New Developments in Hysteroscopy and Instruments

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TİTANİK DELUXE HOTEL, BELEK ANTALYA
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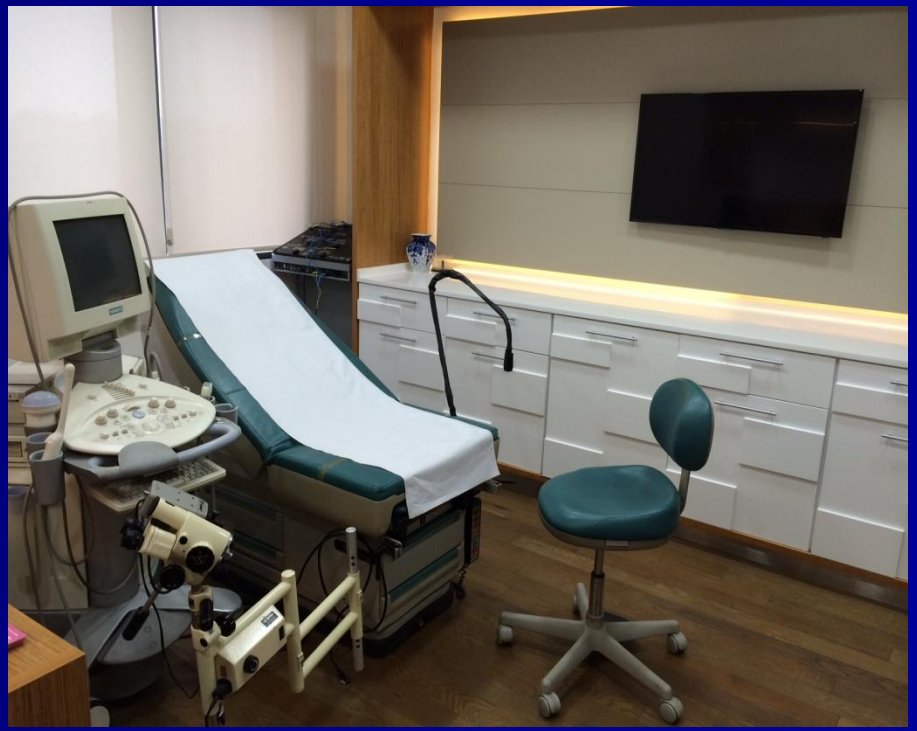
Topics

- Technology and instruments
  - Hysteroscopes and sheaths
  - Resectoscope
  - Electrocautery and laser
  - Morcellation
  - Distension and irrigation
  - Virtual hysteroscopy
- Methods and procedures
  - Preoperative preparation and basic introduction of the hysteroscope
  - Operative procedures
  - Postoperative care
- Conclusion

Where ?

