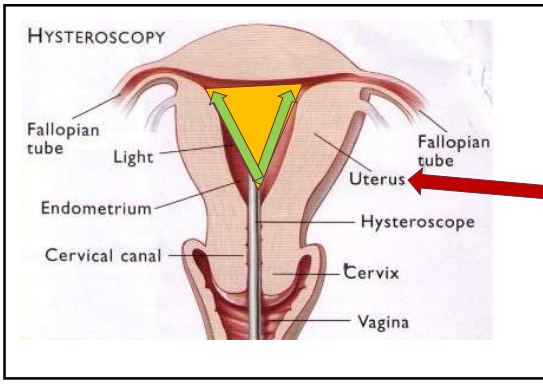
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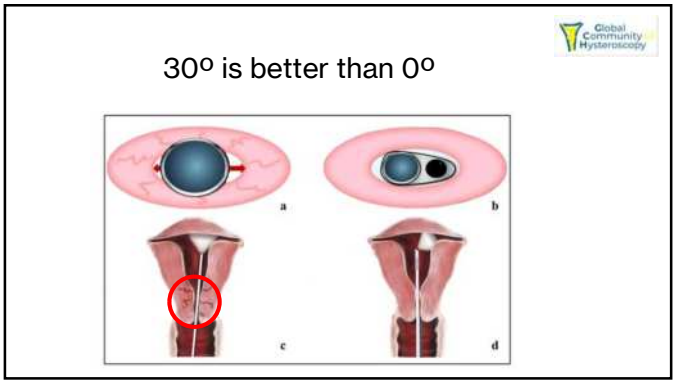
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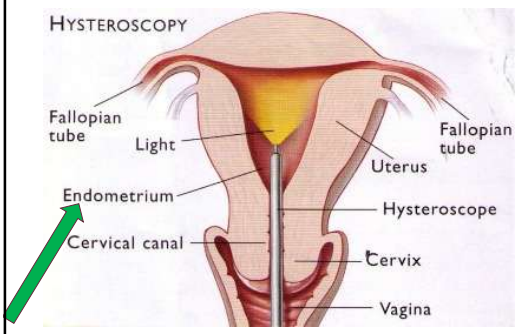


The Myometrium is VERY sensitive to distension

The IDEAL pressure is the **lowest pressure** that allows **adequate visualization** with the least discomfort for the patient.

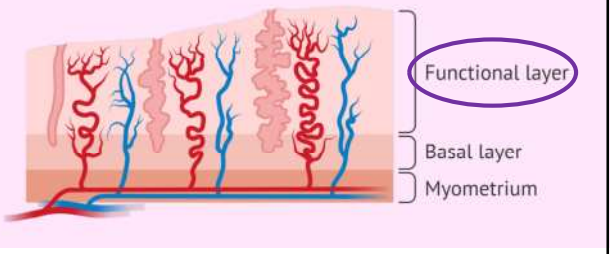
The intensity of contraction of the myometrium increases over time – **the procedure must be short**!!!

31



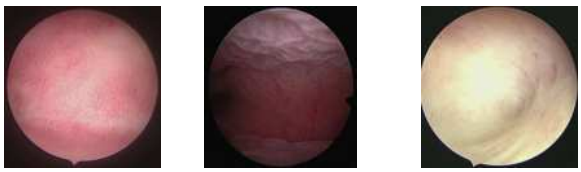
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The Endometrium



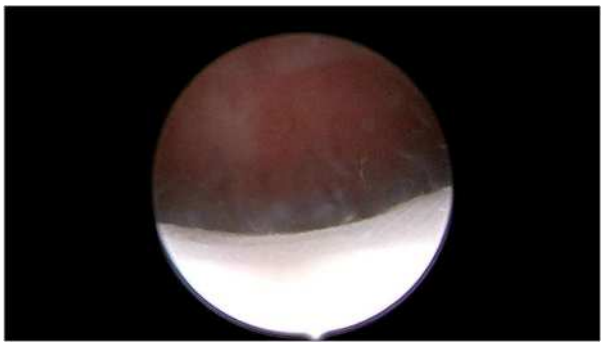
33

The Endometrium



Proliferative | Secretory | Atrophic

34



35



36



After understanding and seeing how incredible the uterine cavity is...

