



Place of reproductive surgery

S. Gordts

ESHRE Campus workshop Endoscopy
Leuven, 24-26 February 2010



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Leuven Institute for Fertility & Embryology

LEARNING OBJECTIVES

At the end of this presentation, participants should be able to:

- Estimate the importance of surgery in reproduction
- Estimate when and how to perform.
- Manage the possibilities of a minimally invasive endoscopic intervention
- Estimate the necessity of training



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Abdominal: Tubal pathology
ovarian pathology: endometriosis, PCO
evaluation adhesions

Uterus:

- cavitare pathology: congenital
acquired
- myometrial pathology: myoma, adenomyosis
- endometrial: subtle lesions



HYDROSALPINX AND IVF OUTCOME

Prospective studies

	Hydros. Pos.	Hydros. Neg
Strandell et al. 1999	23.9%	36.6%
Dechaud et al. 1998	18.7%	34.2%



HYDROSALPINX AND IVF OUTCOME

	Hydrosalpinx	
	positive	negative
	%	%
pregnancy rate	19.67	31.2
implantation rate	8.53	13.68
delivery rate	13.40	23.44
early pregn. loss	43.65	31.11

E. Camus Hum Reprod 14, 5; 1999



HYDROSALPINX AND IVF OUTCOME

Treatment options

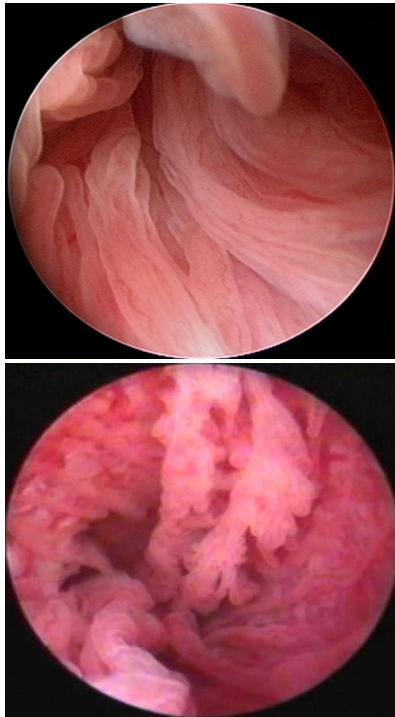
**Should a hydrosalpinx be removed
before IVF??**

**Which surgical correction
should be performed
before IVF??**



Salpingoscopy

Reproductive outcome

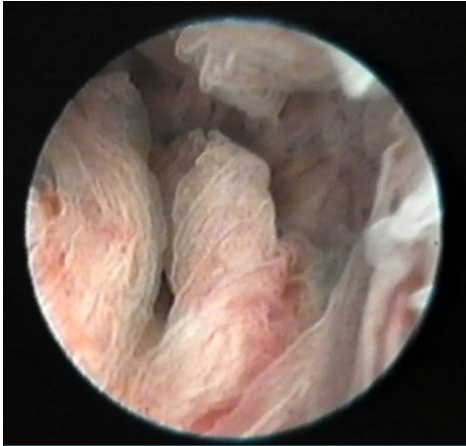


Grade	Intrauterine pregnancy rate	Ectopic pregnancy rate
I II	59%	5%
III	20%	10%
IV	<5%	50%

Brosens, Reprod. med. Rev. 1996, 5:1



HYDROSALPINX MANAGEMENT



Grade

I

II

III

Microsurgical reconstruction



IVa

IVb

V

Preventive salpingectomy

Blood supply to & the innervation of the ovary
Pregnancy complications

Proximal tubal occlusion

Proximal occlusion of hydrosalpinx by
hysteroscopic placement of microinsert
before in vitro fertilization-embryo transfer
followed by successful pregnancy.

Rosenfield Fertil Steril. 2005 May;83



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HYDROSALPINX AND IVF OUTCOME

Treatment options

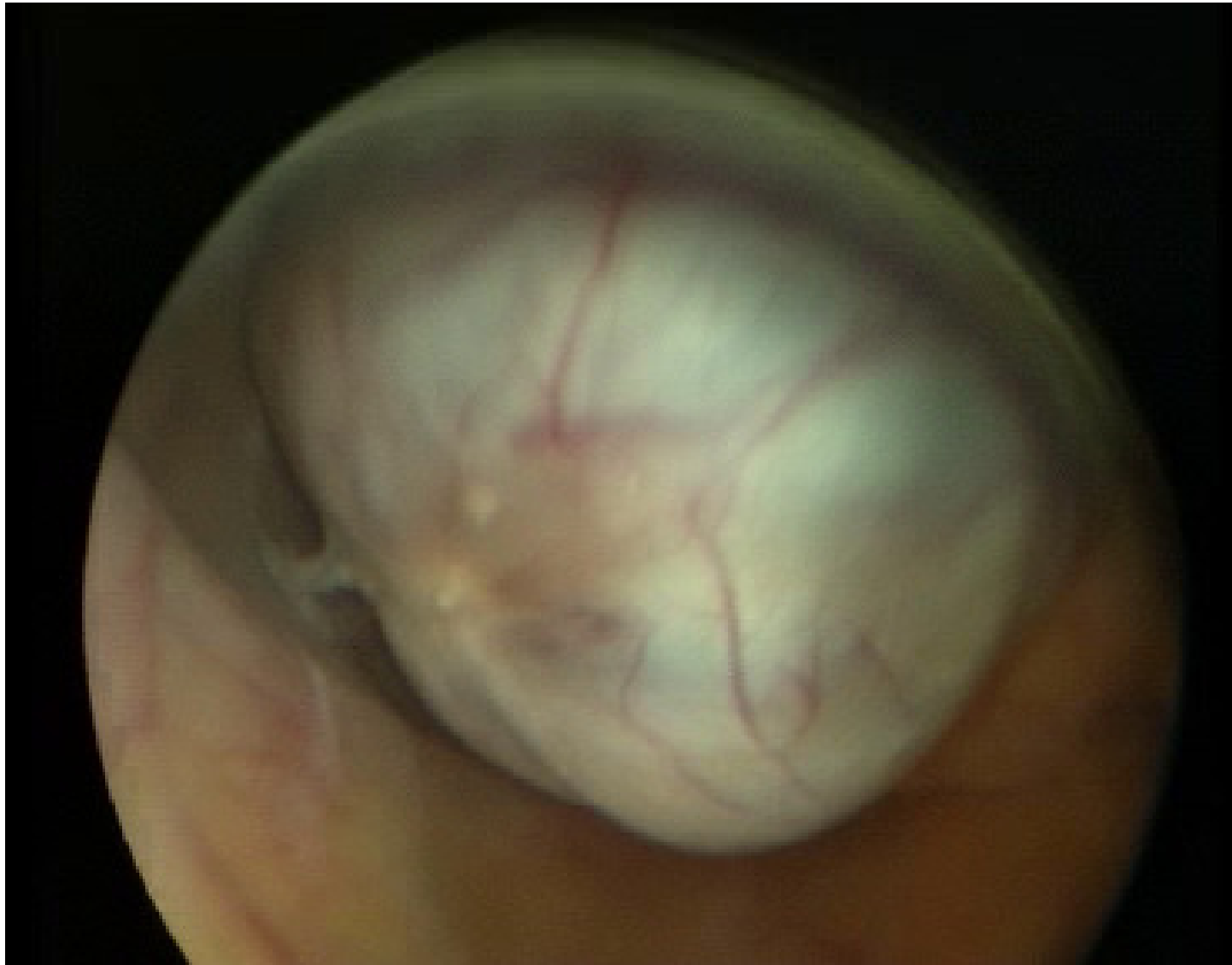
	Pr/ET	Impl.
Salpingectomy	39%	18.8%
Neosalpingostomy	36.2	16.7%
Proximal occlusion	60%	27.3%