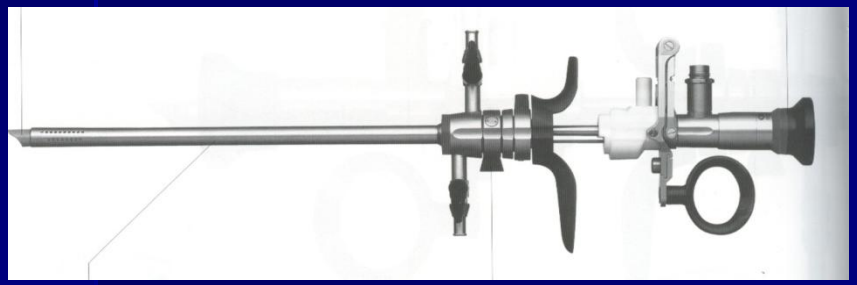
OR

Office



Size and Shape

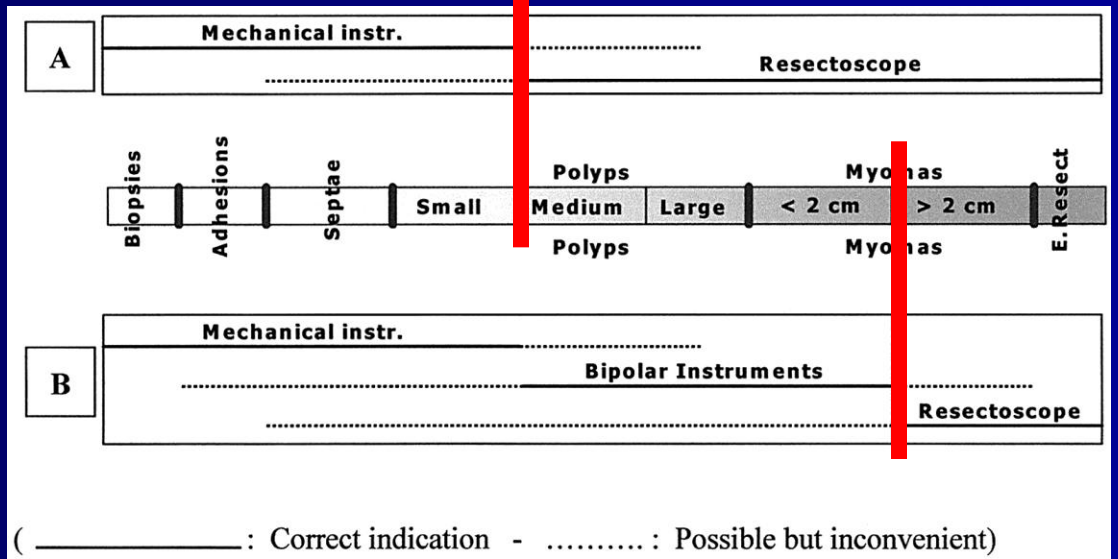
Resectoscope



Office Hysteroscopy

BEFORE 1998

AFTER 1998



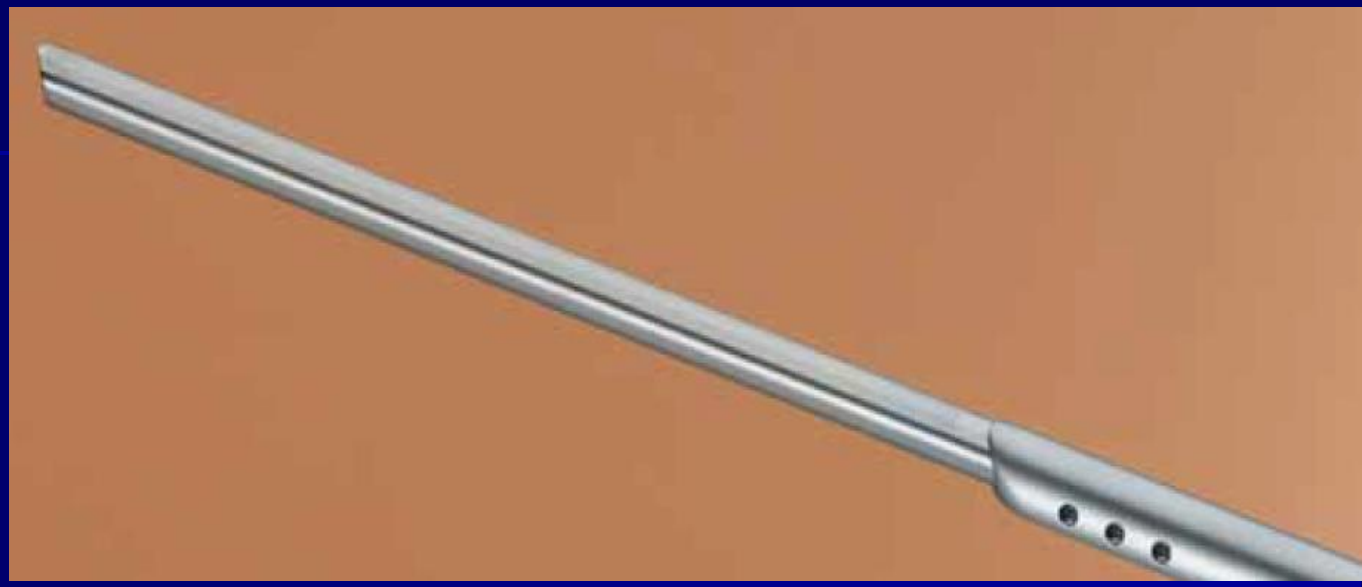
Hysteroscopes and Sheaths

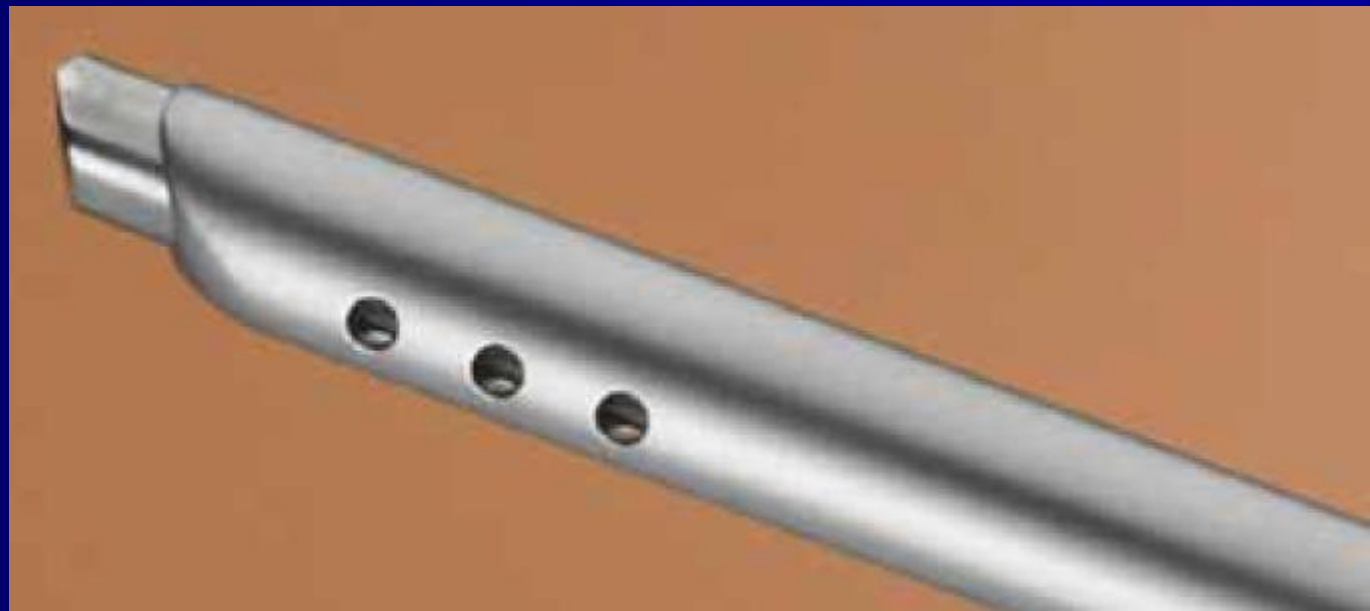
- The most widely used optical hysteroscopes have an outer diameter of 3–4 mm
- Thinner rigid scopes with fibre optics and an outer diameter of 1.9 mm have been developed
  - Lower contrast and resolution of the images
  - Both optical and fibre-optic hysteroscopes are monocular and provide little depth perception, different viewing angles, from 0–70
- Thirty-degree scopes are most commonly used for diagnostic procedures.
- Diagnostic sheaths generally have an outer diameter between 2.5 -5.5 mm
- Operative sheaths have an outer diameter between 5.5 and 9.0 mm.
- Working channels have diameter between 5 and 7 Fr (1 french is exactly 1/3 millimeters).

