SEEING IS BELIEVING

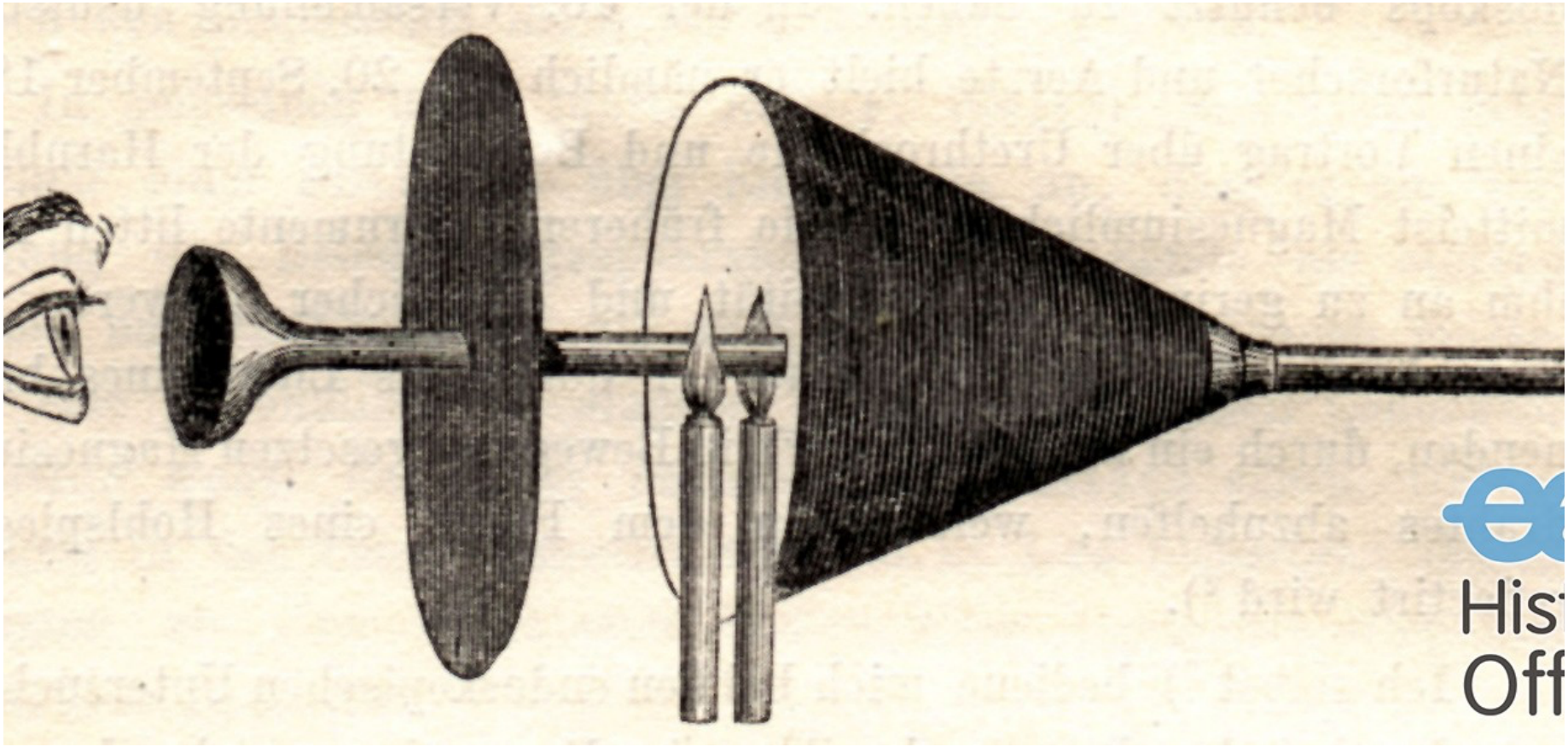
Diagnostic and Therapeutic Hysteroscopy

HISTORICAL HYSTEROSCOPY

- 460-375 B.C. Hippocrates made reference to use of a rectal speculum
- 936-1013 A.D An Arabian physician named Albukasim used mirror reflected light to evaluated the vagina and cervix .
- 1805 Bozzini designed the LichtLeiter with candles and mirrors
- 1865 Desormeaux- produced the first hysteroscope and coined the word "*l'endoscopie"* for evaluation and treatment of urethra and bladder conditions mostly in male patients
- 1869 Pantaleoni – performed the first hysteroscopic cautery of a bleeding endometrial polyp using silver nitrate using the Desormeaux scope in a 61 yo woman with postmenopausal bleeding. Uterine distension and rudimentary instruments were a problem.
- 1925 Rubin used Co2 gas distension, Gauss experimented with liquid distension media.
- 1970s the instruments became more utilitarian
- 1980s use of liquid distension media was routine
- Advances since the '80s resulted in improvements in fiberoptics and visual resolution with smaller diameter scopes

The Bozzini Lichtleiter

Segalas modification on the LichtLeiter



Gasogene lamp: four parts 96% alcohol with one part turpentine introduced to a burning flame

