The IX. Annual Meeting of the Mediterranean Society for Reproductive Medicine

MANAGEMENT OF INTRAUTERINE SEPTUM and ADHESIONS

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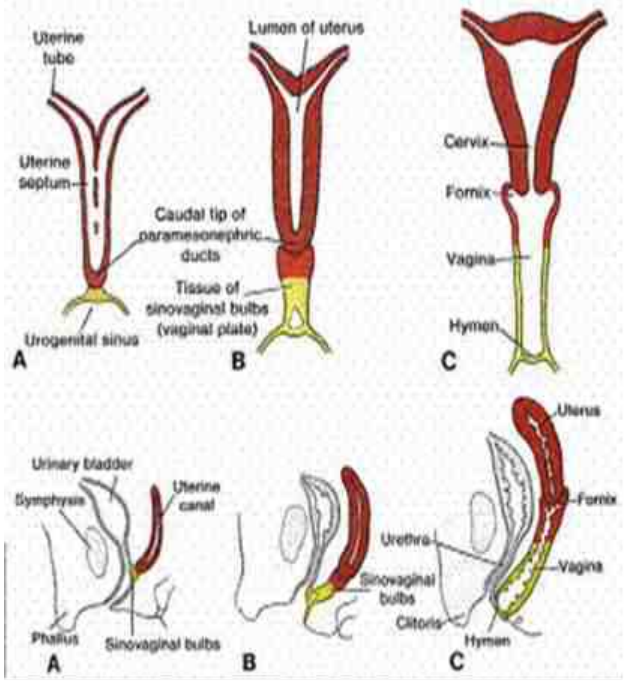
Ufuk Üniversitesi Tıp Fakültesi
Kadın Hastalıkları ve Doğum AD.

Mullerian Anomalies

- Definition: Deviations from normal anatomy that could impair the reproductive potential of a woman.
- They occur due to failure of Müllerian ducts' formation, canalization, fusion or absorption

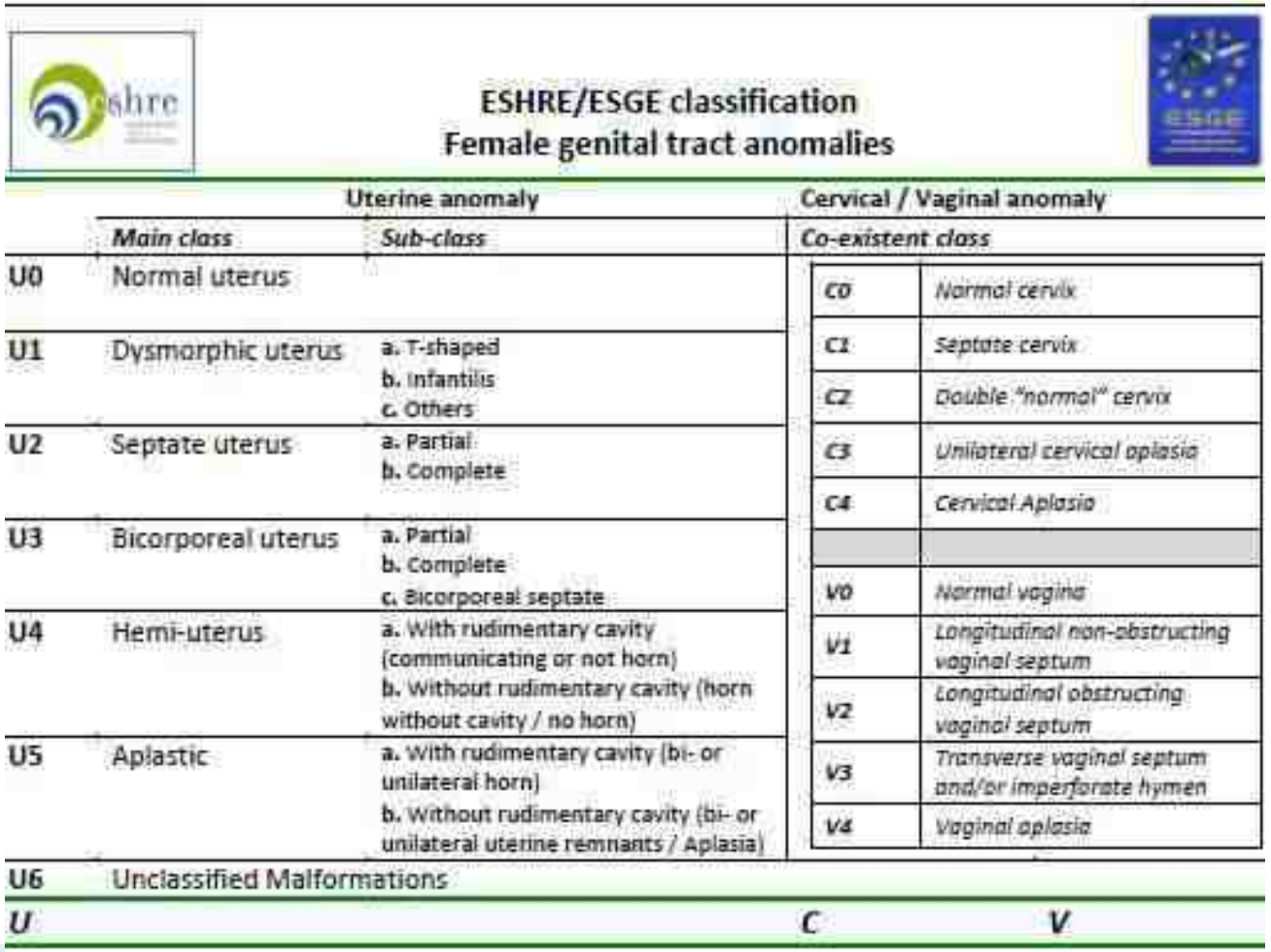


- Exact prevalence unknown ?
- %0.1-%10

Braun P et al, Eur J Radiol, 2005
Rackow BW et al, Curr Opin Obstet Gynecol, 2007

- ASRM Classifcation (has received the most acceptance over the last 25 years)
- 2012→ESHRE ESGE Classification
- ‘CONUTA’
- Based on the anatomy of the uterus mainly, cervix and vagina → subclasses

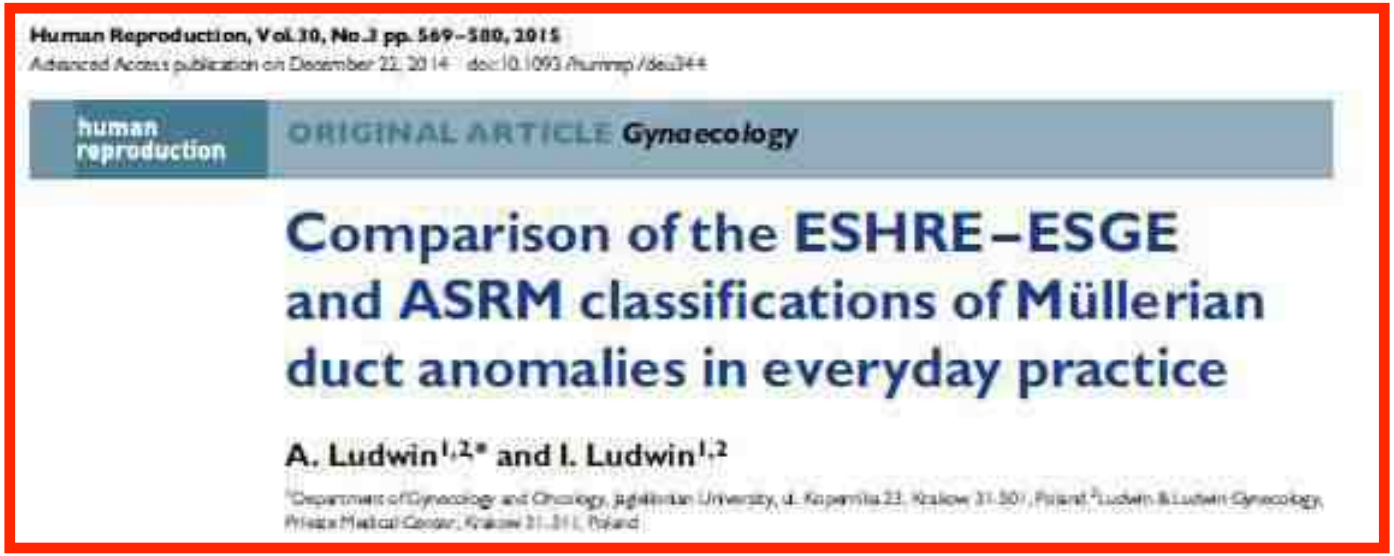
Classification of Mullerian anomalies



ESHRE/ESGE classification
Female genital tract anomalies

	Uterine anomaly		Cervical / Vaginal anomaly	
	Main class	*Sub-class*	*Co-existent class*	
U0	Normal uterus		*C0*	*Normal cervix*
U1	Dysmorphic uterus	a. T-shaped b. Infantilis c. Others	*C1*	*Septate cervix*
U2	Septate uterus	a. Partial b. Complete	*C2*	*Double "normal" cervix*
U3	Bicorporeal uterus	a. Partial b. Complete c. Bicorporeal septate	*C3*	*Unilateral cervical aplasia*
U4	Hemi-uterus	a. With rudimentary cavity (communicating or not horn) b. Without rudimentary cavity (horn without cavity / no horn)	*C4*	*Cervical Aplasia*
U5	Aplastic	a. With rudimentary cavity (bi- or unilateral horn) b. Without rudimentary cavity (bi- or unilateral uterine remnants / Aplasia)		
			V0	*Normal vagina*
			V1	*Longitudinal non-obstructing vaginal septum*
			V2	*Longitudinal obstructing vaginal septum*
			V3	*Transverse vaginal septum and/or imperforate hymen*
			V4	*Vaginal aplasia*
U6	Unclassified Malformations			
U			*C*	*V*

Grimbizis GF et al. Human Reproduction 2013



Human Reproduction, Vol.30, No.3 pp. 569–580, 2015
Advanced Access publication on December 22, 2014 doi:10.1093/humrep/deu344

human reproduction ORIGINAL ARTICLE Gynaecology

Comparison of the ESHRE–ESGE and ASRM classifications of Müllerian duct anomalies in everyday practice

A. Ludwin[1,2]* and I. Ludwin[1,2]

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- Does the ESHRE/ESGE classification increase the frequency of septate uterus?