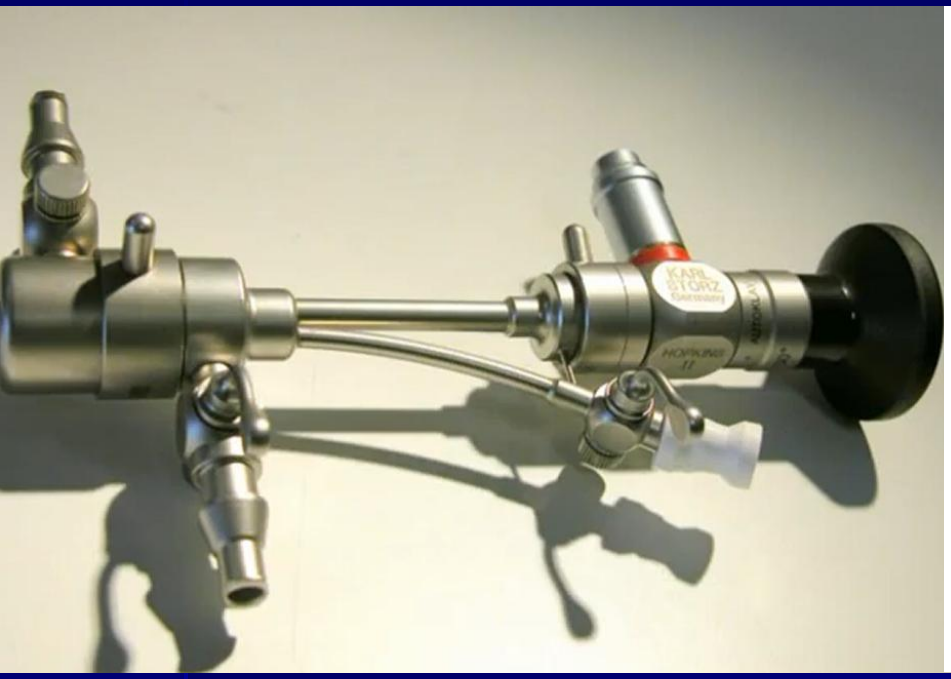
New developments in Hysteroscopes and sheaths

- Generally dominated by decreasing outer diameter without losing the quality of the image.
- Newer hysteroscopes provide separate in and outflow channels
- Invisio Digital Hysteroscope
  - Digital camera system housed in distal tip of the hysteroscope

CAMPO Compact Hysteroscope TROPHYscope®



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Germany


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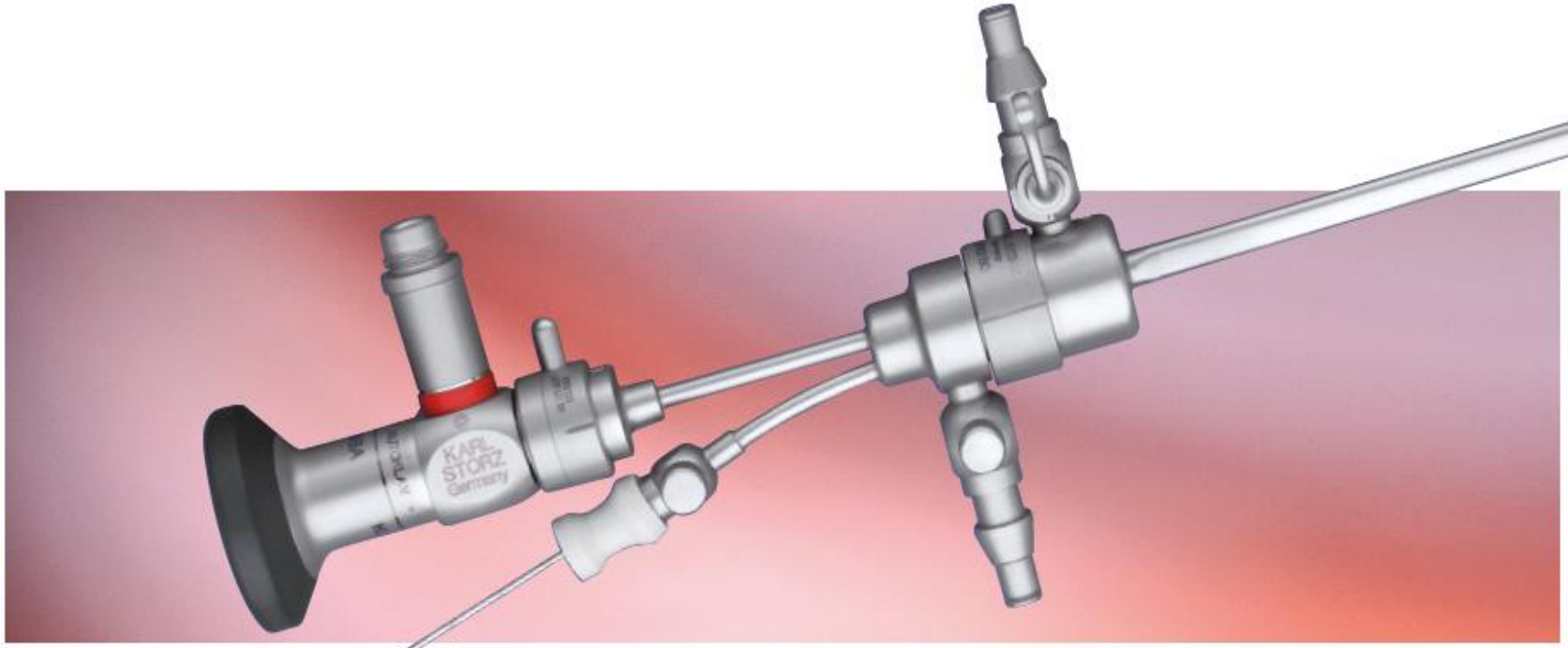
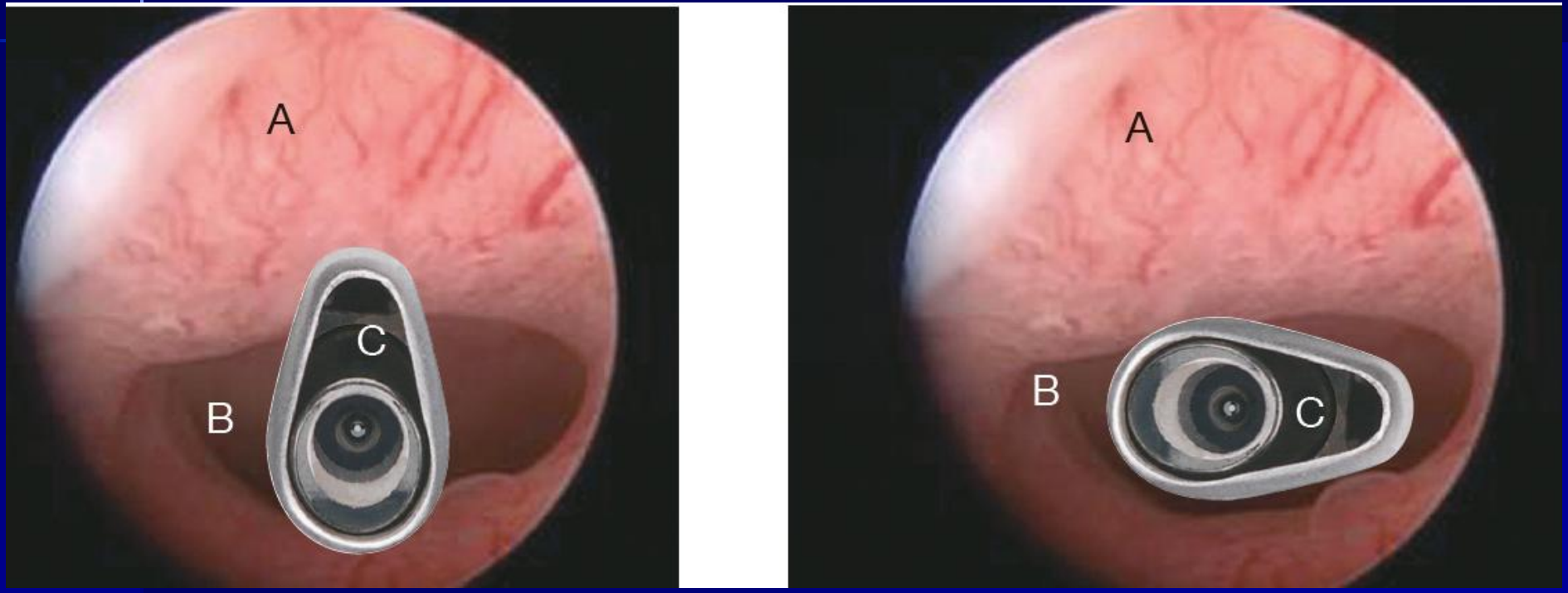
B.I.O.H.