- In the 1865, the first serviceable endoscope was presented by Desormeaux, nearly 50 years after Bazzini.

Indications for Hysteroscopy

- Abnormal Uterine Bleeding, Menorrhagia, Post Menopausal Bleeding
  - Evaluation intraoperatively prior to Novasure/Thermachoice ablation,or during direct endometrial ablation with rollerball/loop electrodes.
- Submucosal Myomectomy
- Endocervical Canal and Endometrial Cavity Assessment with Endocervical/ Endometrial Polypectomy/Directed Lesion Biopsy
- Evaluation of Suspected Mullerian Defects/Endometrial Septum Resection
- Lysis of Asherman's Adhesions (Have Cook or Foley balloon for intracavitary distension post op)
- Removal of Foreign Bodies (ie IUD, retained fetal bone)
- Evaluation and ?Cannulation of Fallopian Tube Ostia
- Sterilization –Essure/Adiana

Helpful PreOperative Imaging

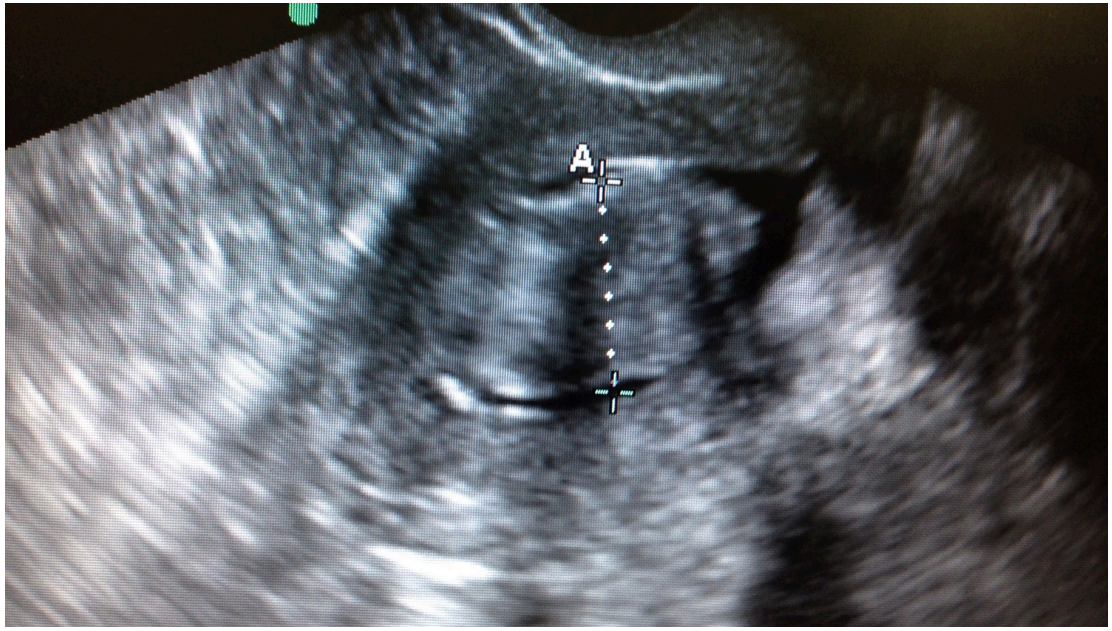
- Pelvic Ultrasound /Saline Infusion Ultrasound
  - Excellent to assess the location, size and vascularity (if doppler is available) of polyps, fibroids, septae, foreign bodies
  - Used to assess the intramural component of Submucosal Fibroids
    1. Type 0 are within the Endometrial Cavity
    2. Type 1 <50% intramural component
    3. Type 2 > 50%intramural component (measure how much myometrium remains between the fibroid and the serosa to prevent perforation)