Compared with ASRM classification ESHRE/ESGE Classification significantly *increase* the frequency of septate uterus recognition!

- 261 patients
- 44/261 Uterin septa with ESGE (16.9%)
- 16/261 Uterine septa with ASRM (6.1%)

Incidence of Mullerian Anomalies

- Infertile patients (6.3%) had a significantly higher incidence of mullerian anomalies, compared with fertile (3.8%) and sterile (2.4%) women.

- Incidence is higher in women with habituel abortuses (12.6%).

Raga F, et al. Human Reproduction 1997

Prevalence of uterine anomalies

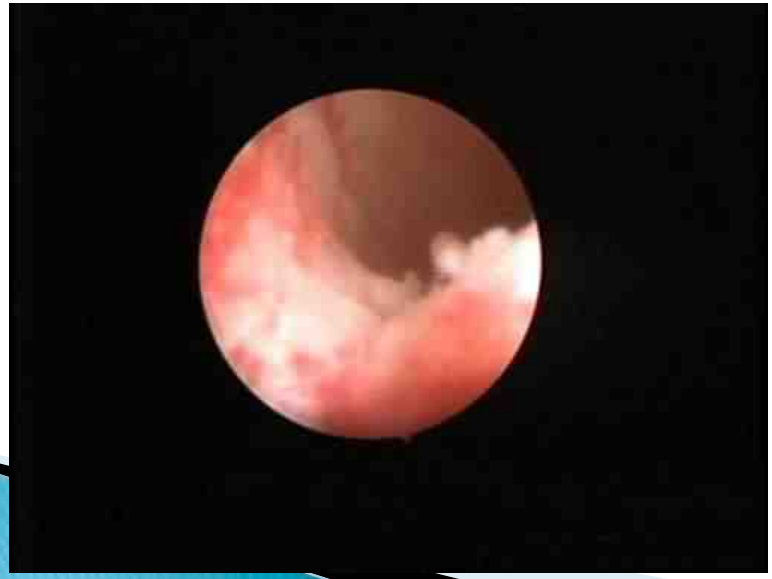
Table II. Uterine malformations: prevalence of the different types

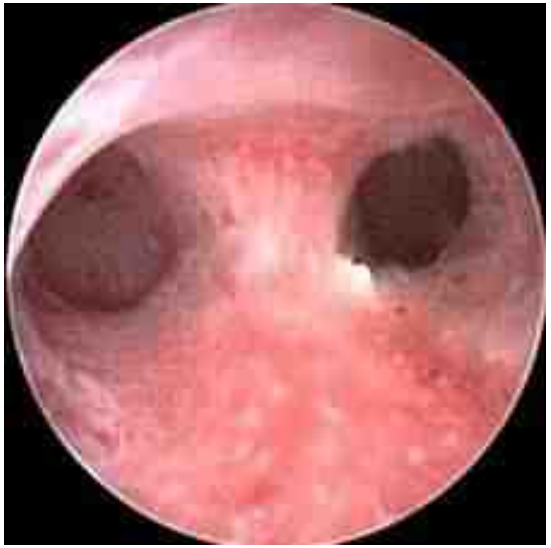
Study	Cases *n*	Diagnosis	Arcuate *n* (%)	Septate *n* (%)	Bicornuate *n* (%)	Unicornuate *n* (%)	Didelphys *n* (%)	Agenesis *n* (%)
Exalto *et al.* (1978)	25	Echo/Lap	1 (4.0)	10 (40.0)	10 (40.0)	3 (12.0)		
Musich and Behrman (1978)	41	HSG	3 (7.3)	14 (34.1)	12 (29.3)	1 (2.4)	11 (26.8)	
Heinonen *et al.* (1982)	182	Varied	20 (11.0)	52 (28.5)	59 (32.4)	13 (7.1)	21 (11.6)	17 (9.3)
Stein and March (1990)	150	Varied	9 (6.0)	45 (30.0)	59 (39.3)	12 (8.0)	25 (16.7)	
Kovacivic *et al.* (1990)	127	HSG	76 (59.8)	19 (15.0)	27 (21.2)	4 (3.1)	1 (0.8)	
Ugur *et al.* (1995)	120	Echo	9 (7.5)	61 (50.8)	26 (21.7)	13 (10.8)	11 (9.2)	
Acien (1996)	249	TVS/HSG/Others	65 (27.1)	41 (17.1)	88 (36.5)	29 (12.1)	17 (7.1)	9 (4.0)
Raga *et al.* (1997)	127	HSG/Lap/Hyst	42 (32.8)	43 (33.6)	26 (20.3)	8 (6.3)	8 (6.3)	
Vercellini *et al.* (1999)	371		30 (8.1)	201 (54.2)	55 (14.8)	51 (13.7)	20 (5.4)	14 (3.8)
Total	1392		255 (18.3)	486 (34.9)	362 (26.0)	134 (9.6)	114 (8.2)	40 (2.9)

HSG = hysterosalpingography; TVS = transvaginal ultrasonography; TDU = three-dimensional ultrasound; Hyst = hysteroscopy; Lap = laparoscopy.

Uterin Septum

- Most common mullerian anomaly is *UTERINE SEPTUM.*
- 55% of Mullerian anomalies.
- Complete or partial defect during uterovaginal septum resorpsion.





In Case of Septate Uterus

- *Spontaneous abortions*
- 1. trimester bleedings
- Preterm birth/ PPROM
- Abnormal fetal position
- Intrauterin growth retardation
- Fetal death

Grimbizis GF et al, Hum Reprod Update 2001

- Poor blood supply to the septum??→ Poor implantation dynamics

- Increased intrauterine pressure with relative cervical incompetance

Perinatal Outcome in Mullerian Anomalies

- 105 Women with Uterine anomaly compared with 182 Women with Normal Uterus
- Risk of *Spontaneous abortion in early trimester* is highest in *uterine septum !!*

Zlopasa G, 2007

Table 2. Peripartum outcomes in women with uterine anomalies

Complications	Uterine anomalies (n=116)	Normal uterus (n=270)	P values
PROM	10 (8.6)	18 (6.7)	0.442
Breach	45 (38.8)	20 (7.4)	0.011
Preterm delivery	23 (19.8)	30 (11.1)	0.015
Cervical cerclage	8 (6.9)	3 (1.1)	0.013
Abruption of placenta	4 (3.4)	3 (1.1)	0.055
Placenta previa	0	3 (1.1)	0.411
Prolapse of cord	2 (1.7)	2 (0.7)	0.332
Uterine rupture	0	1 (0.4)	0.582
Fetal distress	5 (4.3)	15 (5.6)	0.503
Cesarean section	91(78.5)	140 (51.2)	0.001

Data are presented as numbers (%). PROM: premature rupture of membranes.

Yan Z et al, Chin Med J 2010

UTERINE SEPTUM & REPRODUCTIVE OUTCOME

- Poor Reproductive outcome
- Spontaneous abortion rates: %26- %94
- Premature delivery: %9-%33
- Fetal survival: %10-%75
- Spontaneous abortion rates after septum resection: %5,9

Toriano et al., 2004

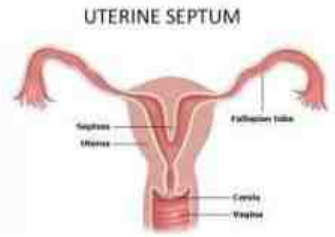
Table VIII. Pregnancy outcome in patients with untreated septate uterus

Study	Patients	Conceiving	Pregnancies	Ectopics	Abortions	Preterm deliveries	Term deliveries	Live births
Heinonen *et al.* (1982)	52	41	81	0	21 (25.9)	7 (8.6)	55 (67.9)	61 (68.5)
Buttram (1983)	72	?	208	0	139 (67.0)	69 (33.0)	0	58 (28.0)
Acien (1993)	31	24	65	0	15 (23.0)	15 (23.0)	35 (54.0)	41 (63.1)
Raga *et al.* (1997)	43	?	145	3 (2.1)	46 (31.7)	21(14.5)	75 (51.7)	90 (62.0)
Total[a]	198	65/83[b]	499	3 (0.6)	221 (44.3)	112 (22.4)	165 (83.1)	250 (50.1)

[a]If the study of Buttram (1983) is excluded the results are as follows: abortions 82/291 (28.1%), preterm deliveries 43/291 (14.8%), term deliveries 165/291 (56.7%) and live births 192/291 (66%).
[b]Total number of patients from series with data on conception.

