



The value of mini-hysteroscopy prior IVF

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"Hystero" Historical notes

- ◆ The development of hysteroscopy is rooted in the work of Pantaleoni, who first reported uterine endoscopy in 1869
- ◆ In 1929 Rubin first used CO₂ to distend the uterus; around the same time, Gauss was experimenting with the use of fluids to achieve uterine expansion
- ◆ Hysteroscopy became popular in the 1980s, when technology afforded more practical and usable instruments than before

Marlow J.L., 1995

Hysteroscopy

- ◆ a diagnostic procedure done for direct endoscopic exploration of cervical canal and uterine cavity
- ◆ Operative hysteroscopy and hysteroscopic resection usually performed for the treatment of different endocervical, intrauterine and some uterine intramural pathology

Mini-hysteroscopy

- ◆ Office procedure that can be performed with 2,5- to 4,5-mm flexible or rigid hysteroscopes
- ◆ Some models have a small operating channel through which a thin-wired biopsy forceps or scissors can be placed
- ◆ Can be done by vaginoscopic method

Campo R, Van Belle Y, Rombauts L, Brosens I, Gordts S. (1999) Office mini-hysteroscopy. *Hum Reprod Update*5:73-81

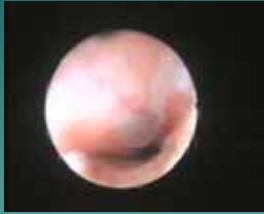
Bettochi S, Selvaggi L. A vaginoscopic approach to reduce the pain of office hysteroscopy. *J Am Assoc Gynecol Laparosc*. Feb 1997.

Guida M et al. Vaginoscopic versus traditional office hysteroscopy: a randomized controlled study. *Hum Rep*. 2006





Field of view



Hysteroscopy



Mini-hysteroscopy

Advantages of mini-hyst

- ◆ Procedure usually does not usually require cervical dilatation and general anesthesia (i.e. less trauma and quick recovery time)
- ◆ Can be done in the office (so called "office hysteroscopy")
- ◆ Fast procedure
- ◆ Easy to learn and operate
- ◆ Targeted biopsy can be done during the procedure ("see and treat" concept)

M. Guida et al, 2006

Disadvantages of mini-hyst

- ◆ Field of view is less in diameter
- ◆ May require more powerful light-source
- ◆ Better works with modern digital video-cameras
- ◆ In case of major pathology requires to repeat hysteroscopic procedure or use anesthesia

Marana R, Marana E, Catalano GF. (2001) Current practical application of office endoscopy. *Curr Opin Obstet Gynecol* **13**:383-387

Infertility and ART

- ◆ Hysteroscopy is a part of evaluation of infertility, gives more precise diagnostic information about uterus and endometrium comparing to other methods (e.g., US, HSG, D&C...)
- ◆ Role of hysteroscopy for IVF patients remains controversial

Balmaceda JP, Ciuffardi I. Hysteroscopy and assisted reproductive technology. *Obstet Gynecol Clin North Am.* Sep 1995
Jan Bosteels et al, *Hum Reprod Update* 2010
RCOG Guidelines: 1999 Grade C recommendation

Possible causes of implantation failure

- ◆ Poor embryo or blastocyst quality
- ◆ Inadequately prepared and non-receptive endometrium

Achache H, Revel A. Endometrial receptivity markers, the journey to successful embryo implantation. *Hum Reprod Update.* 2006

Our study (2008 – 2009)

- ◆ 1st group: 35 infertile patients with mini-hyst prior IVF
- ◆ 2nd group: 33 infertile patients without mini-hyst before subsequent IVF
- ◆ Exams: U/S, hormonal panel (FSH, LH, TTH, prolactin, E2), CBC, Blood-type, STD screening, and spermogram

The Order of HMU#503

Characteristics of patients

	Main group n=35	Control group n=33
Age, yrs	26 – 42 (32,4)	25 – 43 (32,9)
Infertility, yrs	5,8	6,5
Primary infertility	18	17
Secondary infertility	17	16
BMI range	18 - 29	18 – 30
FSH on d2-3	4,3 – 12,2	4,1 – 12,3

Mini-hysteroscopy equipment

- ◆ 3,5 - 4,2 mm outer-diameter rigid Betocchi hysteroscope (Storz)
- ◆ 30' degree 2 mm optic "Hopkins II"
- ◆ Fluid distention media (Ringer)
- ◆ Simple infusion bag (2,5 m height)
- ◆ Traditional technique of mini-hyst (speculum, tenaculum etc)
- ◆ Mini-hyst was scheduled on luteal phase

Main group

- ◆ Anesthesia: 5 patients (14,3%) required IV sedation, others – paracervical bloc with Lidocaine 1%-10cc
- ◆ Cervical dilatation up to Hegar #4,5: in 8 cases (22,9%)
- ◆ Average mini-hyst time: 10 minutes

Mini-hysteroscopy technique

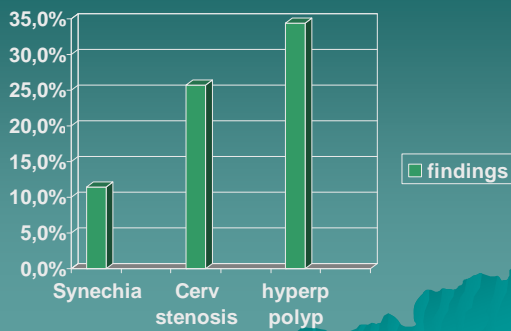


Results of mini-hysteroscopy

- ◆ Adequate visualization in all cases
- ◆ Pain level was minimal
- ◆ No complications (during procedure, early or delayed)

The outpatient hysteroscopy failure rate is less than half (2%) with the mini-hysteroscope compared with the traditional 5 mm hysteroscope (5%)
De Angelis C Hum Reprod. 2003;18:2441-5.

Findings at the time of mini-hyst



- ◆ Endometrial biopsy were taken in all mini-hyst cases
- ◆ Endometrial samples were sent for pathology (H&E staining) and IHC (E₂ and P₄ receptors)
- ◆ All patients with proven endometrial hyperplasia were treated with gestogens: dydrogesterone (Duphaston) 20 mg per day on the day 15 – 26 for 3 months before subsequent IVF



Type of IVF protocols

- ◆ Main group (n=35):
 - long protocol 17 patients
 - short protocol 10 patients
 - ant-GnRH protocol 8 patients
- ◆ Control group (n=33):
 - long protocol 16 patients
 - short protocol 9 patients
 - ant-GnRH protocol 8 patients



Results

	Main group	Control group
Started IVF	35	33
OP	35	33
ET	33	31
Difficult ET	2 ↓	7
N pregnancies	10 ↑	7
% preg/cycle	28,6 ↑	21,2
% preg/ET	30,3 ↑	22,6

Conclusion

- ◆ Mini-hysteroscopy allowed to detect "minor" endometrial or intrauterine problems in asymptomatic infertility patient
- ◆ Mini-hysteroscopy has very low level of complications
- ◆ Cases with difficult ET are less frequent in the mini-hyst group
- ◆ Pregnancy rate in the main group of patients appeared to be significantly higher than in control group

Conclusion

- ◆ Mini-hysteroscopy is minimally invasive procedure that can be done prior (any) IVF cycle
- ◆ Larger prospective randomized control studies are necessary to prove significance of mini-hysteroscopy prior IVF
- ◆ Mini-hysteroscopy can be combined with IHC evaluation of endometrium (i.e. bcl2, PGP 9,5 etc) and test for other markers of implantation (such as integrins or pinopods)



Thank you!