Office Hysteroscopy

BETTOCCHI® Hysteroscopes with semirigid instruments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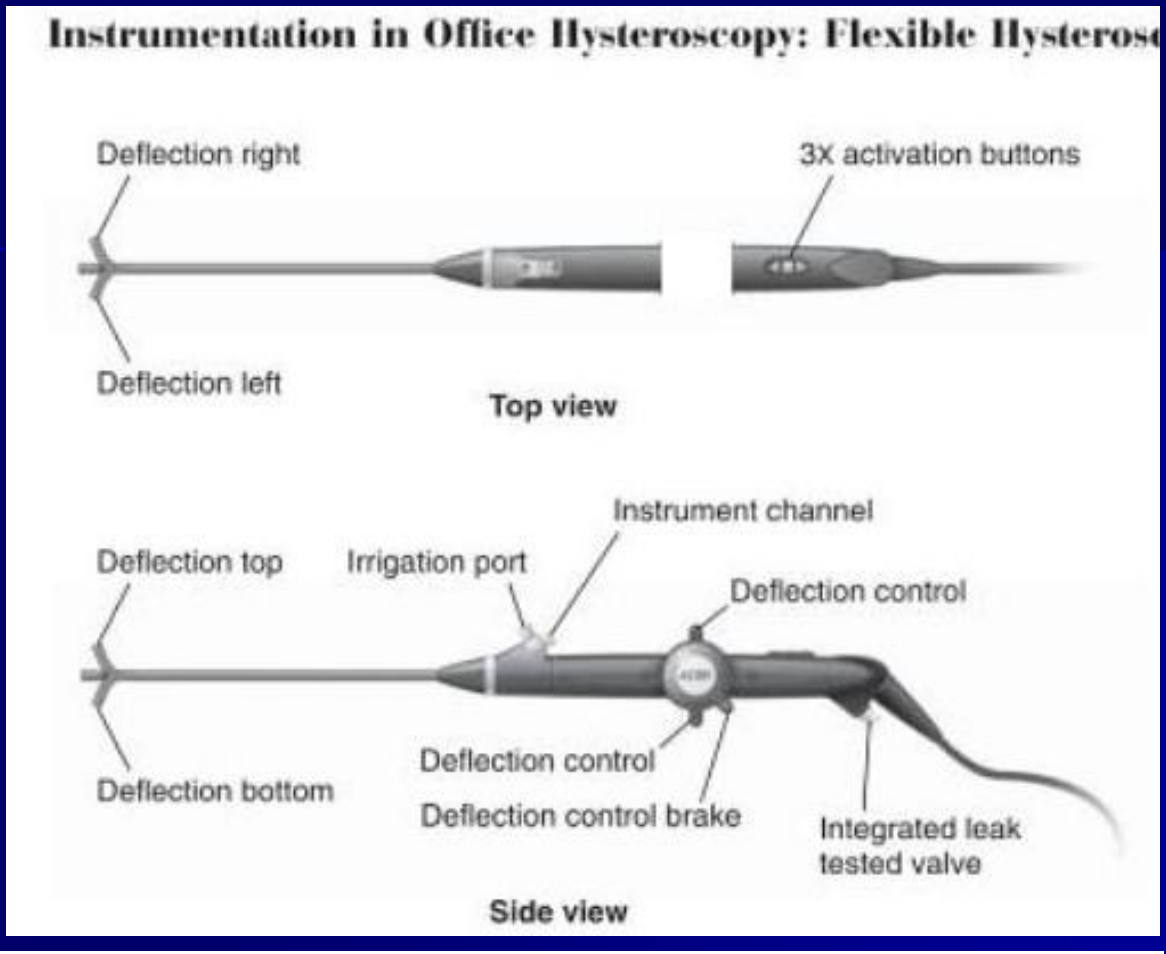
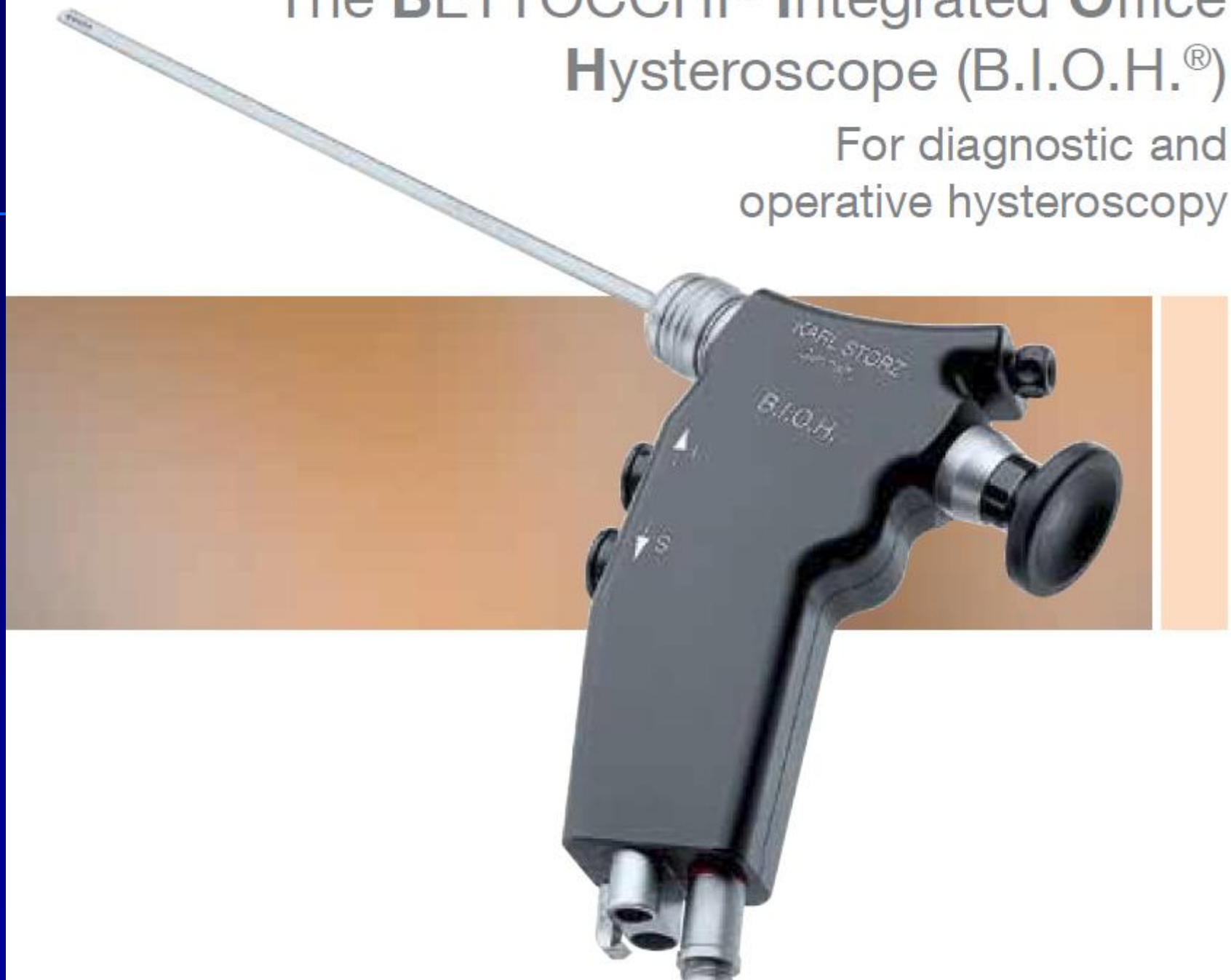