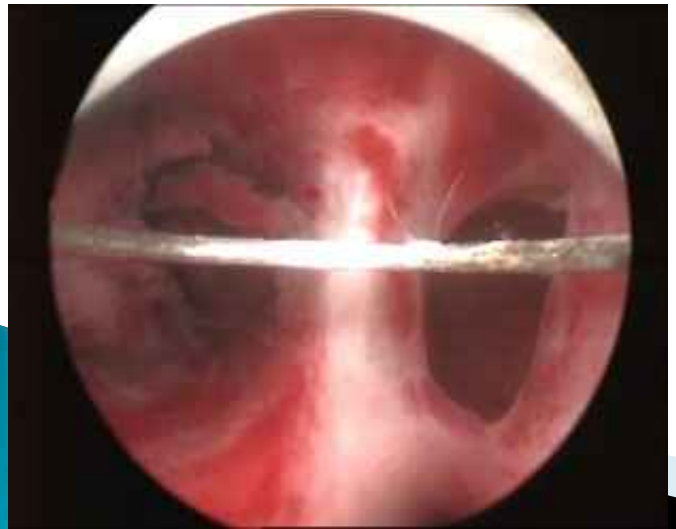
Diagnosis

- Incidentally
- Patients with recurrent pregnancy losses…
- During evaluation of Infertility…



Diagnostic methods

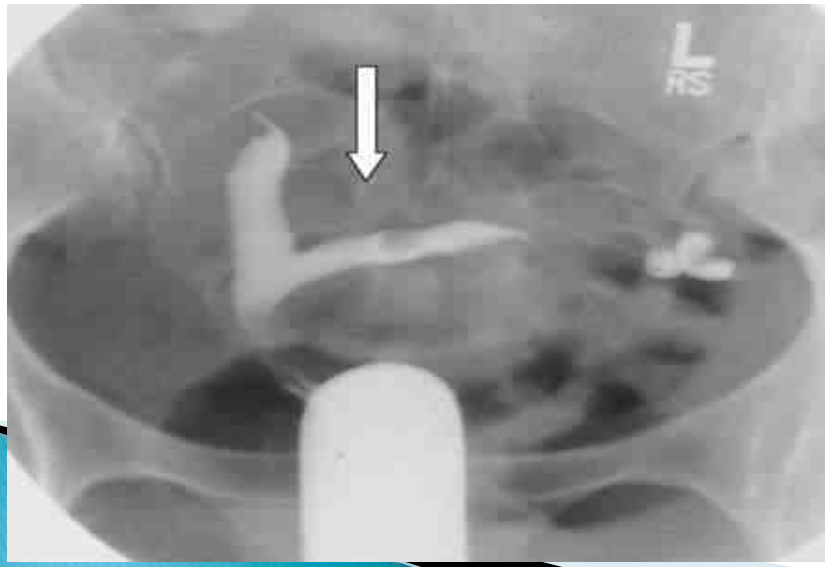
- HSG : accuracy %20-60
- TVUSG: sensitivity of %100, spesificity of %80
- 3D USG: accuracy: %92
- Hysterosonography : accuracy %100
- MRI: accuracy %50-100
- H/S+L/S: GOLD STANDARD



Taylor &Gomel et al., 2008

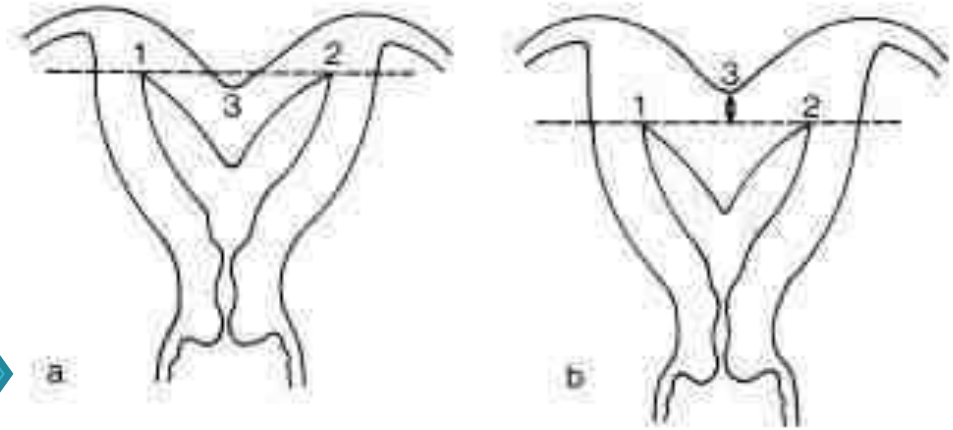
HSG

- With bicornuate and didelphic uteruses, the angle between medial walls is generally >90 degrees
- With septate uteruses, the medial walls are straighter, the resulting angle is generally <90 degrees

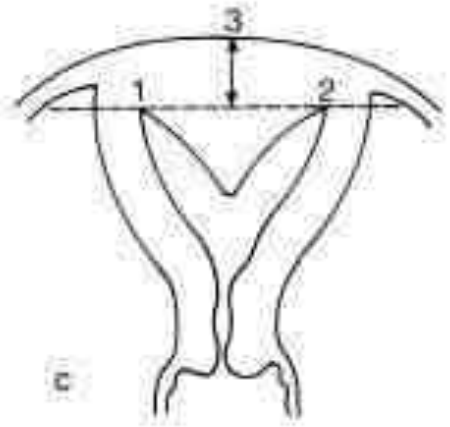


Differentiation between Bicornuate and Septate Uterus

When the fundal indentation (3) is below the line (1,2) joining both ostia or <5 mm over it
Bicornuate or Didelphus



Uterine Septum:
Fundal midpoint >5 mm over the interostial line



Homer. The septate uterus. Fertil Steril 2000

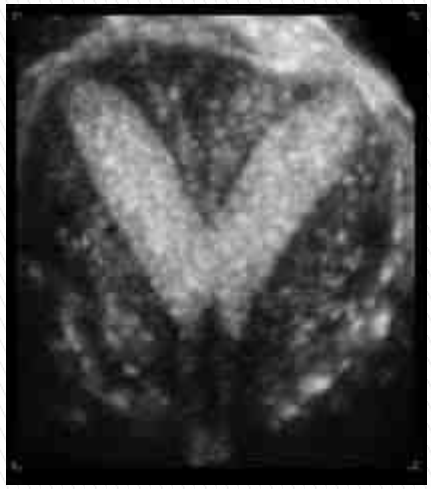
Ultrasonography (2D)

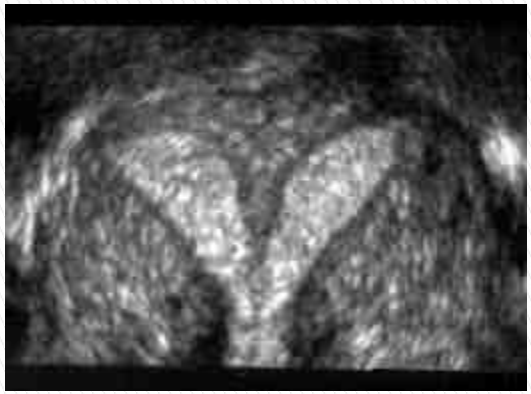
- *Transabdominal USG*: The septate uterus appears as two cavities without sagittal notching and with fundal myometrium
- *Transvaginal USG* permits better assessment, sensitivity of 100%, specificity of 80%

A convex flat, minimally indented (≤1 cm) fundal contour with an echogenic mass dividing the cavity

3D USG

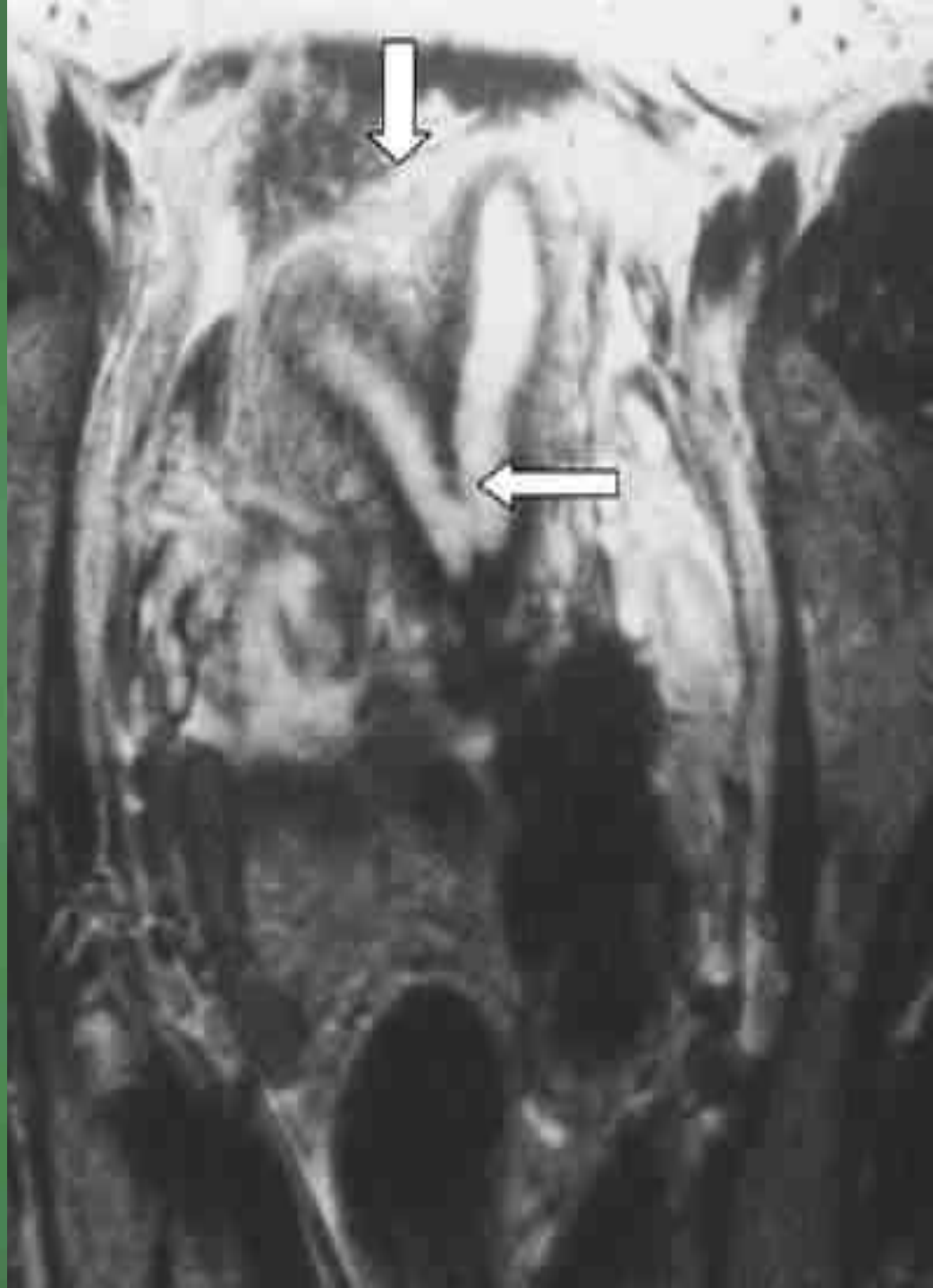
- Sensitivity and specificity of 100%
  - Jurkovic et al. 1995