Murray et al. 1998 Hum Reprod 69,41



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Tubal surgery

- Distal occlusion
- Proximal occlusion

infectious / mechanical



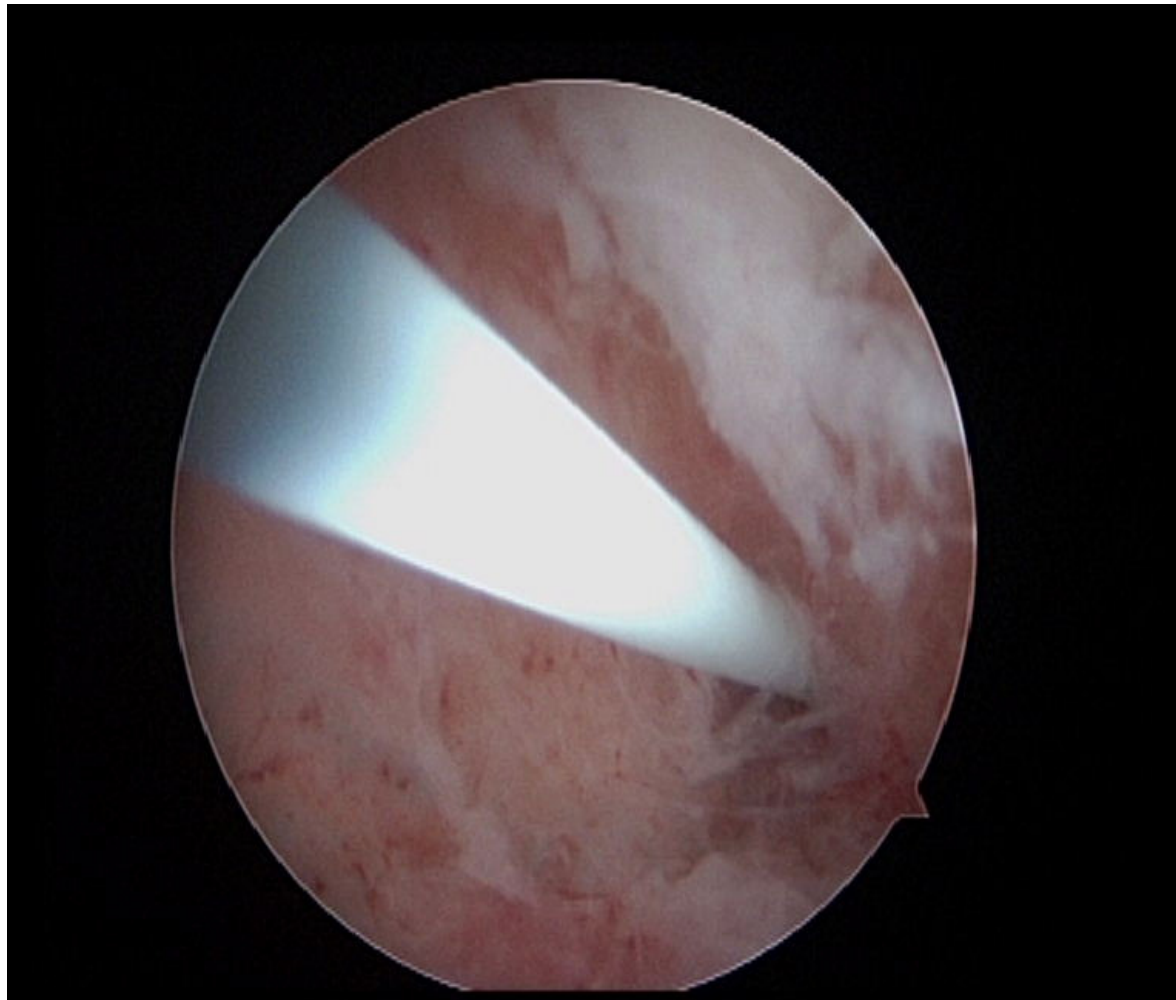
PROXIMAL TUBAL OCCLUSION

	patency n = 113	Pregnancies n = 59
Selective salpingography	34.5%	27.2%
Tubal catheterization	46%	56.6%
Wire guide	8.9%	12.5%
Total	89.4%	40.7%

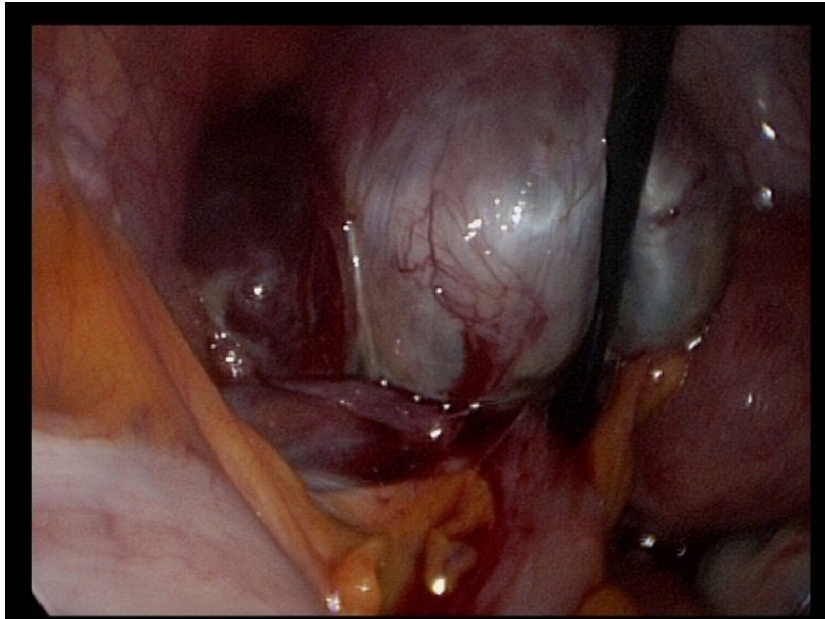
Woolcott, 1995 Hum. Reprod.