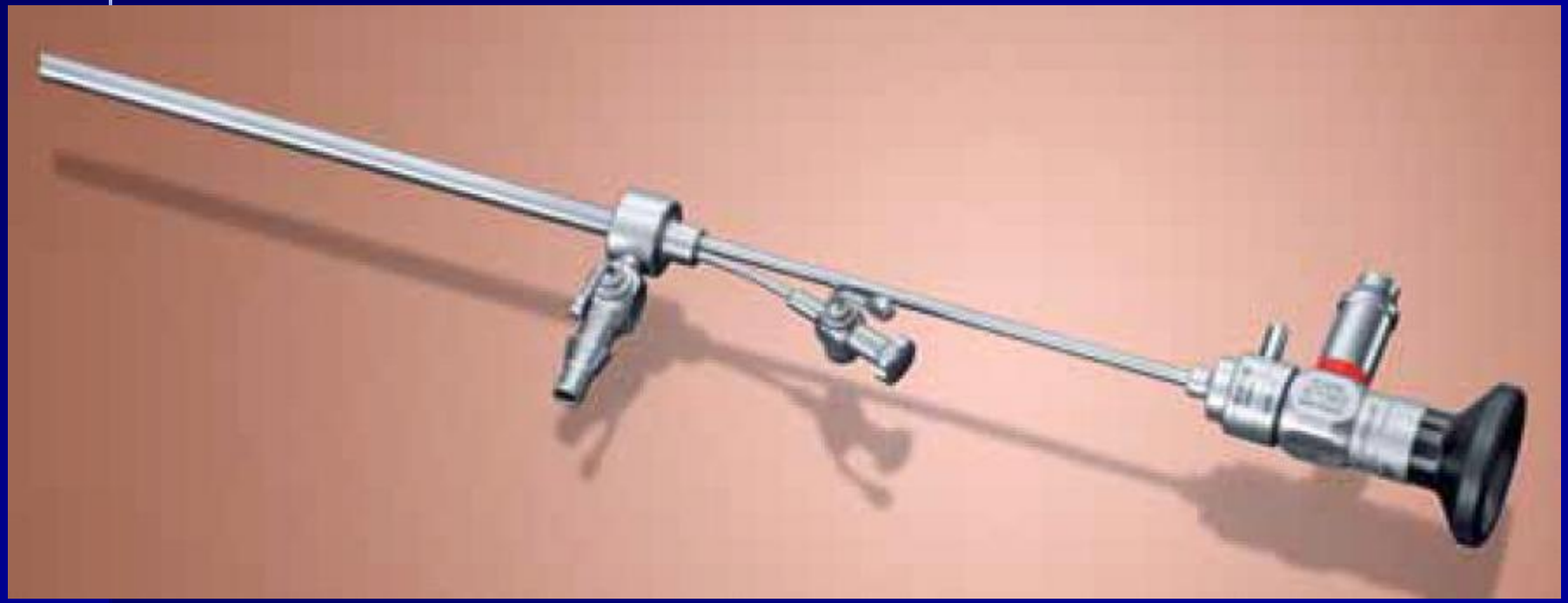
Figure 2–30. The Gyrus ACMI Invisio hysteroscope. This is a fully integrated, all-digital endoscope containing a miniature 3-mm complementary metal oxide semiconductor (CMOS) video color sensor and digital camera system housed in the distal tip of the hysteroscope.