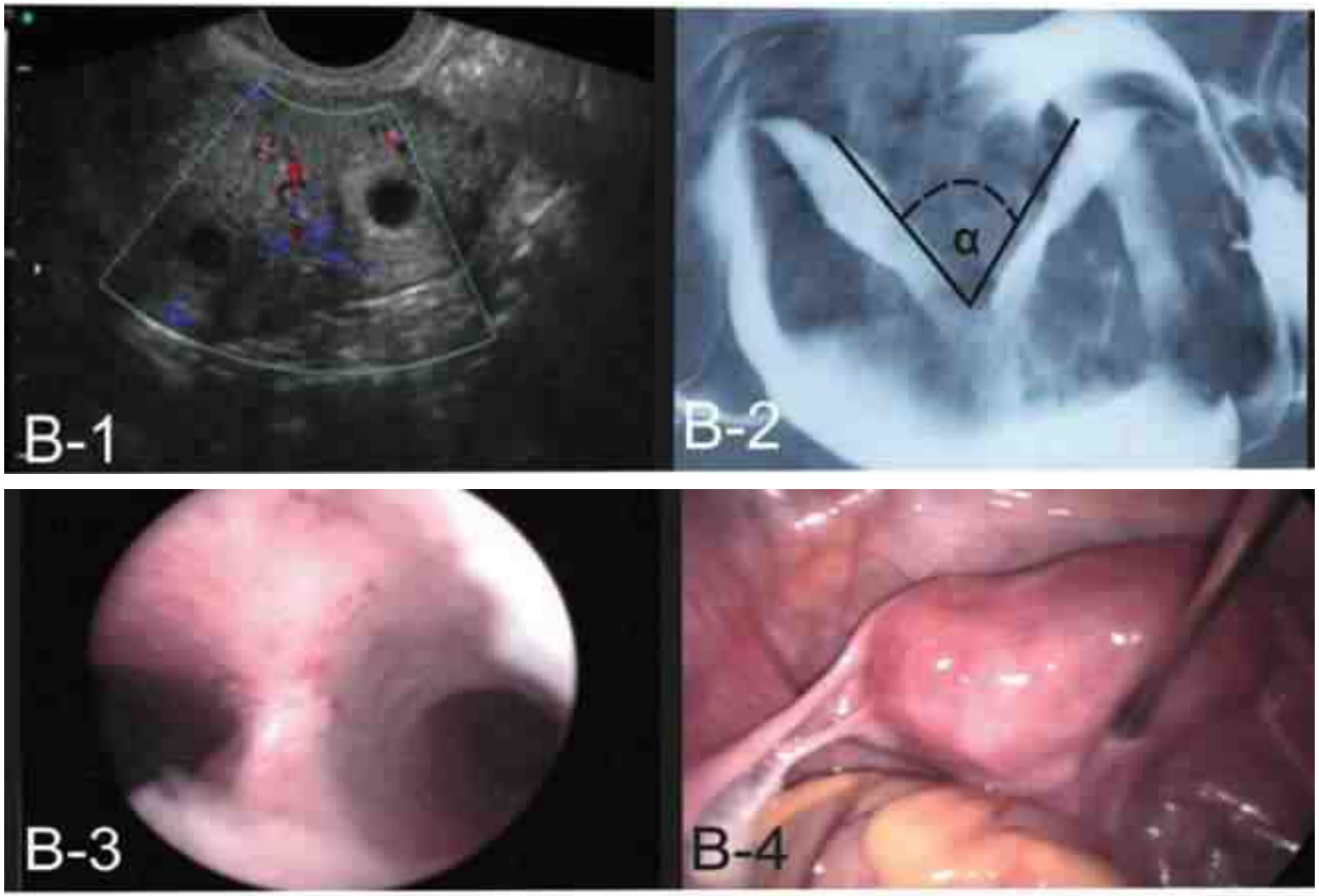




Saline Sonography (Sonohysterography)

SIS may improve on the information obtained from USG alone,
It provides information on the patency of the fallopian tubes





(B) Septate uterus: (B-1) SHG; (B-2) HSG; (B-3) DH; and (B-4) laparoscopy. In HSG the angle between the cornues of the uterus (a) should not exceed 60°.

The septate uterus: a review of management and reproductive outcome

Hayden A. Homer, M.B.B.S., Tin-Chiu Li, M.B.B.S., Ph.D., and Ian D. Cooke, M.B.B.S.

When a septate uterus is found in association with adverse reproductive outcome

Surgical intervention (Metroplasty) ought to be considered

TABLE 1

Reproductive outcome in women with an untreated septate uterus.

Author (ref.)	No. of pregnancies	No. of miscarriages	No. of preterm deliveries
Heinonen et al. (1)	81	21	7
Ashton et al. (56)	59	12	NR
Simon et al. (67)	13	2	NR
Zupi et al. (68)	37	15	0
Chervenak and Neuwirth (72)	0	3	0
Daly et al. (70)	40	34	5
Israel and March (71)	9*	9	0
Valle and Sciarra (18)	42	30	12
Fayez (20)	57	49	8
March and Israel (16)	240	212	21
Perino et al. (33)	27	24	3
Daly et al. (69)	150	130	13
Choe and Baggish (17)	38	31	6
Fedele et al.† (73)	>139	>139	NR
Cararach et al. (74)	176	159	11
Marabini et al.† (75)	>26	>26	NR
Pabuccu et al. (76)	108	96	11
Valle (77)	299	258	28
Colacurci et al.† (78)	≥144	≥144	NR
Total	1,376	1,085 (79%)	125 (9%)

Note: NR = not recorded.

* Subgroup of study with adequate data.

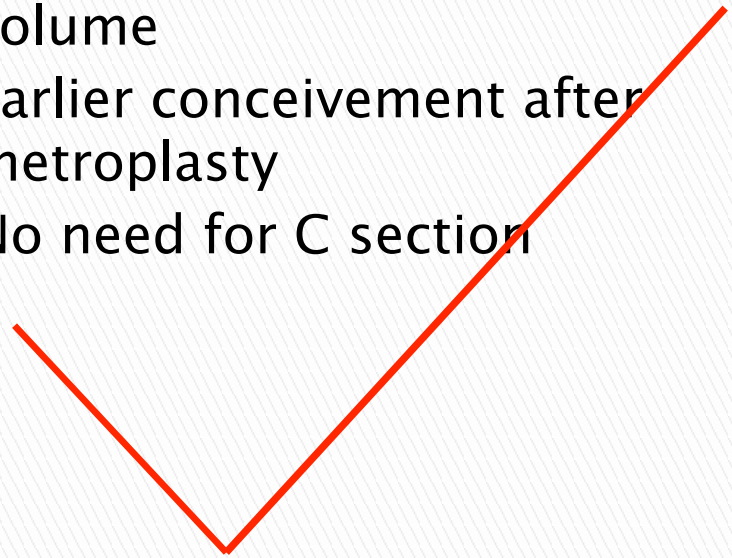
† Not included in total.

Homer. The septate uterus. Fertil Steril 2000.

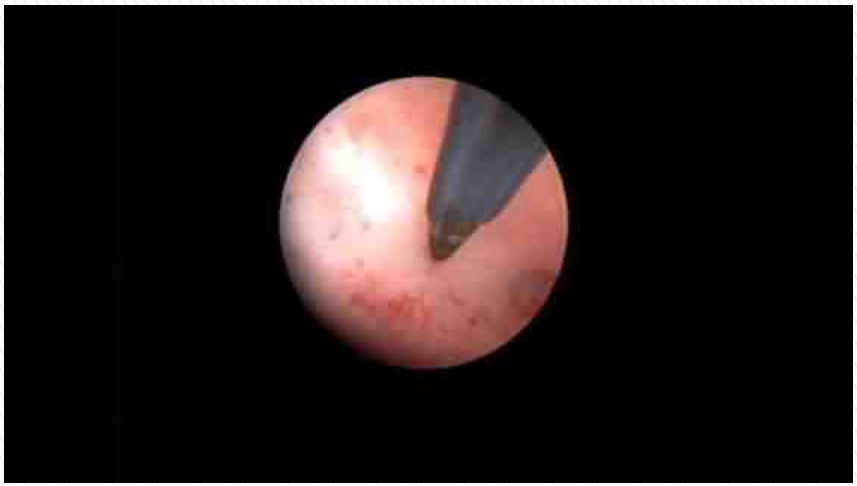
Abdominal vs Hysteroscopic Metroplasty

- Abdominal Metroplasty
  - By Jones at 1953
  - High complication rates
  - Prolonged hospital stay
  - Longer recuperation time
  - Requirement of hysterotomy
  - Longer postoperative interval before conception (3–6 months)
  - Risk of scar rupture

- Hysteroscopic Metroplasty
  - Advantageous
  - Low morbidity
  - No decrease in uterine volume
  - Earlier conceivement after metroplasty
  - No need for C section



HYSTEROSCOPIC SEPTUM RESECTION



OFFICE HYSTEROSCOPY

- Indications:

-small based septum

-subseptus

- Advantages:
  - In the outpatient settings
  - Vaginoscopic evaluation

It should be performed at early proliferative phase of the cycle!!

