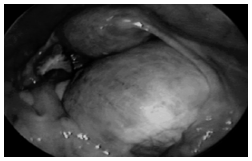
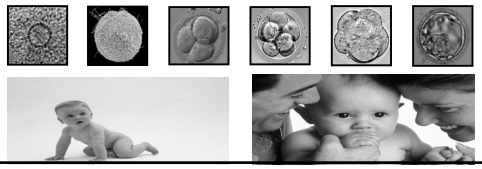


Patient Management and Outcome of IVF/ICSI in Patients with Endometriomas

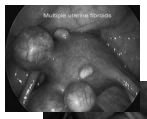
Timur Gürgan, MD
Professor
Division of Reproductive Medicine and Infertility
Faculty of Medicine,Hacettepe University
Ankara,Turkey

The Goals of ART

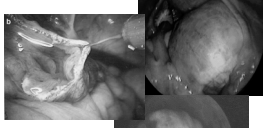
- To minimize the risk of ART
  (complications,psycological,economical etc.)
- To optimize pregnancy rates
- To produce healthy, genetically normal, singleton full-term deliveries

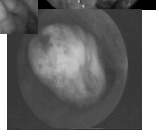


Surgery Before Assisted Reproduction



- Uterine pathologies
- Endometriomas
- Tubal diseases

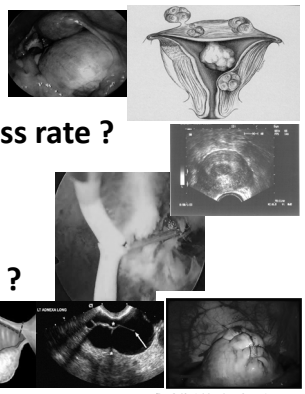




- To achieve pregnancy
- To increase the success of the IVF/ICSI

Surgery Before IVF/ICSI

- Cost
- Complication(s)
- Increase the sucess rate ?



Which patients ?

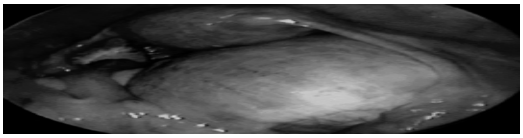
Which opereration ?

Timing ?

Surgery Before Assisted Reproduction

Endometriomas :

Remove or not to Remove ?