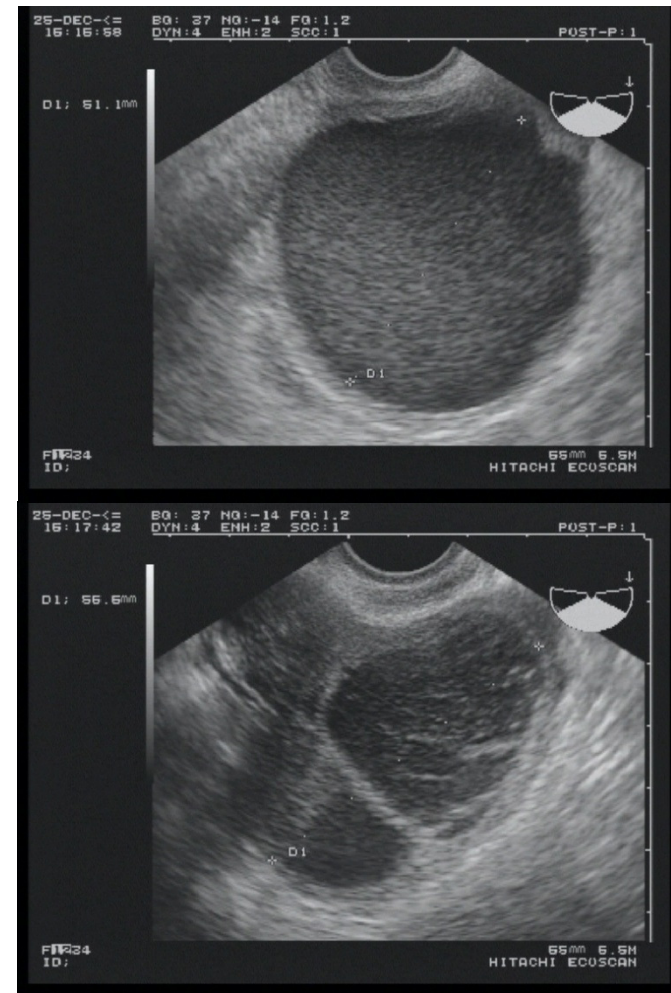
Tubal catheterization



ENDOMETRIOSIS



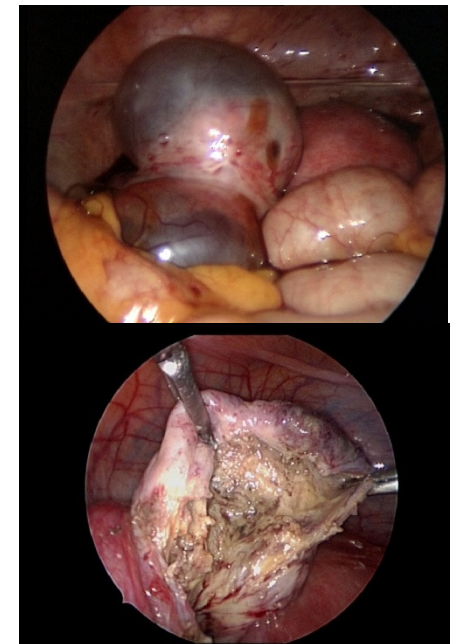
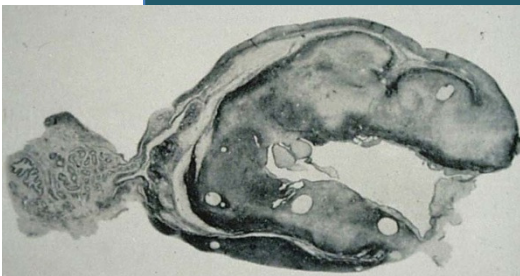
Peritoneal implants ?
Adhesions?



IS ENDOMETRIOSIS A SURGICAL DISEASE?

Concerns:

- Pleiotropic disorder
- Recurrence rate
- Ovarian reserve



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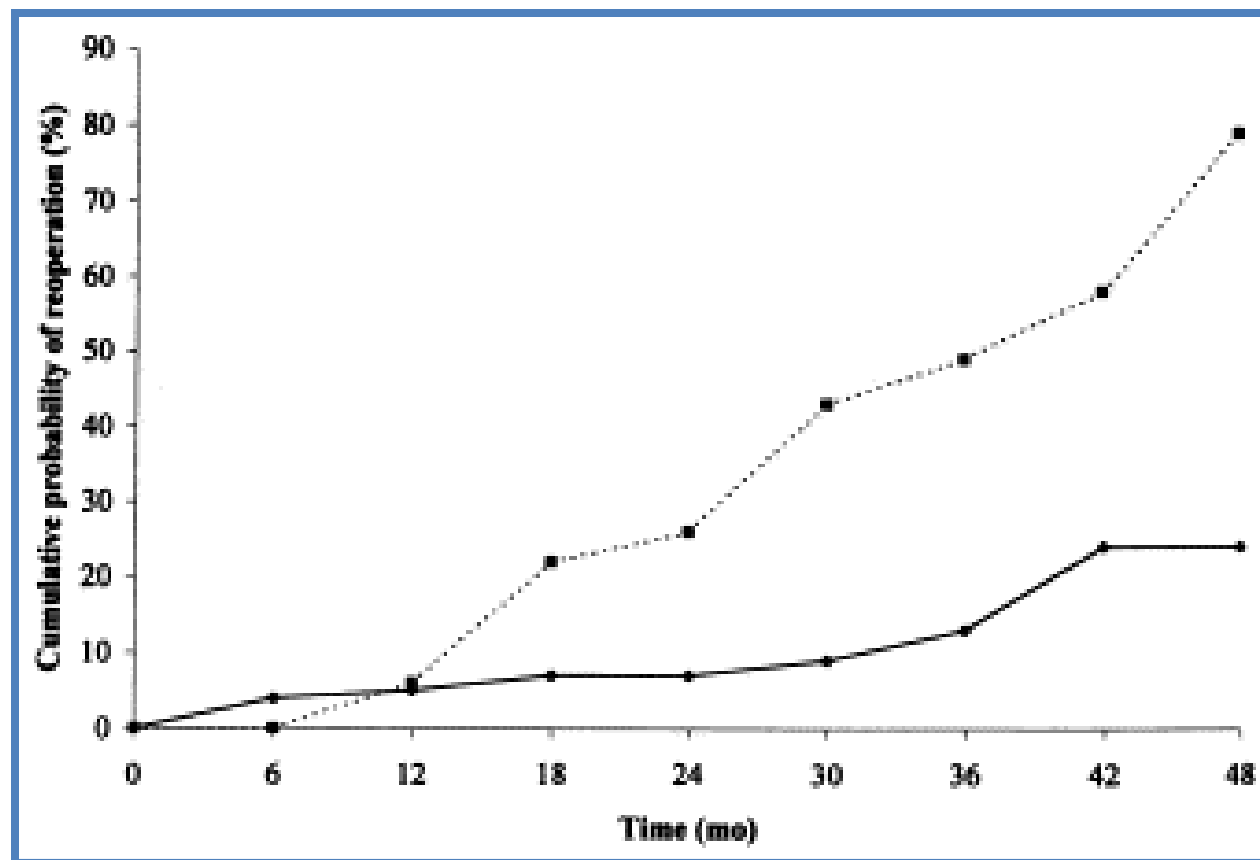
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RECONSTRUCTIVE OVARIAN SURGERY IN ENDOMETRIOSIS

		Ablation	Excision
		recurrence rates	
Hemmings	1998	8% (36)	12% (23)
Saleh	1999	21.9% (70)	6.1% (161)
Beretta	1998	18.8% (32)	6.2% (32)
Fayez	1991	33% (30)	29% (66)



Cumulative probability of reoperation after laparoscopic treatment of ovarian endometriomas by excision (solid line) and by fenestration (broken line). Time 0 = the day of the initial laparoscopic procedure.