HYSTEROSCOPIC SEPTUM RESECTION

RESECTOSCOPIC

- Indications:

-broad based septum

-complete septum with single or double cervix

- Advantages:
  - More clear vision
  - Possibility of washout of debris

Hysteroscopic septum resection

- Septal incision: *either with microscissors, electrosurgery, or fiberoptic light laser energy*
- **Optimal hysteroscopic resection**= less than 1 cm septal residue

Homer et al., 2000

When to stop?

- The dissection is complete when both tubal ostia can be viewed simultaneously
- Or the hysteroscope can be moved freely from one cornual recess to another without intervening obstruction
- And when the laparoscopist observes that the entire uterus glows uniformly, even when the distal end of the hysteroscope is located in one cornual recess
- Daly et al → when significant bleeding was observed

Abdominal Ultrasound Guidance

- 108 patients
- Abdominal USG guided metroplasty decrease '*re-intervention*' rates

Vigoureux S et al. J Minim Invasive Gynecol 2016

- *Intraoperatively, transrectal USG increase the chance of complete resection*

Ghirardi V et al. J Minim Invasive Gynecol 2015

Complete Septate Uterus: Should cervical septum be resected?

- May cause bleeding
- Or Cervical incompetance

Rock et al., 1999
Valle et al., 1996

- *At present conserving the cervical aspect of a complete septum appears to confer no specific benefit!*
- May complicate the surgery
- Impedes vaginal delivery in a subsequent pregnancy

Homer HA et al. Fertil Steril 2000

Reproductive outcome after hysteroscopic metroplasty in women with septate uterus and otherwise unexplained infertility

Recai Pabuçcu, M.D.,* and Victor Gomel, M.D.[b]

Ankara, Turkey; and Vancouver, British Columbia, Canada

- 61 patients with uterine septa and unexplained primary infertility
- 25 (41%) conceived within 8–14 months
- Of these, 18 had live births (13 carried to term, 5 preterm), 7 had spontaneous abortions

Women with uterine septa and unexplained primary infertility might benefit from hysteroscopic metroplasty

Review Article

Hysteroscopic Metroplasty for the Septate Uterus: Review and Meta-Analysis

Rafael F. Valle, MD*, and Geraldine E. Ekpo, MD

From the Department of Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine, Chicago, Illinois (both authors).

- The calculated overall pregnancy rate was 67.8%
- Live birth rate was 53%

J Minim Invasive Gynecol 2012

85 pregnancies, 45 prior and 40 after septectomy.

The mean gestational age:

33.73 ± 6.27 (weeks) → 38.47 ± 1.71 (weeks) after resection($p < 0.05$).

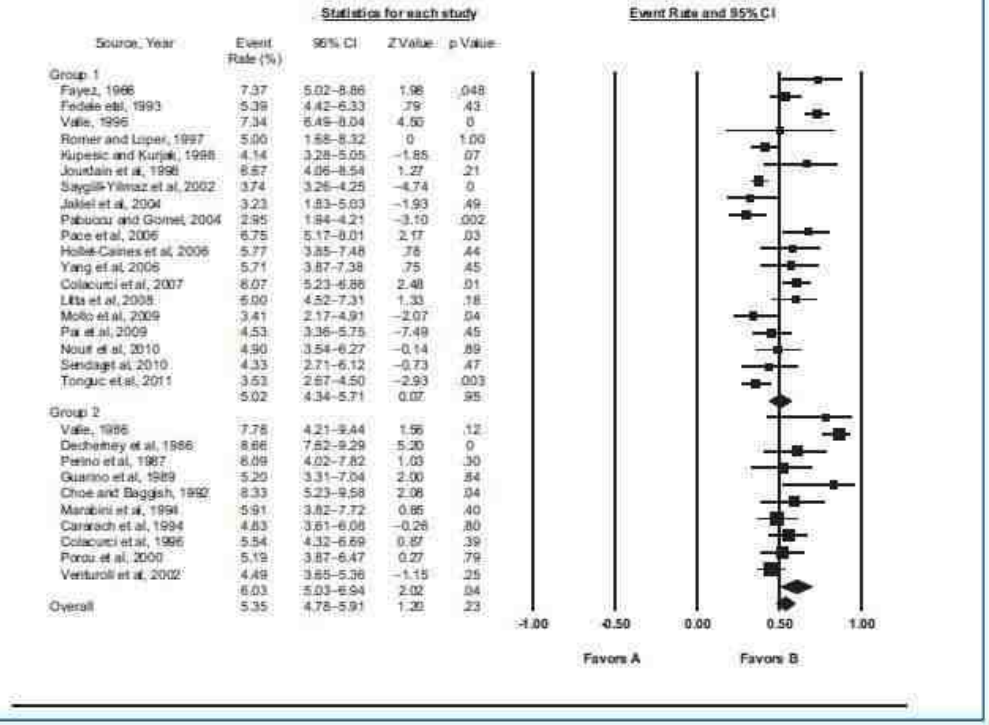
The mean birth weight:

2520 ± 764.4 (g) → 3202.6 ± 630.2 (g)

Spontaneous miscarriage rate dropped from 63.6% to 12.5%.

Fig. 9

Live-birth rate after hysteroscopic metroplasty. Initial meta-analysis was performed on all studies (groups 1 and 2) with live-birth rate reported as percentage. After excluding studies with inconsistent definition of pregnancy rate (i.e., all post-metroplasty pregnancies reported, not just index pregnancy) and studies with a substantial number of subjects lost to follow-up or with ongoing pregnancies, a second analysis was performed on the "clean" studies (group 1).



Freud A. et al. J Matern Fetal Neonatal Med. 2015

Reproductive outcome After Septum Resection

- 20 studies

Comparison of reproductive outcome before and after hysteroscopic metroplasty for the septate uterus in selected series.

		Before metroplasty				After metroplasty			
Author (ref.)	No. of patients	No. of pregnancies	No. of miscarriages (%)	No. of preterm deliveries (%)	No. of term deliveries (%)	No. of pregnancies	No. of miscarriages (%)	No. of preterm deliveries (%)	No. of term deliveries (%)
Chervenak and Neuwirth (72)	2	3	3 (100)	0	0	2	0	0	2 (100)
Daly et al.* (70)	17	40	34 (85)	5 (12.5)	1 (2.5)	9	2 (22)	1 (11)	6 (67)
De Cherney and Polan* (81)	15	NR	>30	NR	NR	11	2 (18)	0	9 (82)
Israel and March* (71)	12	28	26 (93)	0	2 (7)	2	1 (50)	0	1 (50)
De Cherney et al. (79)	103	NR	>206	NR	NR	>71	>8	1	NR
Valle and Sciarra* (18)	12	42	30 (71)	12 (29)	0	10	2 (20)	2 (20)	6 (60)
Fayez (20)	12	21	19 (90)	2 (10)	0	16	2 (13)	0	14 (87.5)
March and Israel (16)	57	240	212 (88)	21 (9)	7 (3)	56	8 (14)	4 (7)	44 (79)
Perino et al. (33)	24	27	24 (89)	3 (11)	0	15	1 (7)	0	14 (93)
Daly et al. (69)	55	150	130 (87)	13 (9)	7 (5)	75	15 (20)	5 (7)	55 (73)
Choe and Baggish (17)	14	38	31 (82)	6 (16)	1 (3)	12	1 (8.3)	1 (8.3)	10 (83.3)
Fedele et al. (73)	71	>139	>139	NR	NR	65	10 (16)	10 (16)	45 (69.2)
Cararach et al. (74)	62	176	160 (91)	11 (6)	5 (3)	41	12 (29)	0	29 (48)
Pabuccu et al. (76)	49	108	96 (89)	11 (10)	1 (1)	44	2 (4.5)	2 (4.5)	40 (9.1)
Valle (77)	115	299	258 (86.3)	28 (9.4)	13 (4.3)	103	12 (12)	7 (7)	84 (81)
Mencaglia and Tantini† (40)	94	NR	>94	NR	NR	62	4 (6)	0	58 (94)
Total	658	1,062	933 (88)	95 (9)	34 (3)	491	67 (14)	29 (6)	395 (80)

Note: NR = not recorded.

* Not included in total to avoid duplication of patients.

† Not included in total because of incomplete data.

- Abortus rates decrease to %14 from %88!
- Live term birth rates increase %3→ %80

Homer et al., 2000

Event leading to diagnosis and pregnancy outcome after metroplasty for different septum sizes, n = 114.

	Septum size ¼	Septum size ½	Septum size > ½
Diagnostic event:	10 (8.8% of n)	18 (15.8% of n)	86 (75.4% of n)
Infertility workup	4 (40%)	7 (39%)	27 (31%)
First trimester miscarriage	4 (40%)	4 (22%)	18 (21%)
Premature delivery	–	2 (11%)	7 (8%)
Normal delivery	–	1 (6%)	1 (1%)
Threeor more miscarriages	1 (10%)	3 (17%)	22 (26%)
C-section	1 (10%)	1 (6%)	11 (13%)
Pregnancy outcome after metroplasty:			
No pregnancy	7 (70%[a])	6 (40%[a])	11 (14.1%[a])
Live birth	3 (30%[a])	5 (33.3%[a])	64 (82%[a])
Miscarriage	–	4 (26.7%[a])	3 (3.8%[a])
Desired fertility	10 (100%)	15 (100%) (3 had no desire)	78 (100%) (8 had no desire)

[a] The percentages are derived from the 100% value of desired fertility.