The **B**ETTOCCHI® **I**ntegrated **O**ffice **H**ysteroscope (B.I.O.H.®)

For diagnostic and operative hysteroscopy



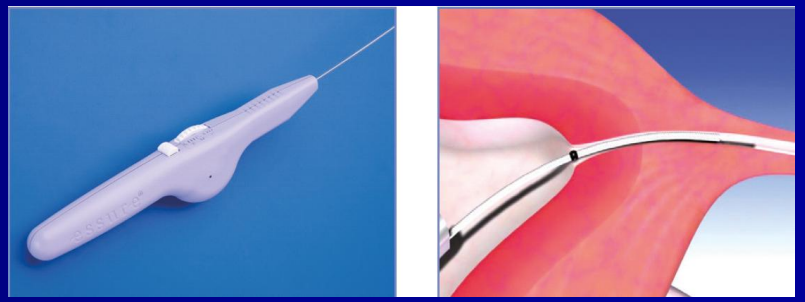
Intrauterin Insemination and Embryo Transfer Using KILANI Sheath



A soft catheter (Wallace 1816 N, HG Wallace Ltd, Colchester, UK)

Operative Instruments and Catheters

- The rigid and semi-rigid instruments include scissors, grasping forceps, and biopsy forceps.
- Flexible can also be inserted through the hysteroscopic sheath for tubal cannulation, selective chromopertubation, or for tubal sterilisation.
  - Essure two micro-inserts for intraluminal tubal occlusion. effectiveness at 5 years above 99.7% (data Conceptus, Mountain View CA, USA)
  - Adiana (Hologic, Bedford MA, USA) based on silicon ingrowth in the intramural tubal lumen after electrocautery,,
- New developments in instruments and catheters are mainly related to hysteroscopic sterilisation.



Instruments and Catheters

- Instruments
  - Forceps, scissor
  - Monopolar instruments
  - Bipolar instruments
  - Lasers
- Catheters
  - Essure, Adiana
  - Tubal catheterisation

26159 EHW

26159 SHW

26159 UHW

26159 H

26159 DHW

26159 BHW

26159 BE **Bipolar Dissection Electrode,** semirigid, 5 Fr., length 36 cm

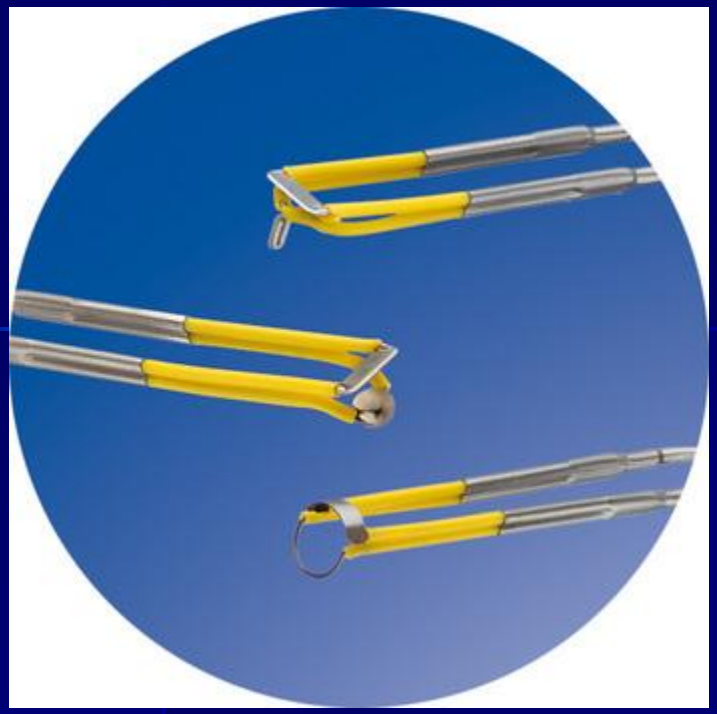
26158 BE **Bipolar Dissection Electrode,** semirigid, needle electrode angled 90°, 5 Fr., length 36 cm

26159 GC GORDTS/CAMPO **Bipolar Ball Electrode,** semirigid, 5 Fr., length 36 cm

26176 LE **Bipolar High Frequency Cord,** length 300 cm

Resectoscope

- The sheath has an outer diameter of 7–9 mm, and includes both inflow and outflow ports for distending media.
- If surgical debris or the so-called ‘chips’ block the operative field, the resectoscope can be removed while the sheath is left in place.
- In cases of monopolar high-frequency electrosurgery, the woman must be grounded and a nonelectrolyte, non-conducting, distending medium must be used.
- The more modern bipolar resectoscopes are used with saline-distending media.
- New developments in resectoscopy are based on smaller outer diameter and bipolar electrosurgery.
- about 1000 ml as the upper limit of non-electrolit solutions intravasation.
- about 2500 ml as the upper limit of saline intravasation.

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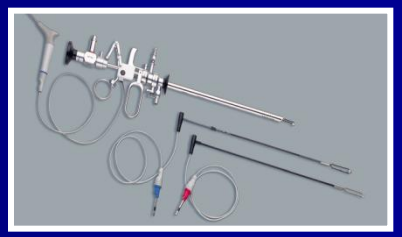
Electrocautery and Laser

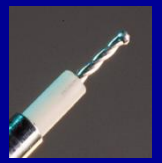
- Electrocautery instruments, such as a loop or needle electrode, roller ball, and button (or 'mushroom') electrode, have been adapted for the hysteroscope or resectoscope
- Lasers (e.g. neodymium: yttrium–aluminum–garnet; potassium-titanyl-phosphate, and argon) offer no advantages over electrocoagulation.
- No new significant developments have taken place in electrocautery instruments or lasers