       Warn the Patient that a reoperation may be necessary

Hysteroscopy Preoperative Check Off List

- Pregnancy Test and Normal Pap Smear – Pregnancy and known cervical or endometrial malignancies are contraindications
- Rule out underlying medical conditions that may be aggrevated by fluid overload (ie. Congestive Heart Failure, Underlying Valvular Disease)
- Rule out Infection
  1. Examine and treat: cervicitis/vaginitis /endometritis
  2. Culture as indicated
- Consider cytotec 200 mcg the night before surgery to decrease cervical trauma/pain during dilation.
- Confirm no allergy to nickel or radiographic contrast material for patients undergoing hysteroscopic sterilization procedures.
- Consider having progestin IUD available for intraop insertion for women in need of contraception/Rx for menorrhagia

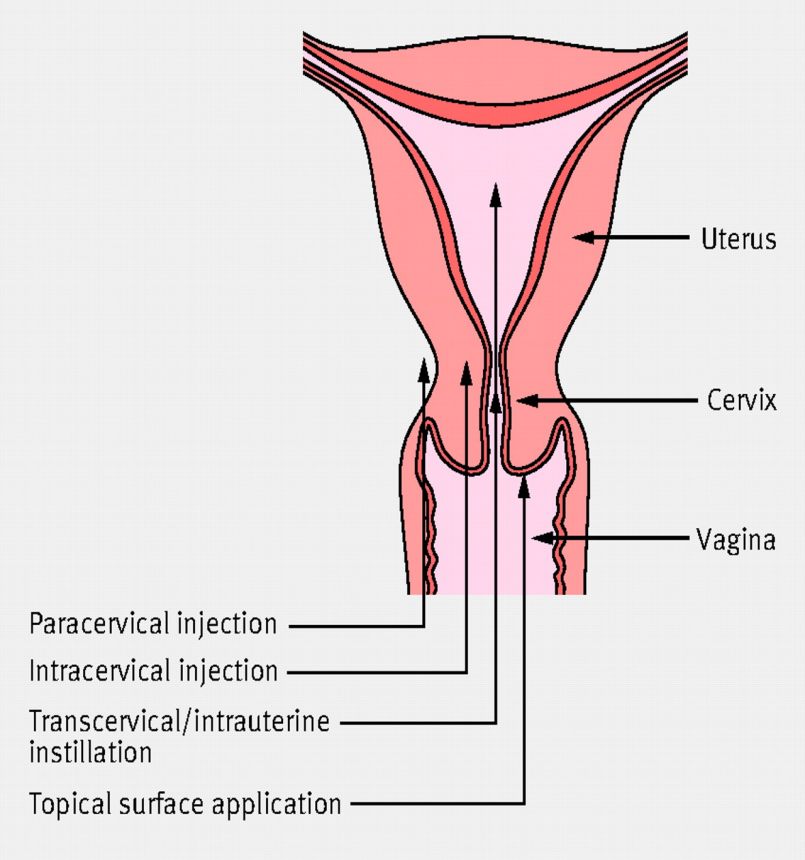
- 61 yo woman seen in the OBGYN Clinic in Jacmel with post menopausal bleeding. BMI 40. No FH malignancy. No previous hx of menstrual morbidity. Endometrial thickness was 26 mm. With sterile saline and an insemination catheter- 5 cc were instilled during vaginal ultrasound. D&C scheduled in Jacmel, instead of endometrial biopsy or referral for hysterectomy for ? malignancy.