Istre. Results after hysteroscopic metroplasty. Fertil Steril 2010.

Even in larger septum, live birth delivery rates increase after hysteroscopic metroplasty.

Istre et al, Fertil Steril 2010

Uterine Rupture in Subsequent Pregnancies?

- The literature reports 18 confirmed reports of uterine rupture during pregnancy or delivery after hysteroscopic metroplasty!
- In all, some complication during the procedure such as excessive or overzealous excision, with substantial penetration of the myometrium and even perforation of the uterine wall, and excessive use of electrosurgical or laser energy

Is cerclage recommended?

- Cervical cerclage should be placed only in cases of persisting US cervical changes in presence of negative or after adequate antibiotic treatment of cervicovaginal swab

Leone FPG et al. Fertil Steril 2000

Should we insert an IUD after septum resection?

- An IUD may provoke local inflammation and favor the formation of synechia
- Increased risk of ascending endometrial and tubal infection

So, there is no role for the routine postoperative use of an IUD!!

Estrogen has no appearant role after hysteroscopic incision of the septum.

SUMMARY

Unicornuate uterus	Uterine didelphys	Bicornuate uterus	Arcuate uterus	Septate uterus
Expectant treatment Cervical length measurement **Cervical cerclage in selected cases** Rudimentary horn excision (if present)	Surgery: uncertain **Metroplast İn selected cases**	**Expectant treatment** **Cervical cerclage in selected cases**	**Expectant treatment**	**Hysteroscopic metroplasty**

MANAGEMENT OF INTRAUTERIN ADHESIONS

History of Asherman Syndrome

- ✓ *1894 – Heinrich Fritsch*

  First described a case of posttraumatic intrauterine adhesion.

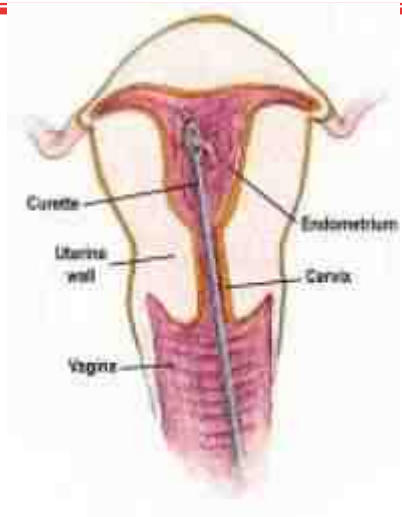
- ✓ *1927 – Bass*
- ✓ *1946 – Stamer*
- ✓ *1948 – Joseph G. Asherman*

  Asherman Syndrome has been used to describe the disease ever since.

Definition

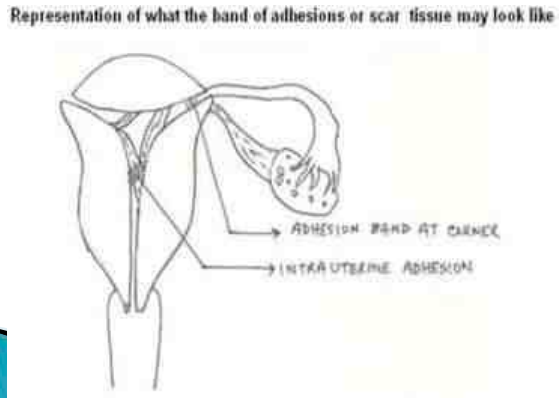
A consequence of trauma to the endometrium,

producing partial or complete obliteration in the uterine cavity and/or the cervical canal.



Prevalence

- The prevelance varies both by *different populations* as well as by the *types of investigation* used for diagnosis.
  - approximately %1,5 in general population
  - 5-39% in recurrent pregnancy losses
  - 40% in interventions after rest placenta



Al-Inany H. Acta Obstet Gynecol Scand 2001

Prevalence of Intrauterine adhesions in various populations

Table 1 Prevalence of intrauterine adhesions (IUA) in various populations

Population	Number with IUA	Total cases	Prevalence (%)	Source (citation)
Secondary amenorrhea	13	487	3	Thomson et al[11]
Infertility	212	2,702	8	Thomson et al[11]
Postpartum curettage	47	197	24	Thomson et al[11]
First trimester curettage				
One	70	443	16	Hooker et al[7]
Two or more	59	253	23	Hooker et al[7]
Recurrent miscarriage	30	129	23	Thomson et al[11]
Retained products of conception[a]	20	50	40	Westendorp et al[117]
Hysteroscopic myomectomy				
Single	10	32	31	Taskin et al[9]
Multiple	9	20	45	Taskin et al[9]
Hysteroscopic septum resection	1	15	7	Taskin et al[9]
Hysteroscopic polypectomy	0	28	0	Taskin et al[9]

[a]Postpartum and spontaneous abortion subjects.

Evans-Hoeker et al. Semin Reprod Med 2014

The criteria for the diagnosis of Asherman syndrome

I. At least one of the following clinical features;
   - ✓ Amenorrhea, hypomenorrhea
   - ✓ Subfertility, infertility
   - ✓ Recurrent pregnancy loss
   - ✓ History of abnormal placentation (previa, accreata…)

II. The presence of intrauterine adhesions by Hysteroscopy and/or histologically confirmed intrauterine fibrosis.

Dan Yu et al. Fertil Steril 2008

Etiology of Asherman Syndrome

I. Trauma to a gravid uterine cavity (%66.7)
   - ✓ Curettage (postpartum, postabortion, elective)
   - ✓ Cesarean section
   - ✓ Evacuation of hydatiform mole

II. Trauma to nongravid endometrium
   - ✓ (Diagnostic curettage, myomectomy, insertion of a IUD, operative hysteroscopy…)

III. Infection (chronic or subacute endometritis)

IV. Congenital anomaly of the uterus (esp. Septate uterus)

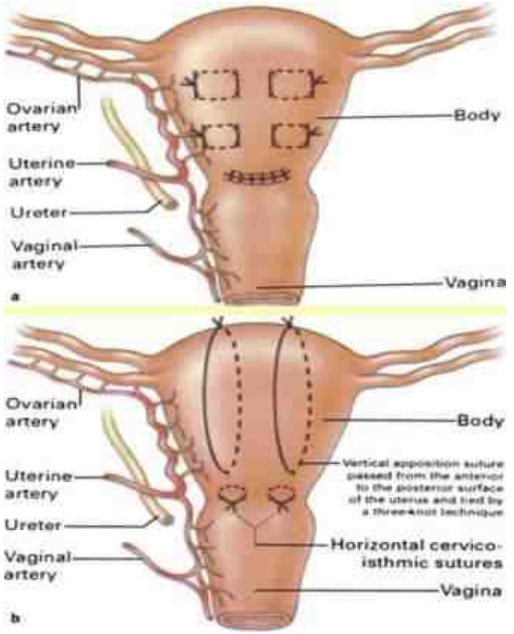
V. Genetic predisposition

VI. Other Factors:
   - *'GnRH analogues'* after hysteroscopic myomectomy
   - Endometrial Curettage at 2-4 weeks postpartum
   - Endometrial Curettage in a patient with lactation more than 3 months,
   - Finding of myometrial tissue fragments in the curettage material

Dan Yu et al. Fertil Steril 2008

Etiology of Asherman Syndrome

- **Compression Sutures** performed due to Uterine Atony (B-Lynch, Modified B-Lynch, Multiple Square, Pereira, Marasinghe, Zheng)
  - B-Lynch sutures decrease uterine blood flow by approximating the anterior and posterior walls of the uterus and thus increase the risk of syneschia
  - Increased number of sutures increase the risk of synechia
  - Presence of endometritis and ischemia inscrease the risk of synechia



Poujade et al. Gynaecological Surgery, 2010

Long-term complications and reproductive outcome after the management of retained products of conception: a systematic review

Angelo B. Hooker, M.D.,[a,b] Hüseyin Aydin, M.D.,[a] Hans A. M. Brölmann, M.D., Ph.D.,[a] and Judith A. F. Huirne, M.D., Ph.D.[a]

[a] Department of Obstetrics and Gynaecology, Zaans Medisch Centrum, Zaandam; and [b] Department of Obstetrics and Gynaecology, VU University Medical Center, Amsterdam, the Netherlands

- Retained products of conception→Comparison of Misoprostol vs Surgical treatment
- No studies reporting on IUA after misoprostol
- More IUAs were encountered after dilatation &curettage

dilatation &curettage 30%

after hysteroscopic resection 13%

Hooker AB et al, Fertil Steril 2015

Symptomatology

I. Menstrual abnormalities(%68)

II. Infertility (%43)

III. Recurrent pregnancy loss

IV. Other pregnancy complications

- ✓ Spontaneous miscarriage
- ✓ Preterm delivery
- ✓ Abnormal placental implantation
- ✓ Ectopic pregnancy
- ✓ IUGR-?

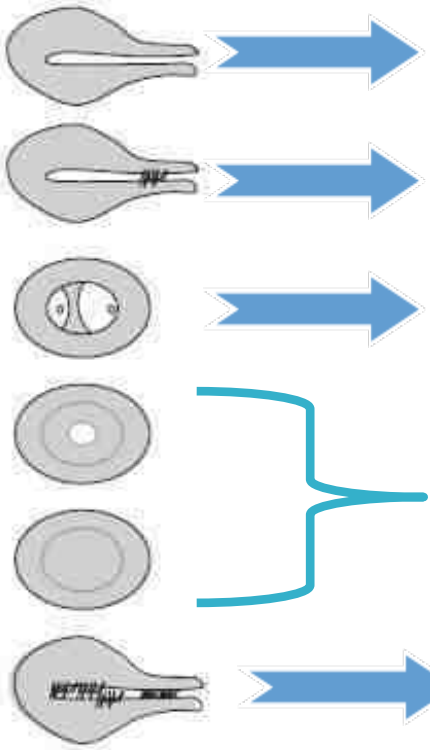
Dan Yu et al. Fertil Steril 2008

Clinical Pathology Correlation

Clinical pathology correlation of Asherman syndrome.