Your turn to act and train.

37



38



39

Erica F. Robinson, MD
Division Chief & Associate Professor
Complex Benign Gynecology
UConn Health



UCONN HEALTH

Office Hysteroscopy: Indications, Patient Selection & Evidence-Based Pain Control

3-16, 2026 · BOSTON · #AAGL26

1

Disclosure

- Consultant: Hologic

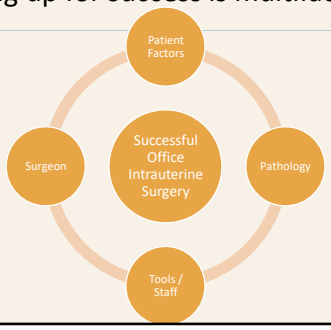
2

Objectives

- Identify good candidates for office intrauterine surgery and navigating shared decision making
- Demonstrate appropriate pathology for office intrauterine surgery
- Analyze the evidence behind pain management for office intrauterine surgery

3

Setting up for success is multifactorial



4

Patient Factors

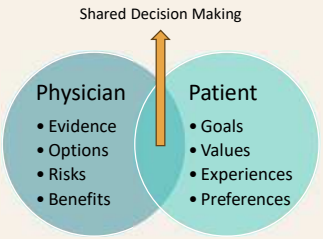


- Timing - schedule for follicular phase
- Anatomy
  - Cervical Stenosis
  - ?menopausal cervix
  - Small vs large pathology
- Medical history
  - Multiparity (prior vaginal delivery) is protective vs previous CS predictor of increased pain
  - Dysmenorrhea
  - Chronic pelvic pain
- Psyche
  - Anxiety, anxiety, anxiety

5

Patient

- Thorough counseling
- Give time for discussion and questions
- Stress typically fast, but relaxation helps
- Review tools for pain relaxation
- Offer office or sedation–
  - Pros/cons
  - Make it a patient choice
- Stress that patient is in control!
- Communicate
- Communicate
- Communicate



6

Most office hysteroscopy is well tolerated without medications for pain!!

- Technique
- Patient selection
- Surgeon expertise
- Communication

7

Pain Management



8

Vaginoscopy	fast, effective, lower pain scores
NSAIDS	Overall mixed data– some studies support use, others report no difference 2019 Cochrane Review
Cervical preparation	misoprostol may decrease procedural pain, but is a/w increased side effects (abdominal pain, cramping, GI side effects, bleeding) Insufficient evidence for routine use. Menopausal patients- may see benefit if given vaginal estrogen x 2wks + vaginal misoprostol 12hrs prior
Opioids	High adverse effects, do not help
Paracervical block	can decrease pain at tenaculum site highly variable technique
TENS	
Music/VR	mixed data may be part of a multimodal plan

9

The environment

- Instrumentation as reviewed by Dr. Tavcar
- Well prepared and trained staff



10

The Pathology

- IUDs
- Insufficient EMB, Cavity Assessment
- Polyps
- Fibroids – treatment and/or surgical planning
- Retained POC or Missed AB
- Adhesiolysis
- Isthmocele/Niche/Cesarean scar evaluation

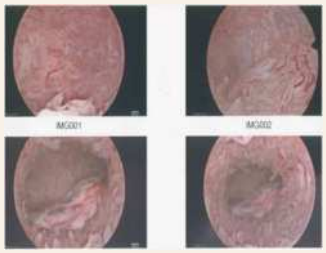
11

Clinical Scenarios PERFECT for OH

IUDs	Abnormal uterine bleeding	Concern for Asherman's
Retained or loss Concern for malposition	Inconclusive EMB Abnormal ultrasound/imaging finding • Polyps • Fibroids Postmenopausal bleeding Retained products of conception	Postpartum patients with previous Asherman's After instrumentation for postpartum hemmorrhage