TECHNIQUES FOR RECONSTRUCTIVE OVARIAN SURGERY IN ENDOMETRIOSIS

Eversion versus Excision

Excision: higher incidence adhesion formation
lower recurrence rate
Reduced ovarian volume and ovarian
reserve

(El-Shawi, 1998; Al-Azemi, 2000; Nargund 1995; Loh, 1999)

Eversion: 2 step technique if >5 cm



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TECHNIQUES FOR RECONSTRUCTIVE OVARIAN SURGERY IN ENDOMETRIOSIS

Residual ovarian volume after surgery

Endometriosis

5,1 ± 3.2*

Dermoid

6.7 ± 3.3*

Treated

4.3±2.3**

Control

9.7±3.9*

Treated

7.1±3.5*

Control

8.3±3.1

*p<0.001

*p<0.001

*p<0.05

Exacoustos et al. Am J Obst Gynec, 2004,191



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TECHNIQUES FOR RECONSTRUCTIVE OVARIAN SURGERY IN ENDOMETRIOSIS

Residual ovarian volume after surgery

**Lack of correlation between residual ovarian
volume and cyst diameter.....**

**Resection of even small endometrioma
significant loss of ovarian volume**

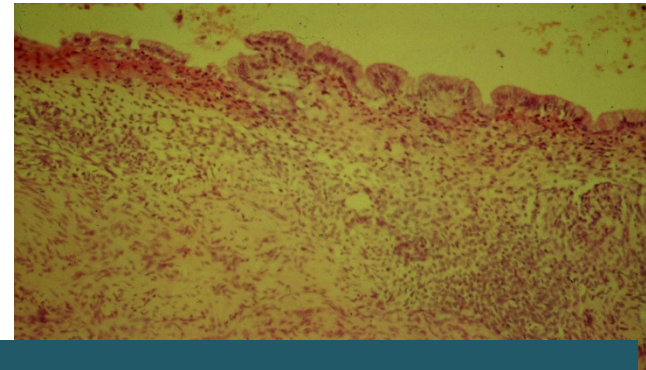
Exacoustos et al. Am J Obst Gynec, 2004,191



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OVARIAN ENDOMETRIOMA



Hachsiguga et al. Hum Reprod 2002

easy removable endom. cyst:	prim. follicles	68.9% (1-25)
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Muzii et al. Fertil Steril, 2002

endometrioma:	ovarian tissue	54%* (1-2 mm thick)
other ovarian cyst:	ovarian tissue	6%*

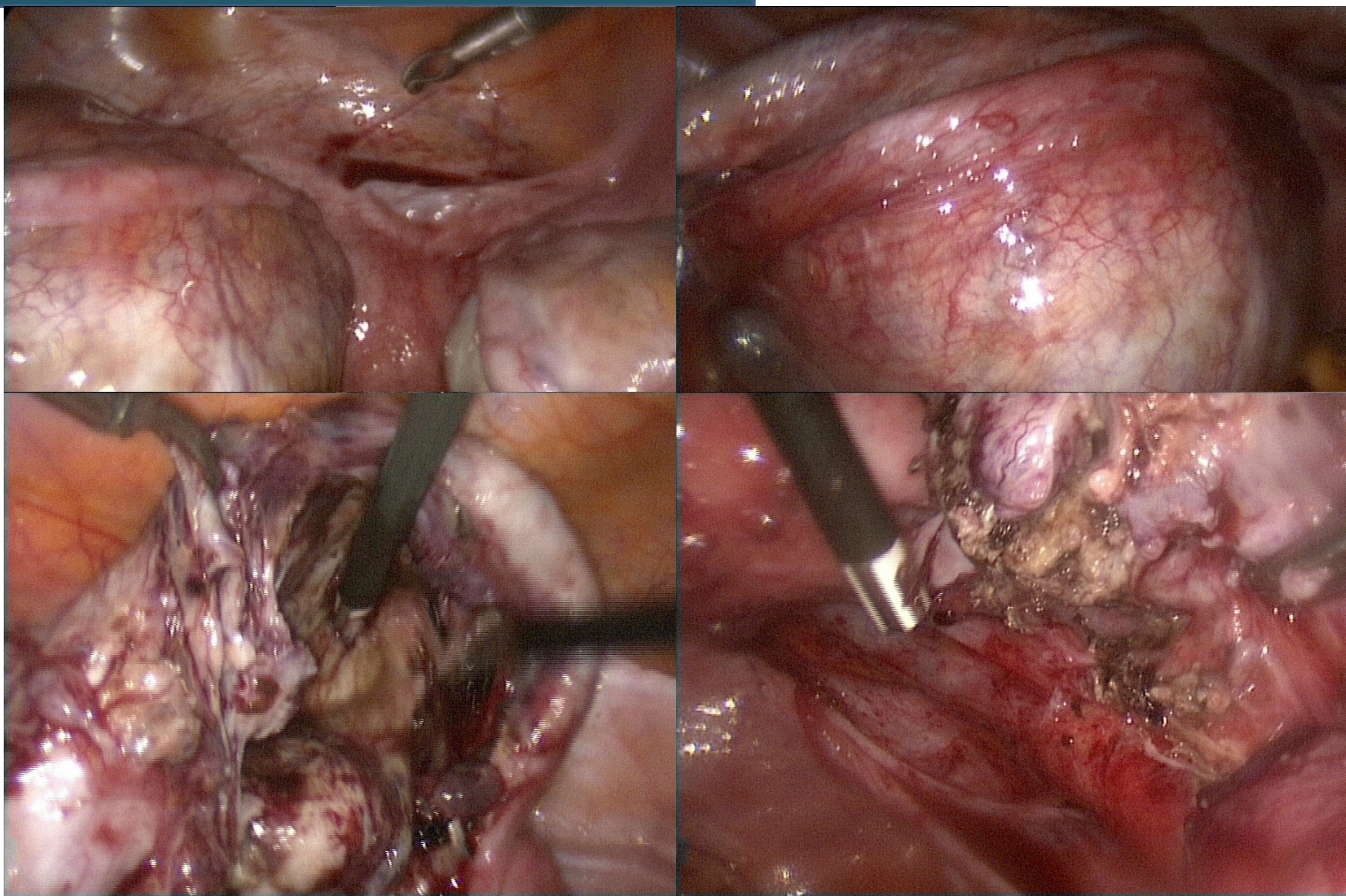
(p<0.005)