Location of the pathology of Asherman's syndrome

1. Intrauterine fibrosis without visible adhesion or obliteration of cavity
2. Cervical canal adhesion (Atretic amenorrhea)
3. Uterine cavity adhesion
   1) Central adhesion without obliteration of cavity
   2) Partial obliterate and constriction of cavity
   3) Complete obliterate of whole uterus cavity
4. Uterine cavity combined with cervical canal adhesion



Variable

Obstructive amenorrhea

Variable

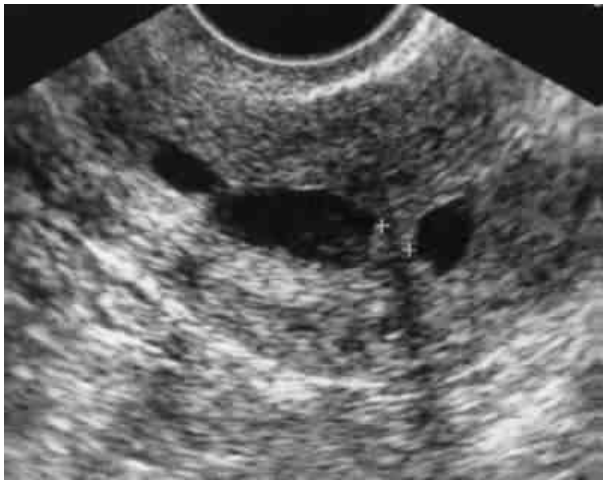
Amenorrhea & Infertility

Obstructive amenorrhea

RADIOLOGICAL DIAGNOSIS

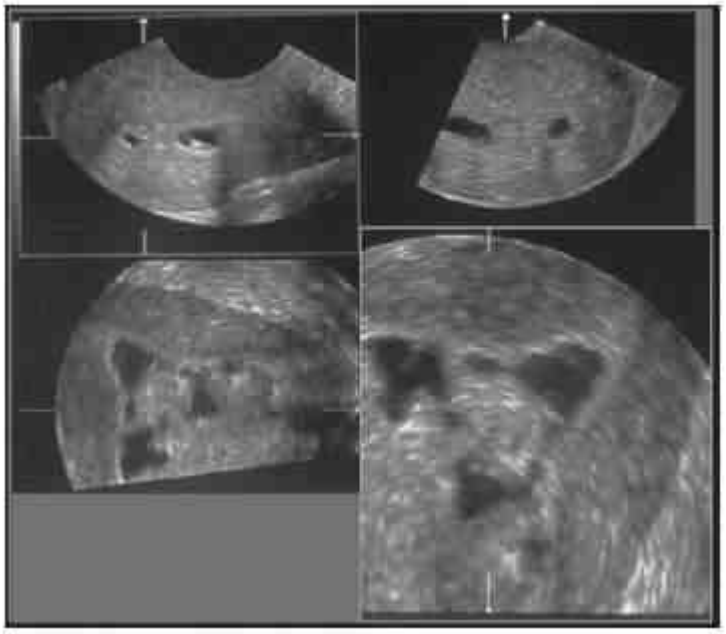
- ✓Hysterosalphingography
- ✓Ultrasonography
- ✓Sonohysterography
- ✓MRI

SİS



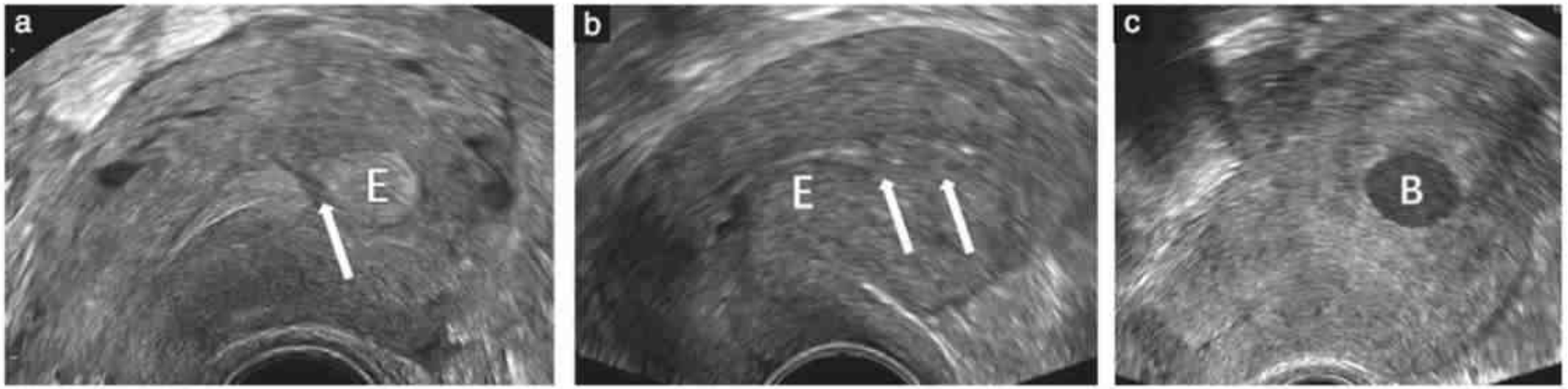
HSG

3D USG



Ultrasound and intrauterine adhesions: a novel structured approach to diagnosis and management

T. N. AMIN, E. SARIDOGAN and D. JURKOVIC*

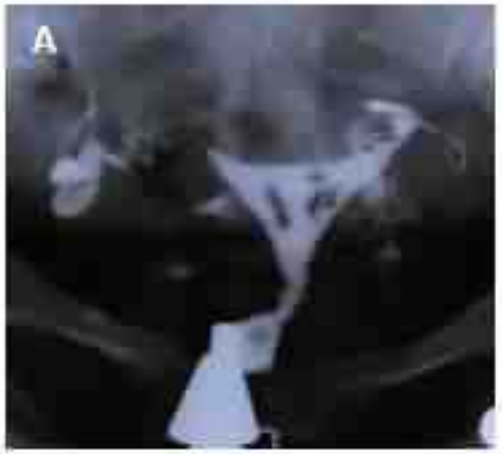


Adhesions present with

a) **Thick adhesion bands**
b) **Thin endometrium**
c) **Partial obliteration of the cavity with fluid at the fundus at the ultrasonography**

Ultrasound Obstet Gynecol 2015

IU Adhesions in the HSG



Ahmadi F et al. Int J Fert Steril 2013

HYSTEROSCOPIC DIAGNOSIS

Hysteroscopy more accurately confirms the presence, extent, and morphological characteristics of adhesions and the quality of the endometrium...

AAGL Practice Report

Hysteroscopy

- Hysteroscopy enables→
  - accurate description of location and degree of adhesions
  - *Classification*
  - Concurrent treatment of IUA

Classification of Intrauterine Adhesions

- *Prognosis* is related to 'severity of disease'

Guidelines for Classification of IUA's:

1. Intrauterine adhesions should be classified because this is prognostic for fertility outcome (Level B)
2. There are various classification systems. It is currently not possible to endorse any specific system. (Level C)

Summary of Classification Systems

Minimal (Mild)
Moderate
Severe

March et al. 1978, Valle and Sciarra 1988

Isthmic
Marginal
Central
Severe

Hamou et al. 1983

Recent Classification

- Complex system creates a prognostic score:
  - by incorporating *menstrual and obstetric history*
  - With *IUA findings at hysteroscopic assessment*

Nasr et al. Gynecol Obstet Invest2000

Table 1. Proposed clinicohysteroscopic scoring system of IUA

		Score
Hysteroscopic findings		
Isthmic fibrosis		2
Filmy adhesions	Few	1
	Excessive (i.e., >50%, of the cavity)	2
Dense adhesions	Single band	2
	Multiple bands (i.e., >50% of the cavity)	4
Tubal ostium	Both visualized	0
	Only one visualized	2
	Both not visualized	4
Tubular cavity (sound less than 6)		10
Menstrual pattern		
Normal		0
Hypomenorrhea		4
Amenorrhea		8
Reproductive performance		
Good obstetric history		0
Recurrent pregnancy loss		2
Infertility		4

0–4 = Mild (good prognosis); 5–10 = moderate (fair prognosis); 11–22 = severe (poor prognosis).