Video Clips
Various Hysteroscopic Techniques

- myomectomy with loop electrodehttps://youtu.be/D8OzdJI0X08?list=PLaHGr0pMg-ORbX_-v_tqsM2n5N91j97S6
- uterine septum resection with loop electrodehttps://youtu.be/W_RRuYiOUxY?list=PLaHGr0pMg-ORbX_-v_tqsM2n5N91j97S6
- Myosure myomectomy https://youtu.be/G4nZGvy4v1s
- Hysteroscopic Lysis of Ashermans Adhesionshttps://youtu.be/d2qi2kHhFOo
- Intrauterine Foley balloon placed after ashermans dissection https://youtu.be/ELOZWxiB14w

Local Anesthesia Alternatives



Anesthesia Pearls of Wisdom

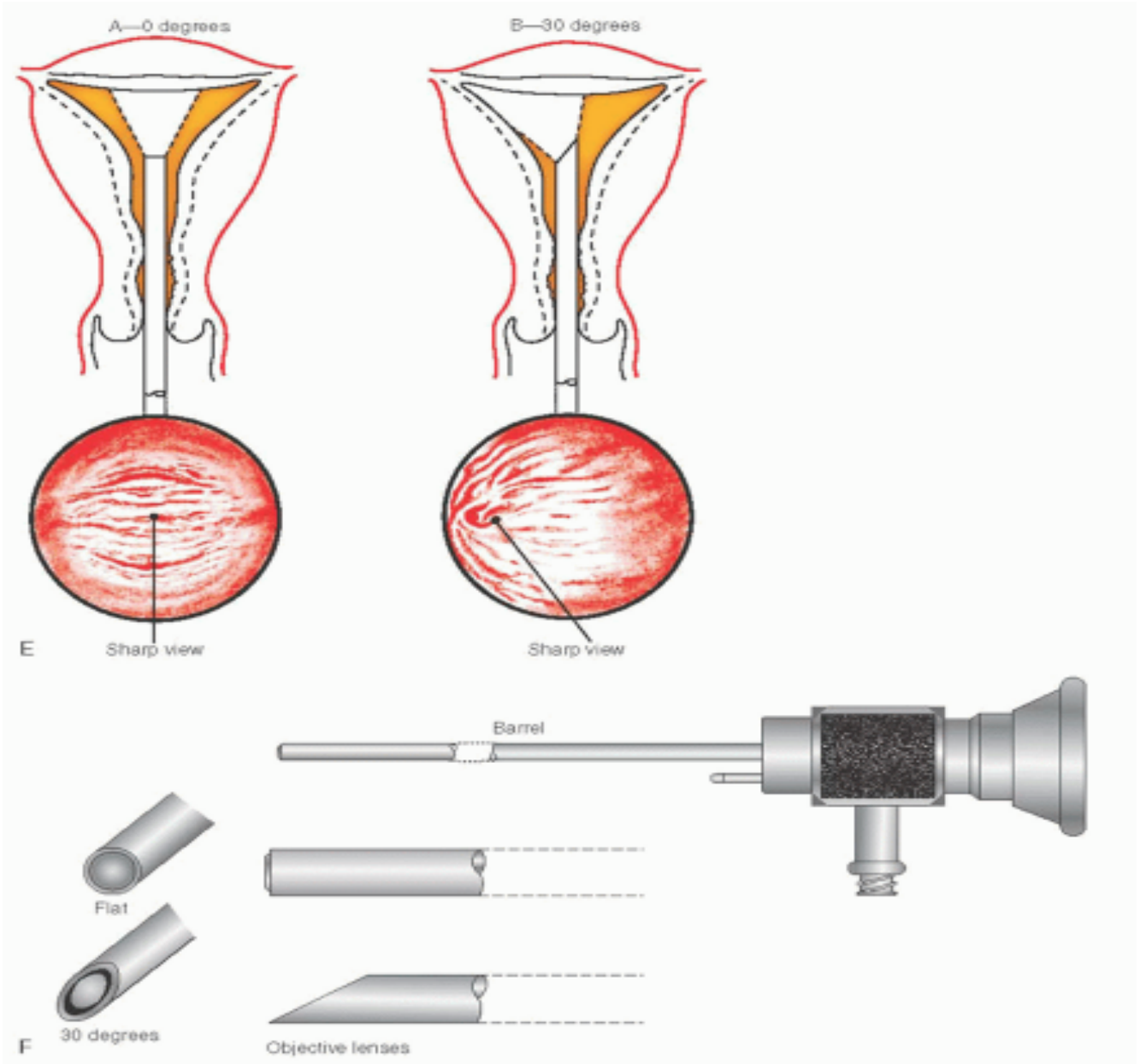
- Preop Cytotec 200 mcg the night before surgery may decrease pain with dilation
- Neither Opiates, NSAIDs, Local nor Topical Anesthetics were more beneficial at controlling pain than placebo.
- Short Diagnostic Procedures with small diameter scopes may only require local anesthesia with paracervical block.
- Longer /More Extensive Procedures with larger diameter scopes will likely require a regional anesthesia (spinal) or paracervical block with MAC (monitored anesthesia care) or general anesthesia depending on anxiety and pain tolerance.
- Always have resuscitation equipment readily available due to possibility of severe vasovagal responses to cervical dilation &/or uterine distension or surgical/anesthetic complications
- In most cases 10 CC of 0.25 % bupivocaine or 1-2% lidocaine is sufficient. Toxic doses of lidocaine would be 4.5 mg/kg or 31.5 cc for a 70 kg woman.