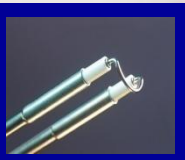
Energy

- Monopolar current

- Bipolar current







- Mechanic
  - 'cold loop' technique

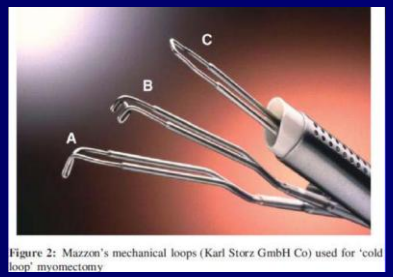


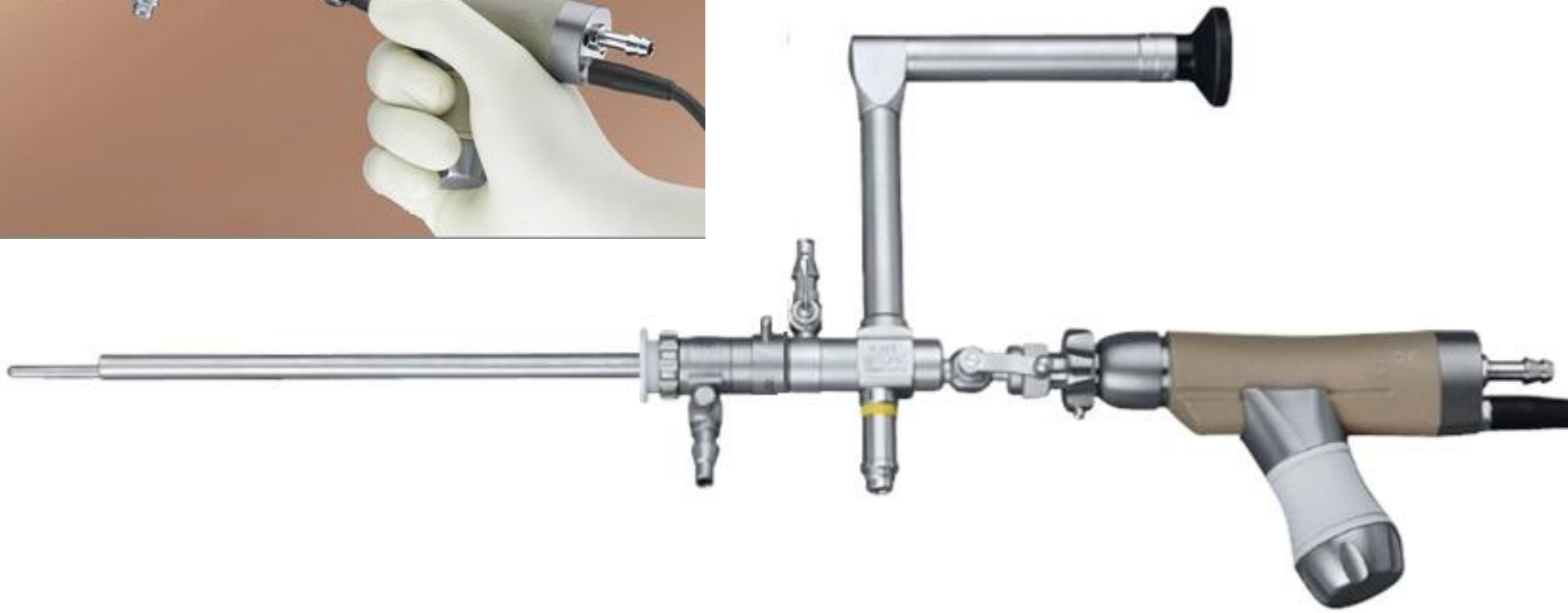
Figure 2: Mazzon's mechanical loops (Karl Storz GmbH Co) used for 'cold loop' myomectomy

- Laser

Morcellation

- The TRUCLEAR (Smith and Nephew, Andover MA, USA) technique, which is based on an instrument that consists of a set of two metal hollow rigid tubes that fit into each other
- The 4.0-mm morcellator is introduced in the uterine cavity through a straight-forward working-channel of a continuous flow 8–9 mm rigid hysteroscope.
- A new development in hysteroscopic morcellation is the recent availability of a smaller outer diameter TRUCLEAR system, with a 2.9-mm cutting-blade and a 5.0-mm hysteroscope for office or ambulatory use with no or local anaesthesia.
- A new morcellator system MyoSure was recently introduced by Hologic (Bedford MA, USA).
- Intra-uterin BIGATTI Shaver (IBS) (Karl Storz)

Intra-uterin BIGATTI Shaver (IBS)



Distension and Irrigation

- Carbon dioxide (CO_2) is rapidly absorbed and easily cleared from the body by respiration.
- Pumps are available to monitor pressure and volume for liquid media.
- Normal saline and lactated Ringer solution are isotonic, conductive, low-viscosity fluids, which can be used for diagnostic hysteroscopy and for mechanical and bipolar operative procedures.
- The hypotonic, non-conductive, low-viscosity fluids mannitol (5%), sorbitol (3–5%), and glycine (1.5%), should be used only with monopolar operative procedures.
  - falls to 5 mmol/l (this relates to an intravasation of 500ml of electrolyte-free fluids).
- New developments are the availability of newer fluid-management systems that are more reliable and precise in measuring in- and outflow fluids, and therefore improve patient safety.

Virtual Hysteroscopy

- TV USG
- SIS
- GIS
- 3/4D USG and GIS=VHS
- The latest development in this field is the method to change the gel during dilution into a stable foam that is fluid enough to pass patent tubes and can be observed as a white echodense contrast during transvaginal ultrasonography in cases of a fertility work-up (hysterosalpingo-foam sonography [HyFoSy])

Emanuel MH, van Vliet M, Weber M et al. First experiences with hysterosalpingo-foam sonography (HyFoSy) for office tubal patency testing. Hum Reprod 2012; 27: 114–117.

Methods and Procedures

- Preoperative preparation and basic introduction of the hysteroscope
- Operative procedures
- Postoperative care

Preoperative Preparation and Basic Introduction of the Hysteroscope

- The woman is placed in the lithotomy position; skin, intravaginal or intracervical antiseptical measures are not required. Without the need of a speculum and a tenaculum, the hysteroscope can be inserted vaginoscopically into the cervix.
  - a metaanalysis of six RCTs (n ¼ 1321)
  - They found that vaginoscopic approach to hysteroscopy was less painful than using the traditional technique (standardised mean difference (SMD) 0.44, 95% CI from 0.65 to 0.22).
- No evidence was found to recommend the routine administration of mifepristone or misoprostol to women before outpatient hysteroscopy.
- Cervical priming with vaginal prostaglandins may be considered in postmenopausal women if using hysteroscopic systems greater than 5 mm in diameter.