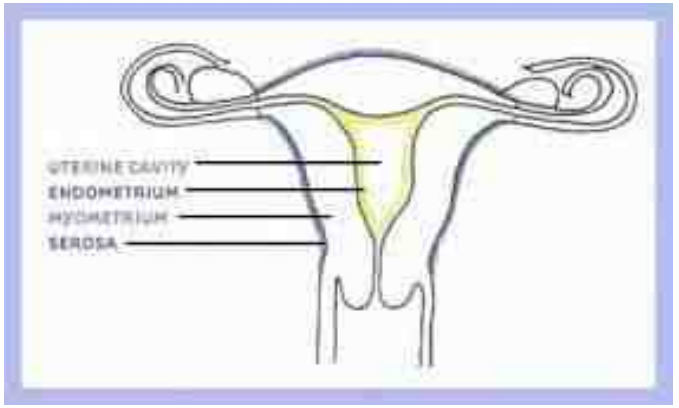
Special Article

AAGL Practice Report: Practice Guidelines for Management of Intrauterine Synechiae

AAGL *Advancing Minimally Invasive Gynecology Worldwide*

AIM OF TREATMENT

- Restoration of the uterine cavity
- Prevention of recurrence
- Endometrial restoration
- Maintanence of the normal cavity



Management

- Treatment should only be considered when there are signs or symptoms (pain, menstrual dysfunction, infertility, or recurrent pregnancy loss)
- Expectant Management
- Cervical Probing
- Dilatation and Curettage
- *HYSTEROSCOPY*

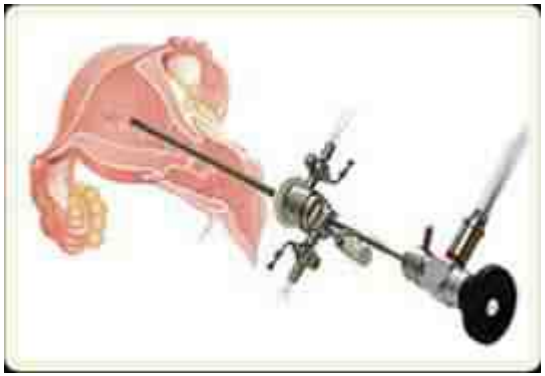
In selected women

There is no evidence to support the use of (Level C)

Treatment of choice

Hysteroscopic adhesiolysis

- Blunt dissection
- Scissors or biopsy forceps
- Monopolar and bipolar electrosurgical instruments
- Nd-YAG LAser



FERTILITY AND STERILITY®
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Published by Elsevier Science Inc.

Vol. 68, No. 6, December 1997
Printed on acid-free paper in U. S. A.

Hysteroscopic treatment of intrauterine adhesions is safe and effective in the restoration of normal menstruation and fertility

Recai Pabuçcu, M.D.
Vedat Atay, M.D.
Esat Orhon, M.D.
Bülent Urman, M.D.†
Ali Ergün, M.D.

- ✓ Forty women with recurrent pregnacy loss or infertility resulting from intrauterine adhesions.

- ✓ After hysteroscopic adhesiolysis;
  - ✓ In 16 infertile cases;
    - ✓ %63 (n:10) conceived,
    - ✓ %37 (n:6) term or viable preterm delivery
  - ✓ In 24 cases with recurrent pregnancy loss;
    - ✓ %71 term or viable preterm delivery

Pabuçcu R et al. Fertil Steril 1997

- Laser or electrical energy provides hemostasis as well as adhesiolysis but may cause endometrial damage!

Duffy S, J Obstet Gynaecol 1992

Roge P, Gynaecol Endosc 1997

- Some authors suggest: There is no difference between scissors or resectoscope

De Cherney A, Obstet Gynecol 1983

Cararach M, Human Reproduction 1994

Reproductive outcome following hysteroscopic adhesiolysis in patients with fertility due to Asherman's syndrome

- Conception rates 40.4%
- Live birth rate 86.1%
- Abortus rate 11.1 %

- Hysteroscopic adhesiolysis is a safe and effective method for reconstruction of regular menstruation

Roy K et al. Arch Gynecol Obstet, 2010

Disadvantages

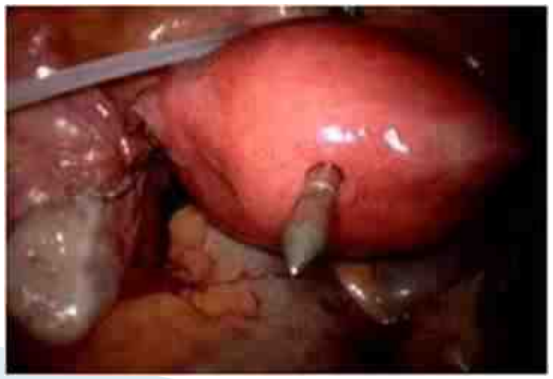
✓Risk of Uterine Perforation:

Hysteroscopic management of the severe and dense ones intrauterine adhesions, ***may be technically difficult,***

- ✓ ***Also carries a significant risk of uterine perforation.***

✓Perforation usually occurs *during the dilatation of the cervical canal* or / and the introduction of the hysteroscope.

- Recurrent Adhesions
- Cost



Guiding Techniques for Hysteroscopy

In order to improve safety and efficiency!
&To minimize uterine perforation!!

- Fluoroscopically-guided blunt dissection
- Transabdominal ultrasound guidance
- Laparoscopic guidance

Efficiency and pregnancy outcome of serial intrauterine device–guided hysteroscopic adhesiolysis of intrauterine synechiae

- ✓Prospective, randomized trial to highlight the efficiency of Lippes loop guidance during hysteroscopic adhesiolysis for severe adhesions.
- ✓71 subfertile patients with severe intrauterine adhesions.
- ✓Patients were randomized into 2 groups;
  - ✓Group 1: H/S plus IUD, E,P

    2nd look 1 week later.

    3rd look H/S 2 months later (n=36)
  - ✓Group 2: H/S plus IUD, E,P

    2nd look 2 months later (n=35)

Pabuccu et al., Fertil Steril 2008

Efficiency and pregnancy outcome of serial intrauterine device–guided hysteroscopic adhesiolysis of intrauterine synechiae

An IUD-guided therapeutic approach ***simplifies*** hysteroscopic adhesiolysis for severe intrauterine adhesions. **The Lippes loop IUD probably enlarges the cavity and creates bits of endometrium, which simplifies the procedure for adhesiolysis**.

Adhesion formation results.

Result	Group 1 (n = 36)		Group 2 (n = 35)
	One wk after hysteroscopy	Two mo after hysteroscopy	Two mo after hysteroscopy
None	5 (13.5)	33 (89.1)[b]	6 (17.1)
Filmy	12 (32.4)	1 (2.7)[b]	11 (31.3)
Mild	15 (40.5)	1 (2.7)[b]	13 (37.0)
Severe	4 (10.8)	1 (2.7)[a]	5 (14.2)

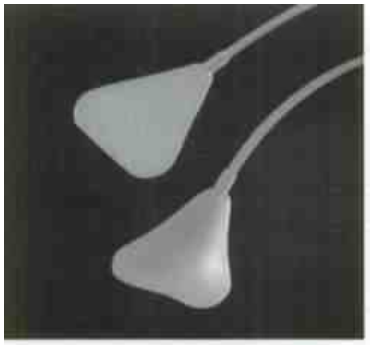
Note: Data are n (%).
[a] $P < .05$, statistically significant.
[b] $P < .01$, statistically significant.

Pabuccu. IUD-guided adhesiolysis. Fertil Steril 2008.

Pabuccu et al., Fertil Steril 2008

Prevention of recurrence

- Barrier Methods (Sepra film, *hyaluronic acid gel*)
- Mechanical Methods (IUD, Lippes loop, Folley balloon, Adhesion balloon)
- Hormonal agents (estrogen, progestin, GnRH analogues, danazol)
- Pharmacological agents (antibiotics, NSAIDs, Ca antagonists, antihistaminics)
- Second / Third look hysteroscopic adhesiolysis are effective in both therapeutic *and for prevention of recurrence.*



- Adhesion Balloon
  - Triangle shaped balloon inflated with 10 ml
  - Hard to apply from a narrow cervix
  - Broad spectrum Antibiotics

M.March , Management of Asherman's Syndrome RBM Online, 2011

- Some studies reported that the application of a 8 – 10 F Foley catheter into the uterine cavity with an inflated balloon for 3-10 days after adhesiolysis may prevent recurrence.

Orhue AA et al. Int J Gynaecol Obstet 2003

Amer MI et al. MEFS J 2005

Barrier Methods

- ✓ *Auto-cross linked hyaluronic acid (ACP) gel*

Hyaluronic acid is a component of extracellular matrix and efficient in prevention of recurrent adhesions!

De Guida M et al, Hum Reprod 2004

Mettler et al, Minimally Invasive Therapy, 2013

90 patients (32 pts received ACP, 58 pts did not receive ACP)
The mean ASRM score after surgery was equivalent in the two groups.

Did not prevent recurrence of IUAs

Thubert T et al. Eur J Obstet Gynecol Reprod Biol. 2015

Anti-adhesion barrier gels following operative hysteroscopy for treating female infertility: a systematic review and meta-analysis

Jan Bosteels · Steven Weyers · Ben W. J. Mol · Thomas D'Hooghe

- ACP gel prevents denovo formation of adhesions in hysteroscopic surgery
- No change in live birth rates

Bosteels J et al. Gynecol Surg, 2014

SUMMARY:

- It is reasonable to offer expectant management as an alternative to intervention in selected women with IUAs. (Level C)
- There is no evidence to support the use of blind cervical probing. (Level C)
- There is no evidence to support the use of blind dilation and curettage. (Level C)
- Hysteroscopic guidance is the treatment of choice for symptomatic IUAs. (Level C)
- Direct visualization of the uterine cavity at hysteroscopy in conjunction with a tool for adhesiolysis is the treatment of choice for IUAs. (Level B)
- In the presence of extensive or dense adhesions, treatment should be performed by an expert hysteroscopist familiar with at least one of the methods described. (Level C)

- Barriers such as hyaluronic acid and auto-cross-linked hyaluronic acid gel seem to reduce the risk of adhesion recurrence and may be of benefit after treatment of IUAs. At this time, their effect on posttreatment pregnancy rates is unknown, and they should not be used outside of rigorous research protocols. (Grade A)
- Postoperative hormone treatment using estrogen, with or without a progestin, may reduce recurrence of IUAs. (Grade B)
- Medications to improve vascular flow to the endometrium should not be used outside of rigorous research protocols. (Grade C)
- There is no evidence to support or refute the use of preoperative, intraoperative, or postoperative antibiotic therapy in surgical treatment of IUAs. (Grade C)


Warning: Not for diagnostic use


Warning: Not for diagnostic use

- Tomorrow, we will celebrate the 96th year of the opening of Turkish Parliament...

The Turkish nation will always be grateful for what you have presented to us and we all promise to keep it to our last breath.....