Steps to Prevent Insufflation Related Complications

- Insufflation of CO2 should be at less than 100 ml/minute and should be provided at minimal trendelenberg with the dilated cervix not exposed to open air. Remove the speculum after the hysterscope has been placed uintracervically.
- Limit the Amount of time doing the surgery. Come back for the last bit of myoma later.
- Use the Continuous Flow Infusion pump if available or a well maintained continuous Flow Gravity pump 3 feet above equals a 75 mm Hg
- Identify flow and hyponatremia before we have to intervene.

Hysteroscopic Instruments

- Diagnostic Scopes generally have a Outside Diameter of 2.7-5 mm and are better tolerated than Operating Scopes with OD of 5-10 mm. Scopes with OD >5 mm will require a paracervical block generally.
- Viewing Angles range from straight (0 degree) up to 70 degrees (more useful for visualization of the tubal ostia for sterilization procedures)


A—0 degrees
B—30 degrees
Sharp view
Sharp view
E
Barrel
Flat
30 degrees
Objective lenses
F

Types of Operating Electrodes

Cutting loop

Coagulation electrode

Cutting electrode

Cutting loop

Discussion Uterine Distension Media

- Mono-polar Electrodes require hypotonic, nonconductive media such as glycine. Can't use saline/LR etc.
- Bipolar Electrodes allow the use of isotonic, low viscosity conductive media such as saline.
- Carbon Dioxide – flow rates of 40-60 ml/min and pressures up to 100 mm Hg are acceptable. Beautiful picture but can't clear the blood. Higher pressures result in arrhythmias, embolism, death.
- Liquid Distension requires pressures of approximately 75 mmHg but may require up to 100 mm Hg (higher may result in intravasation of media).
  - Nonconductive/high viscosity solution intravasation like dextran 70 can be prevented by using a syringe or sophisticated efflux systems that monitor flow and volume during the procedure. Anaphylaxis, DIC and destruction of instruments are adverse effects.
  - Mannitol 5%, sorbitol and glycine are the low viscosity/hypotonic/nonconductive liquids. Mannitol can only be used with monopolar procedures, sorbitol can result with hyperglycemia and glycine needs to be avoided in patients with liver failure since it is metabolized into ammonia.
  - Saline and LR are the isotonic, conductive low viscosity liquids that can't be used with monopolar systems.