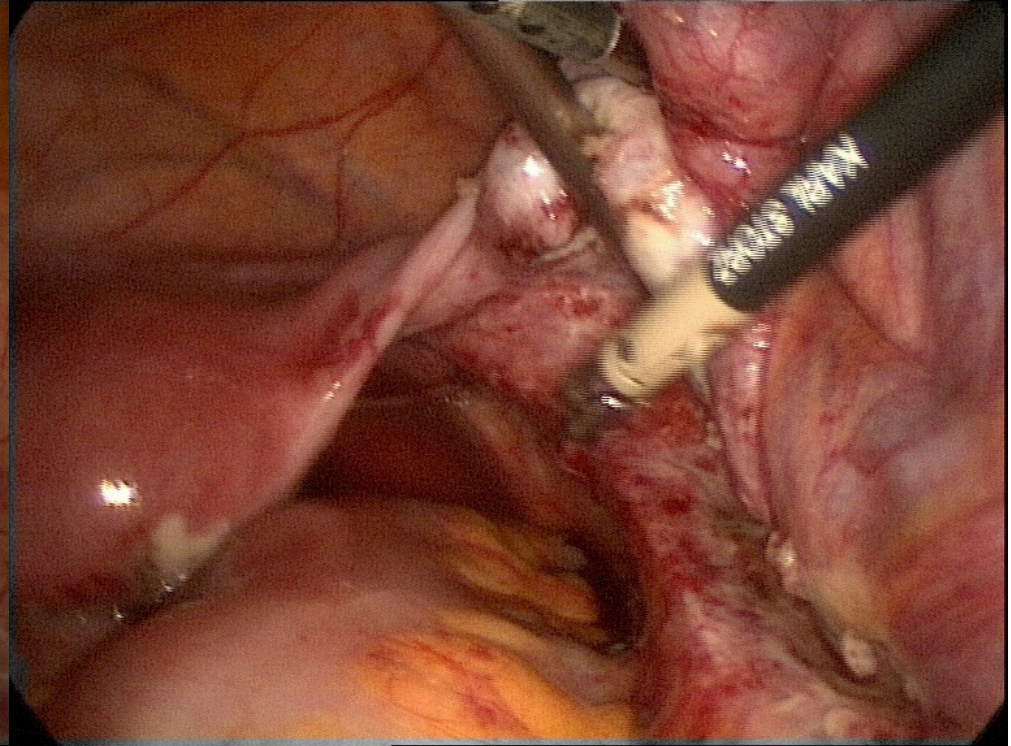
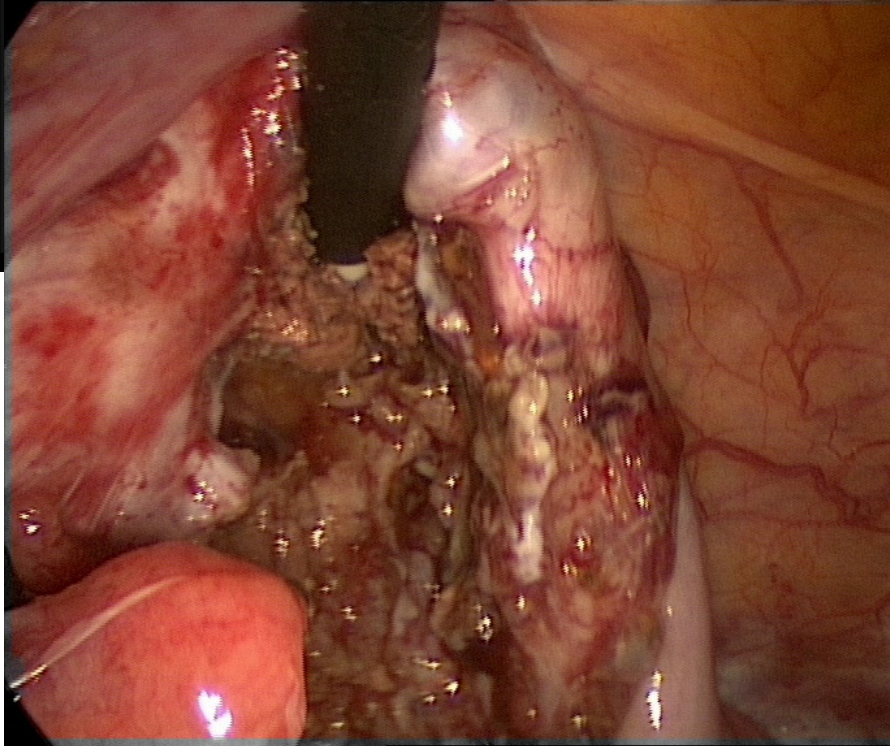
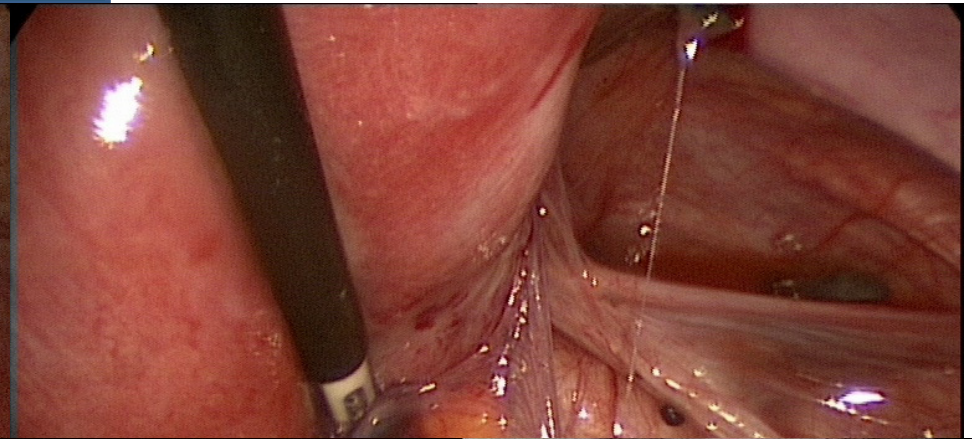
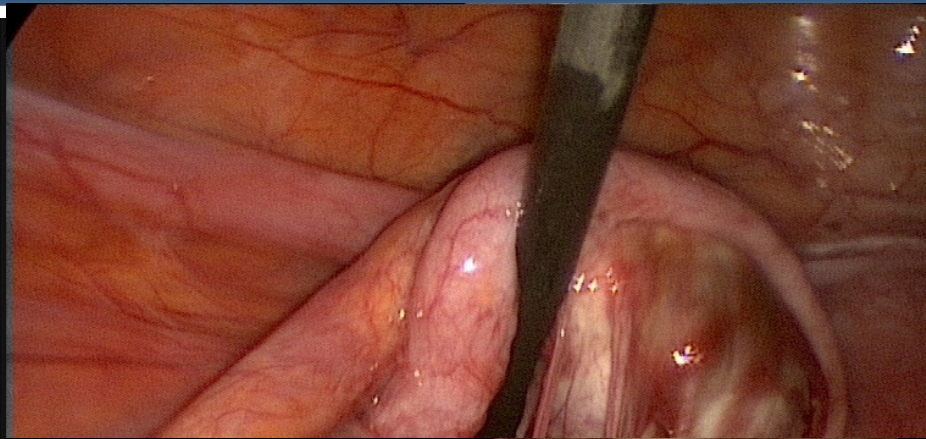
(73% no prim follicles present *no histology of ovarian hilus*)
(*tissue may be morphologically altered*)