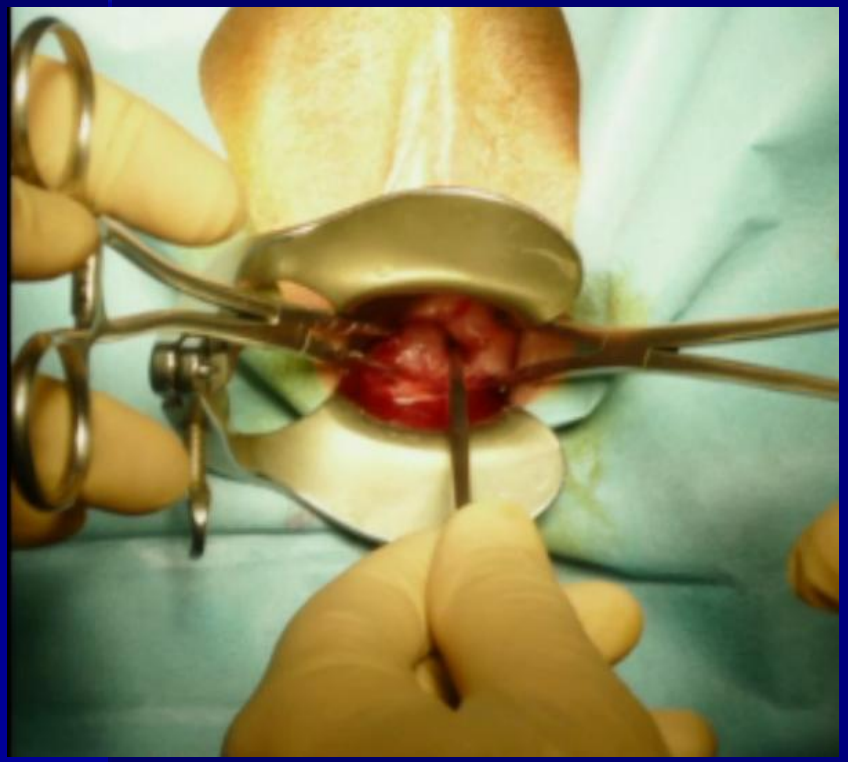
Cooper NA, Smith P, Khan KS et al. Does cervical preparation before outpatient hysteroscopy reduce women's pain experience? A systematic review. BJOG 2011; 118: 1292–1301.

Preoperative Preparation and Basic Introduction of the Hysteroscope

- Meta-analysis (nine RCTs, 1296 participants) revealed a significant reduction in the mean pain score for the use of local anaesthetics during the procedure compared with placebo (SMD 0.45, 95% CI 0.73 to 0.17).
- No significant reduction was found in the mean pain score more than 30 mins after the procedure.
- No significant reduction was reported in the mean pain score with the use of non-steroidal anti-inflammatory drugs or opioid analgesics compared with placebo during, within, or more than 30 mins after the procedure.
- Transcervical and topical application did not show a statistical difference compared with placebo.

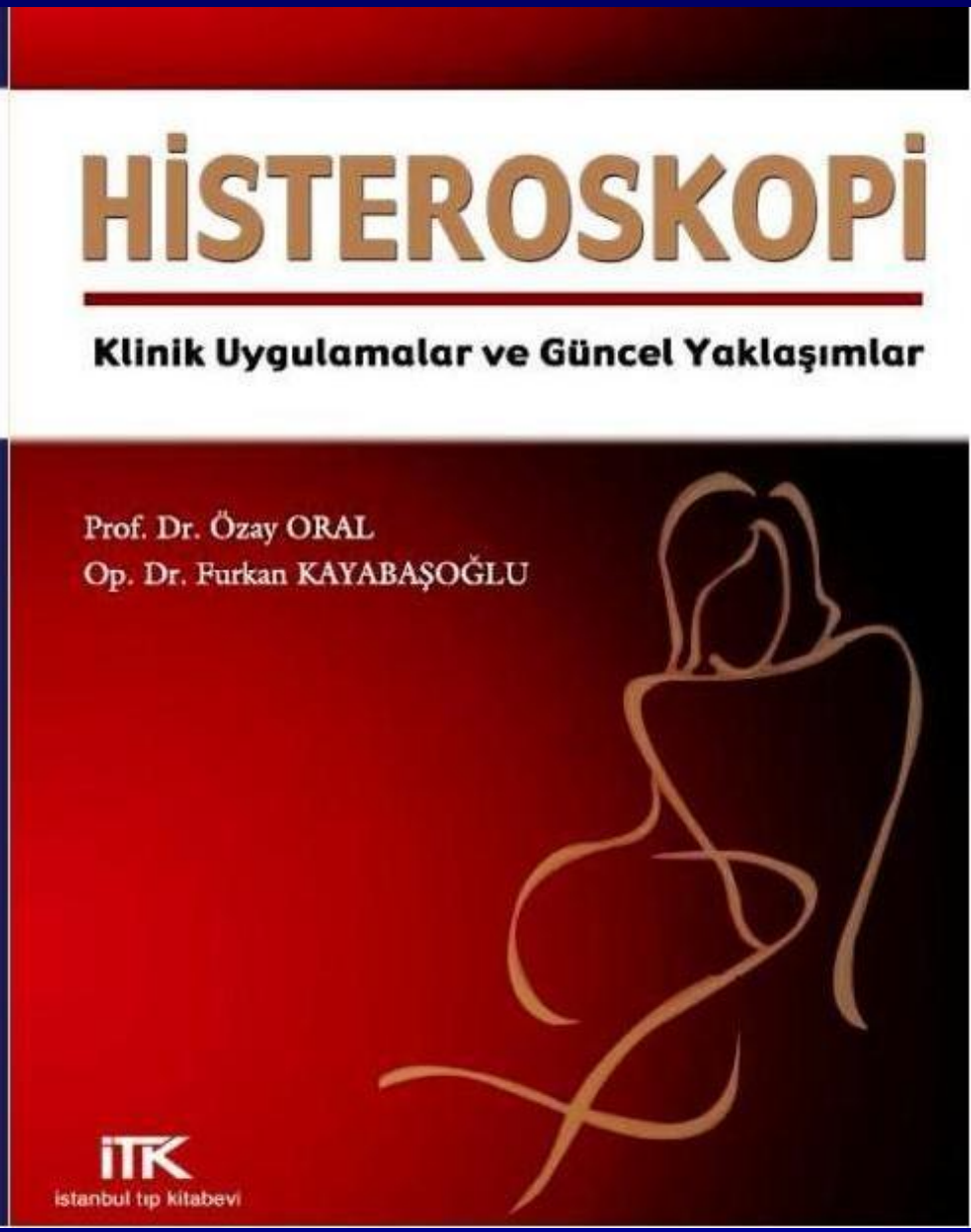
Style

Speculum



Vaginoscopy

Conclusion



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Prof. Dr. Özay Oral
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Merkezi


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