12

Pathology





- IUDs:
  - Stuck
  - Malpositioned
- Cavity Assessment

13

Pathology: Polyps & Fibroids



14

Pathology: Postmenopausal bleeding

OH performed with polypectomy and targeted EMB



15

Pathology: Retained POC

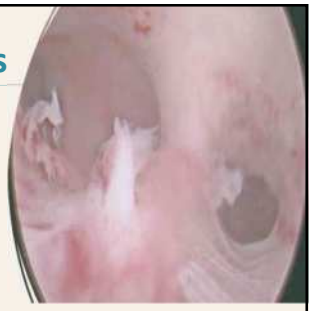
- 35yo G5P2123 with missed AB in cesarean scar niche
- Initially expectant management
- Persistent bleeding and spotting, beta HCG plateau'd in the 20s
- US: increased echogenicity and color flow in the suspected niche measuring approximately 21mm with concern for retained products of conception in the c-section scar.



16

Pathology: adhesions

- On hysteroscopy:
  - Severe adhesive disease starting at the lower uterine segment
  - No tubal ostia for guidance
- Goal: creation of normal sized cavity



17

Acknowledgements

- Dr. Jovana Tavcar
- Dr. Sergio Haimovich
- Dr. Alka Kumar

18

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19

CULTURAL AND LINGUISTIC COMPETENCY & IMPLICIT BIAS

The California Medical Association (CMA) outlines standards for Cultural Linguistic Competency and Implicit Bias in CME. The goal of the standards is to support the role of accredited CME in advancing diversity, health equity, and inclusion in healthcare. These standards are relevant to ACCME-accredited, CMA-accredited, and jointly accredited providers located in California. AAGL is ACCME-accredited and headquartered in California.

CMA developed the standards in response to California legislation (Business and Professions (B&P) Code Section 2190.1), which directs CMA to draft a set of standards for the inclusion of cultural and linguistic competency (CLC) and implicit bias (IB) in accredited CME.

The standards are intended to support CME providers in meeting the expectations of the legislation. CME provider organizations physically located in California and accredited by CMA CME or ACCME, as well as jointly accredited providers whose target audience includes physicians, are expected to meet these expectations which began on January 1, 2022. AAGL has been proactively adopting processes that meet and often exceed the required expectations of the legislation.

CMA CME offers a variety of resources and tools to help providers meet the standards and successfully incorporate CLC & IB into their CME activities, including FAQ, definitions, a planning worksheet, and best practices. These resources are available on the CLC and IB standards page on the CMA website.

Important Definitions:

Cultural and Linguistic Competency (CLC) – The ability and readiness of health care providers and organizations to humbly and respectfully demonstrate, effectively communicate, and tailor delivery of care to patients with diverse values, beliefs, identities and behaviors, in order to meet social, cultural and linguistic needs as they relate to patient health.

Implicit Bias (IB) – The attitudes, stereotypes and feelings, either positive or negative, that affect our understanding, actions and decisions without conscious knowledge or control. Implicit bias is a universal phenomenon. When negative, implicit bias often contributes to unequal treatment and disparities in diagnosis, treatment decisions, levels of care and health care outcomes of people based on race, ethnicity, gender identity, sexual orientation, age, disability and other characteristics.

Diversity – Having many different forms, types or ideas; showing variety. Demographic diversity can mean a group composed of people of different genders, races/ethnicities, cultures, religions, physical abilities, sexual orientations or preferences, ages, etc.

Direct links to AB1195 (CLC), AB241 (IB), and the B&P Code 2190.1:

Bill Text – AB-1195 Continuing education: cultural and linguistic competency.
Bill Text – AB-241 Implicit bias: continuing education: requirements.
Business and Professions (B&P) Code Section 2190.1

CLC & IB Online Resources:

Diversity-Wheel-as-used-at-Johns-Hopkins-University-12.png (850×839) (researchgate.net)
Implicit Bias, Microaggressions, and Stereotypes Resources | NEA
Act, Communicating, Implicit Bias (racialequitytools.org)
https://www.contemporaryobgyn.net/view/overcoming-racism-and-unconscious-bias-in-ob-gyn
https://pubmed.ncbi.nlm.nih.gov/34016820/
https://hr.ucdavis.edu/departments/learning/certificate/implicit-bias
https://pmc.ncbi.nlm.nih.gov/articles/PMC7011228/