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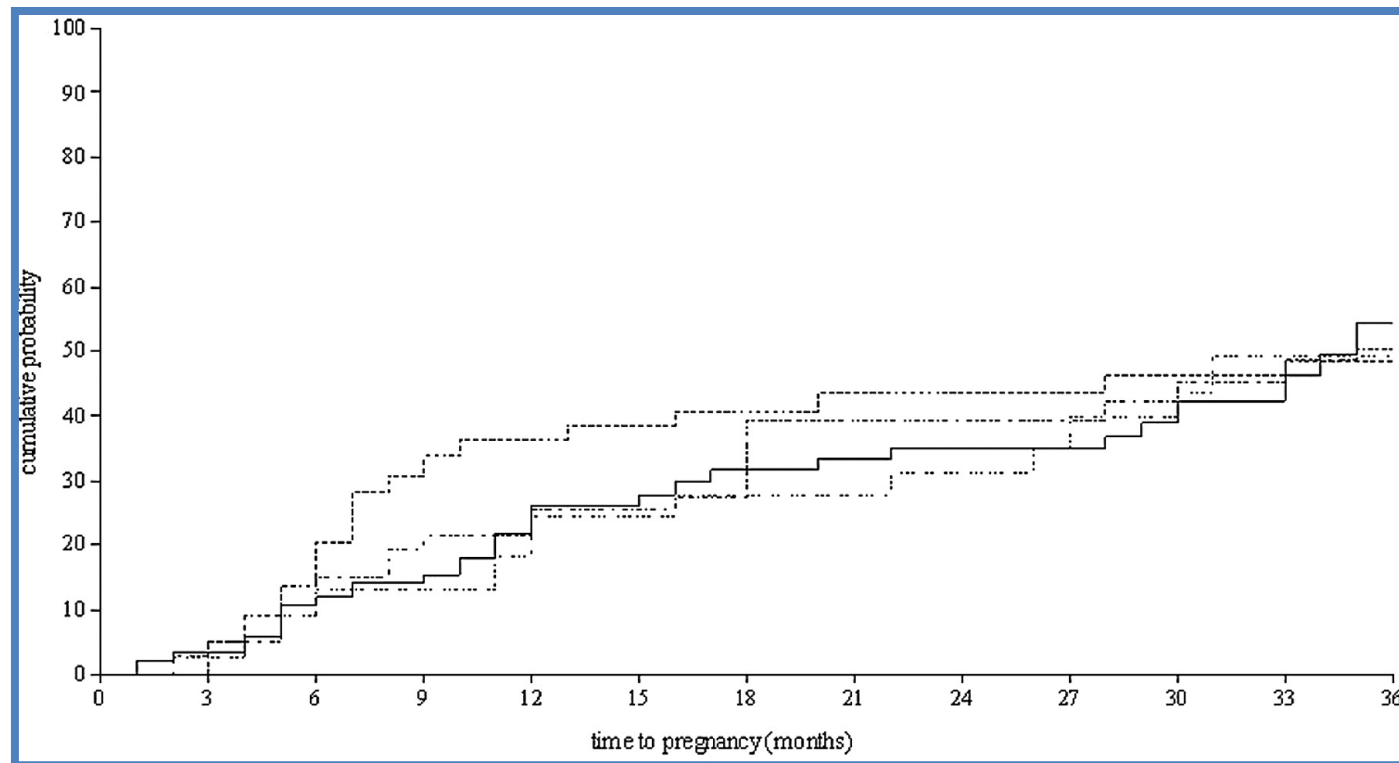


TREATMENT ENDOMETRIOMA AND PREGNANCY

		No	% PREGN
Sprangler	1971	101	51%
Acosta	1973	107	45%
Soules	1976	58	43%
Garcia	1977	61	37%
Brosens	1977	52	54%



Cumulative 36-month probability of becoming pregnant by disease stage in 222 infertile women who underwent conservative surgery for endometriosis and had no other infertility factor



Vercellini, P. et al. Hum. Reprod. 2006 21:2679-2685



ENDOMETRIOSIS-Associated INFERTILITY

Fertilization Rate in IVF

	Endo	Tubal	P
• Geber ('95)	46%	56%	<.02
• Arici ('96)	71%	70%	ns
• Hull ('98)	56%	60%	<.001
• Bergendal ('98)	60%	78%	<.001
• <u>Azem ('99)</u>	40%	70%	<.001



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ENDOMETRIOSIS-Associated INFERTILITY

Implantation Rate in Ovum Donation

	Endo	No Endo	P
• Simon (1994)	25%	17%	ns
• Sung (1997)	12%	13%	ns
• <u>Diaz*</u> (2000)	15%	16%	ns

* sibling



Pregnancy Outcome of ART in Endometriosis

		Endometriosis	Control	P
•	Simon (1994)	13%	34%	<.001
•	Geber (1995)	40%	45%	NS
•	Olivennes (1995)	29%	36%	NS
•	Dmowski (1995)	29%	25%	NS
•	Arici (1996)	14%	24%	NS
•	Hull (1998)	30%	27%	NS
•	Azem (1999)	11%	22%	<.001



Stage of endometriosis and IVF outcome

Meta-analysis

	rAFS I-II	rAFS III-IV	
Mean Nb ooc	8.19	6.70	p<0.001
Peak E ₂	5813.38	1447.73	p<0.001
Fertil.%	58.38%	74.47%	p<0.001
Pregn %	21.12%	13.84%	p<0.001
Implant%	11.31%	10.23	0.003

Barnhart et al. Fertil Steril 2002, 77



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Stage III - IV endometriosis IVF outcome

	Nb ooc	fertil%	pregn%/ET
Barnhart (2002)	6.70	74.47	13.84
Olivennes (1995)	7.1	66.26	50.0
Azem (1999)	7.14	40	10.6
Oehninger (1988)	3.7	90	28.4
Aboulghar 2003)			15.3%
Tummon (1991)	3.82		13-14%



Pregnancy Outcome of ART in Endometriosis

	Endometrioma rAFS IV <i>previous surgery</i>	Control
<i>Cancellation rate</i>	29.7 %	1 %
<i>Clinical pregn/cycle</i>	15.3 %	52.5 %

Aboulghar et al. 2003, Am J Obst Gyn.



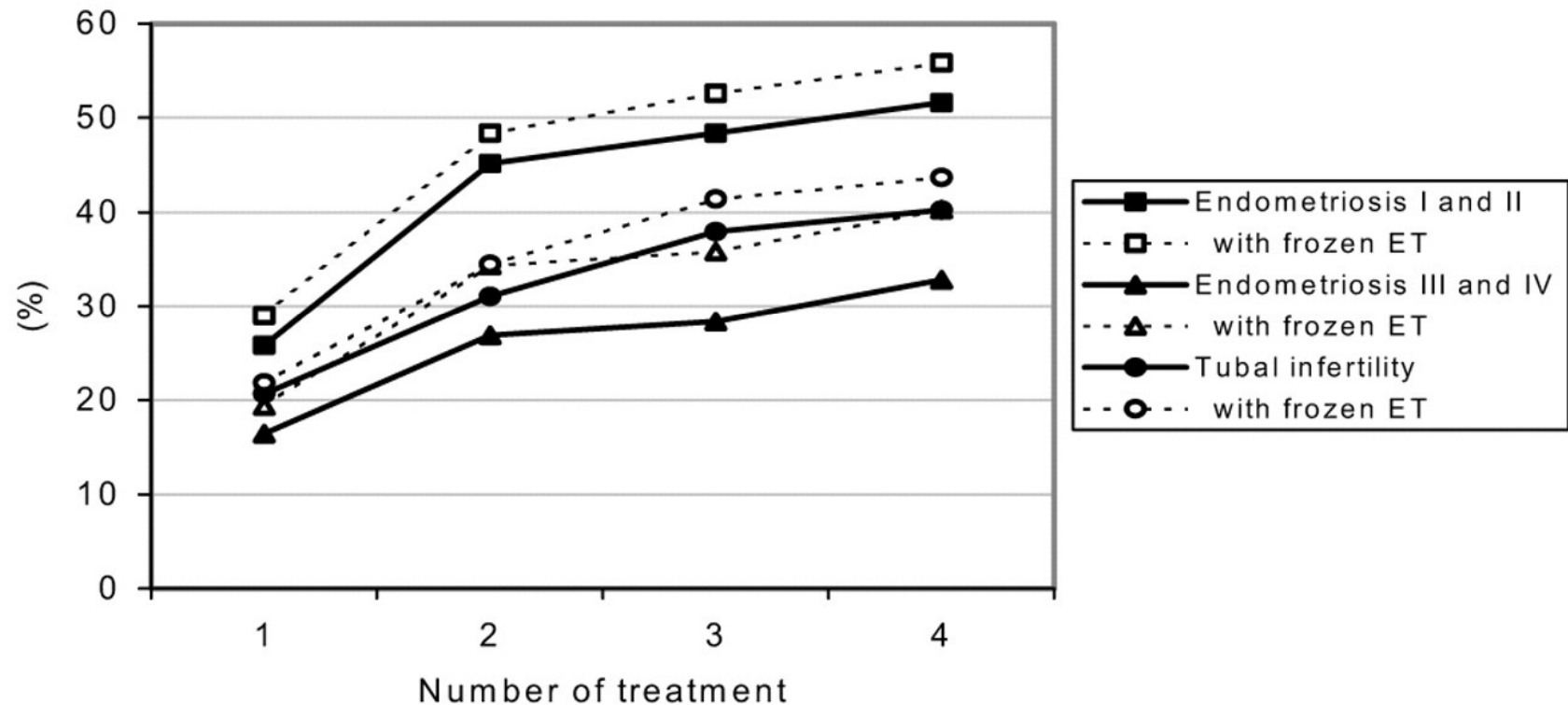
Cumulative life birth rate

Tummon et al. 1991

Stage I	33%
Stage II	22%
Stage III	15%
Stage IV	13%



Cumulative live birth rates (%) with and without frozen embryo transfer

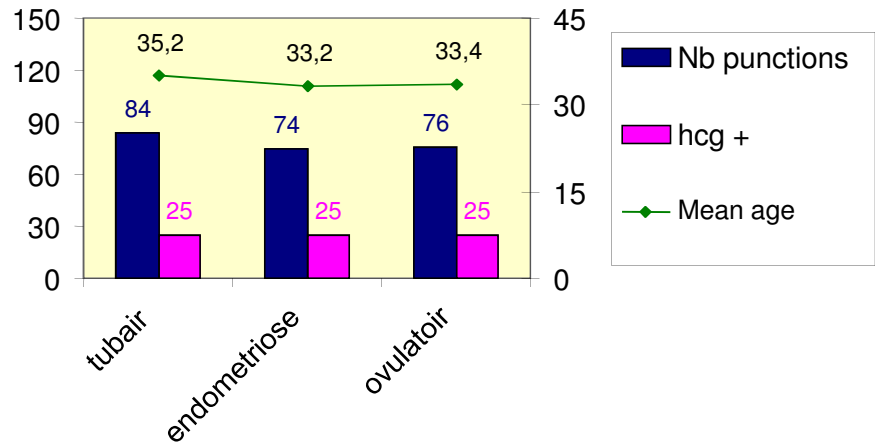


Kuivasaari, P. et al. Hum. Reprod. 2005 20:3130

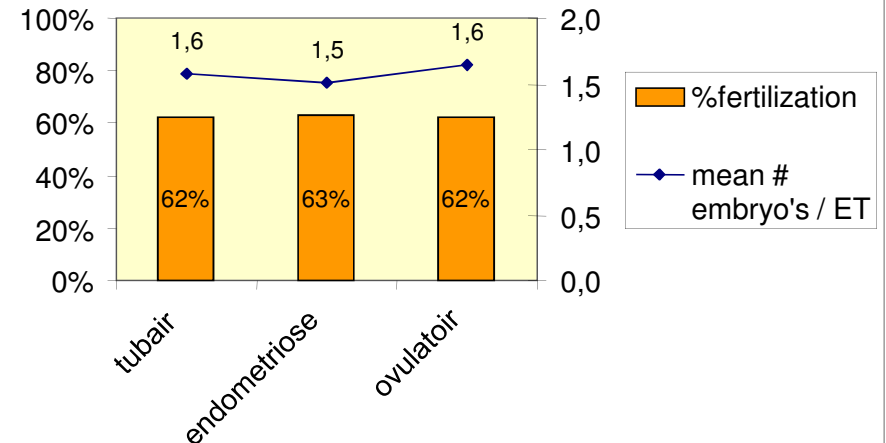


IVF outcome and endometriosis

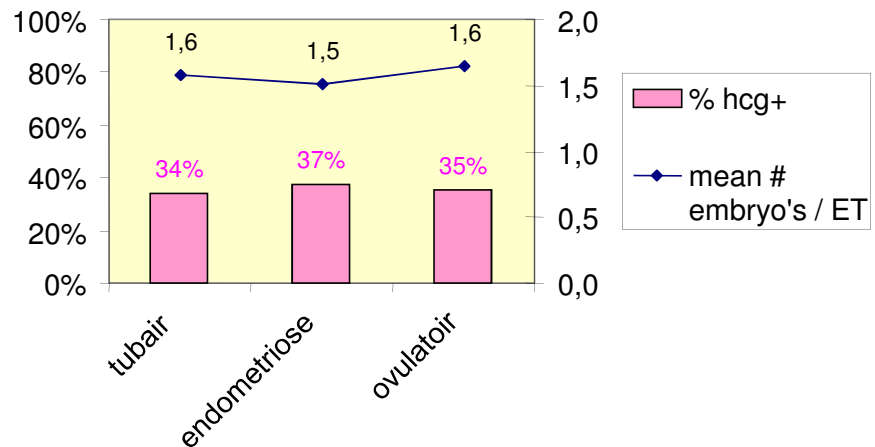
Endometriosis 2005



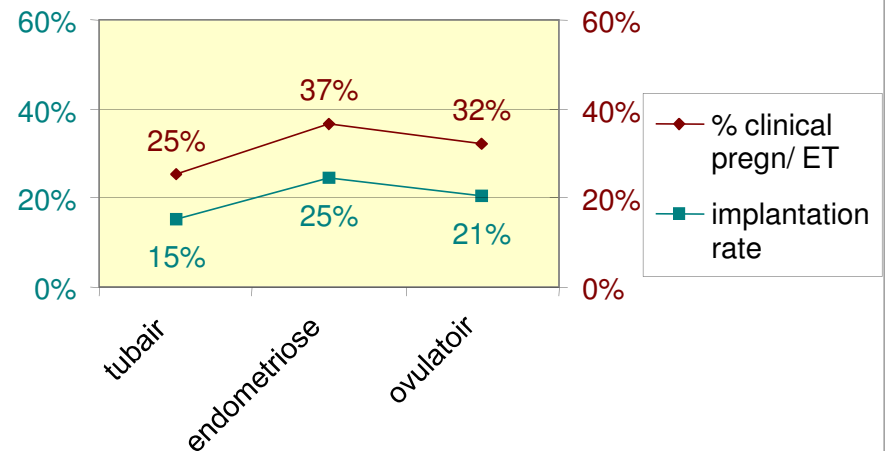
Fertilization 2005



Pregnancy rate 2005



Clinical pregn. 2005



Endometriosis rAFS III – IV

Re-operation versus ART

	IVF	<u>Re-operation</u>
Number	23	18
Age	32.5	31.6
CPR	33.3%*	24.4%

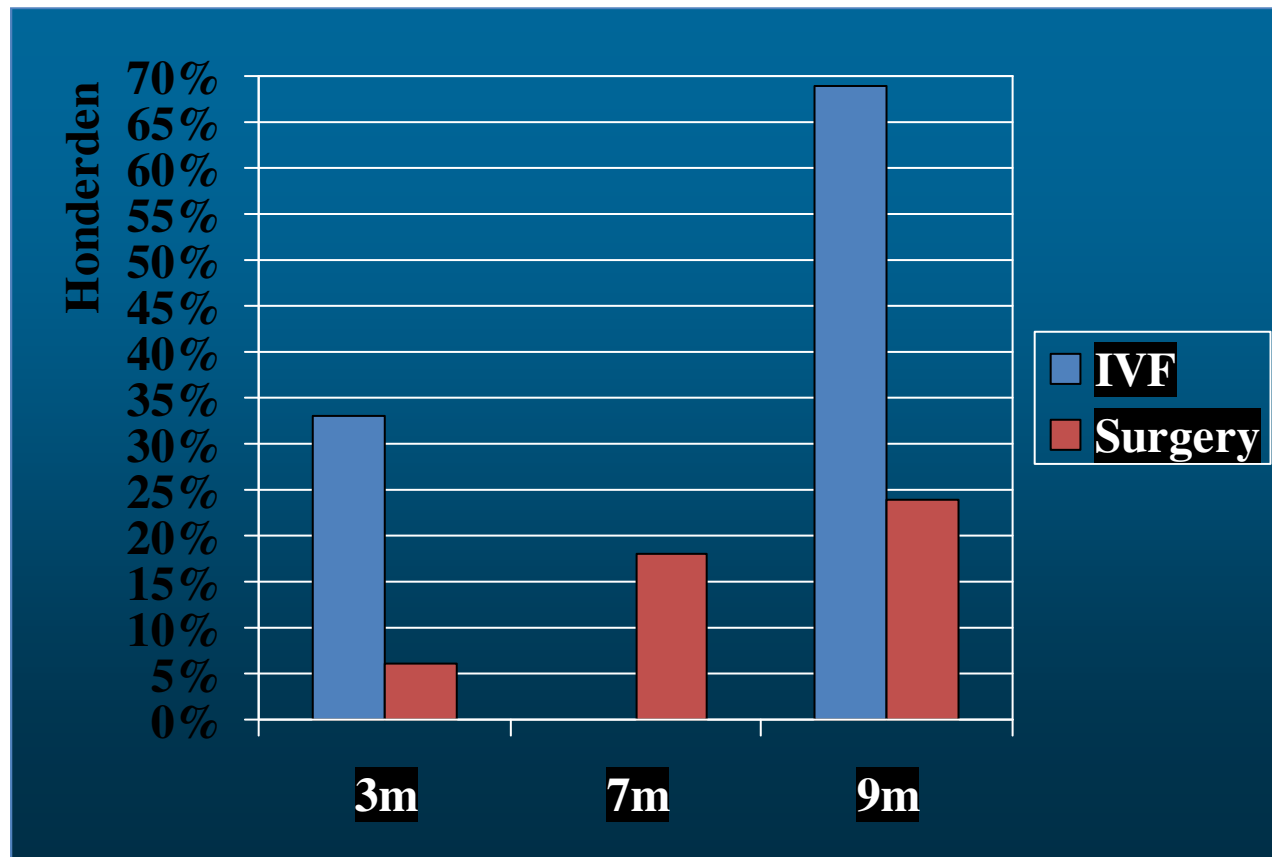
* 1 cycle

Pagidas et al. 1996 Fertil Steril,65



Endometriosis III – IV

CPR: Re-operation versus ART



Pagidas et al. 1996 Fertil Steril,65



Recurrence of endometriosis

Reoperation and CPR

Cheewadhanaraks, 2004	n=32	20.5%	(12m)
Wheeler, 1983	n=62	47%	(36m)
Pagidas, 1996	n=18	24.4%	(9m)
Bussaca, 1998	n=81	45-54%	(24m)
Candiani, 1991	n=42	30.7%	(27m)



Recommendations in case of recurrence ovarian endometrioma

IVF : first choice

< 5 cm, unilateral ?
patients at age,
combined male pathology
GnRha down regulation



Recommendations in case of recurrence ovarian endometrioma

Re operation

in case of cysts larger 5 cm, bilateral
pain

experienced surgeons

GnRha for 2 – 3 months as preparation for IVF

Informed consent



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Conclusions

No evidence based treatment

Results in case of recurrence seems not to be different.

Results ART: stage III - IV : lower pregn%

Experienced surgeon is mandatory



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Conclusions

Re-operation:

PRO: pregnancy rates 20 – 50%
spontaneous conception

CONTRA: reducing ovarian reserve
recurrence is possible
risk intervention

? higher pregn% after reducing



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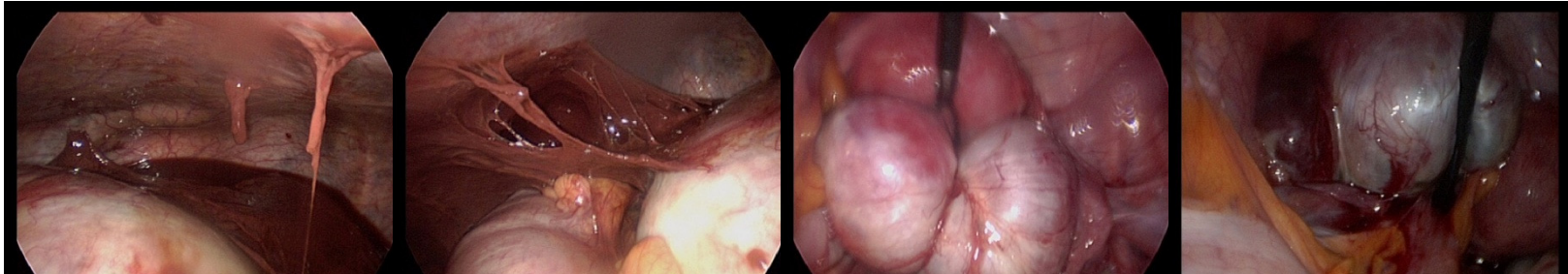
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Conclusions

ART

PRO: although pregnancy rate ↓ with severity, higher CPR

CONTRA: IVF treatment_(costs, multiple pregn.)
cyst rupture; abces
long term? malignancy?



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Uterine fibroids: should we operate?

Stephan Gordts MD



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Junctional Zone Myometrium

Functional important entity in reproduction

- Ontogenetically related to endometrium
- Cyclic changes in SSH receptors
- Role in gamete transport and implantation



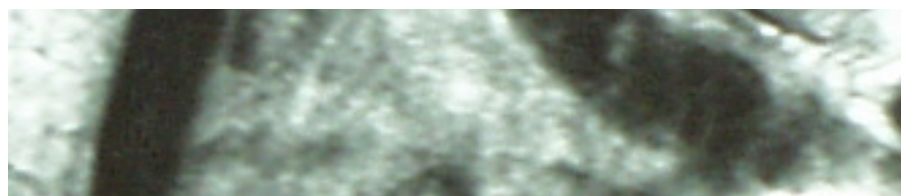
Junctional Zone Myometrium

Important role in Reproduction

Functional important entity in reproduction

- Early changes from time of implantation
- Decidualisation and trophoblast invasion
- Defective transformation of JZ spiral arteries in spectrum of pregnancy complications





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