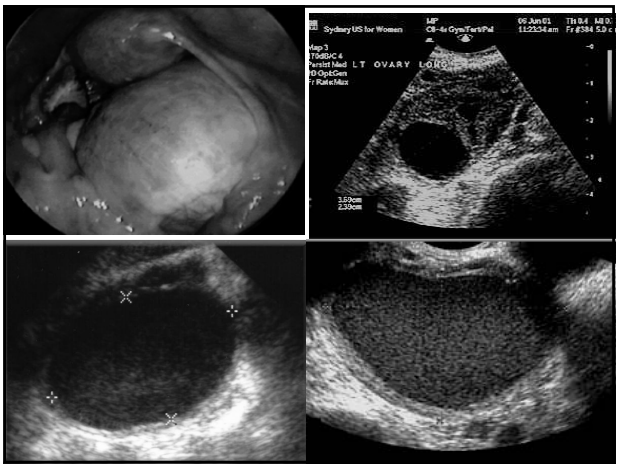
Endometriomas

- Adnexeal mass (14%-44%)
- Pelvic pain
- Infertility

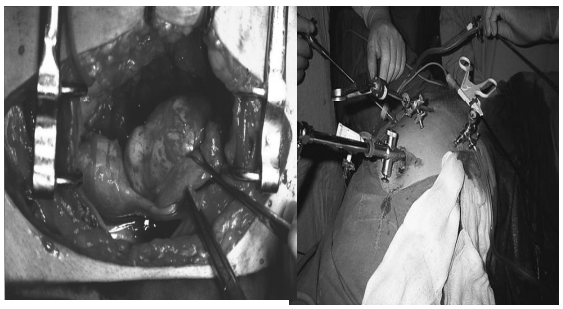
Treatment Options

- Expectant management
- Surgery

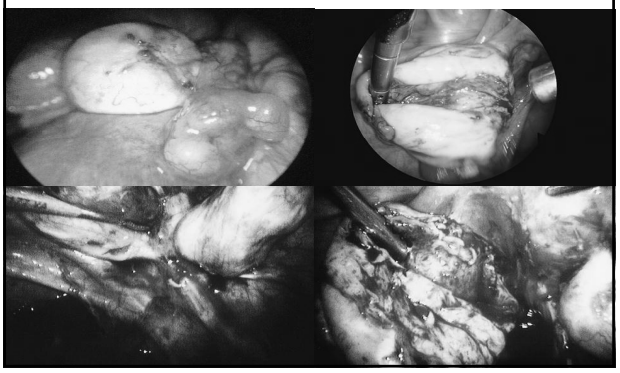
Aspiration
Fenestration
Ablation,coagulation
Cystectomy
Recurrence of the endometriomas is an important issue ! (18%-30%)



Endometrioma Tx
L/T vs L/S



Endometrioma Cystectomy



Treatment of Endometriomas

- **Medical therapy alone has a limited role**
- **Operative laparoscopy represents the first-line treatment** Chapron et al.,2002; Jones and Sutton,2002
- **Better PR and a lower rate of recurrences after laparoscopic ovarian cystectomy**
- **PR after surgey vary between 23%-67%** Elsheikh et al.,2003;Alborzi et al.,2004
- **PR significantly influenced by patients charasteristics,length of follow – up, selection criteria, adhesion score and surgical technics (40%-50%)**
- **USG guided aspiration associated with high rate of recurrances**

A prospective, randomized study comparing laparoscopic ovarian cystectomy versus fenestration and coagulation in patients with endometriomas

Saeed Alborzi, M.D., Mozhdeh Momtahan, M.D., Mohammad Ebrahim Parsanezhad, M.D., Sedigheh Dehbashi, M.D., Jaleh Zolghadri, M.D., and Soroosh Alborzi

Division of Infertility and Endoscopy, Department of Obstetrics and Gynecology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

FERTILITY AND STERILITY®
VOL. 82, NO. 6, DECEMBER 2004

TABLE 2

Recurrence of signs and symptoms of endometriomas and rate of reoperation after 1 year.

	Cystectomy	Fenestration and coagulation	P
Recurrence of cyst (%)	3/52 (5.8)	9/48 (18.8)	~.09
Recurrence of symptoms (%)	2/28 (5.3)	6/30 (20)	~.13
Reoperation (%)	1/52 (1.9)	4/48 (8.3)	~.19

TABLE 3

Recurrence of signs and symptoms of endometriomas and rate of reoperation after 2 years.

	Cystectomy	Fenestration and coagulation	P
Recurrence of cyst (%)	9/52 (17.3)	15/48 (31.3)	.16
Recurrence of symptoms (%)	6/28 (15.8)	17/30 (56.7)	.001
Reoperation (%)	3/52 (5.8)	11/48 (22.9)	.003

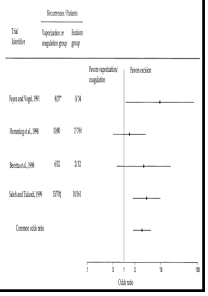
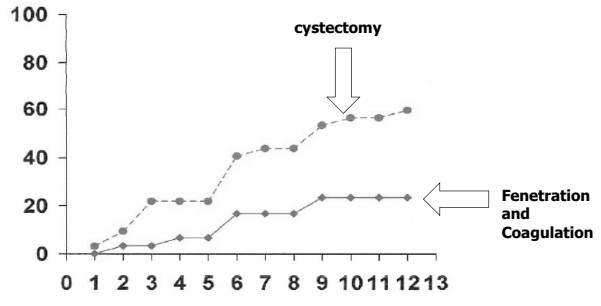


FIGURE 1

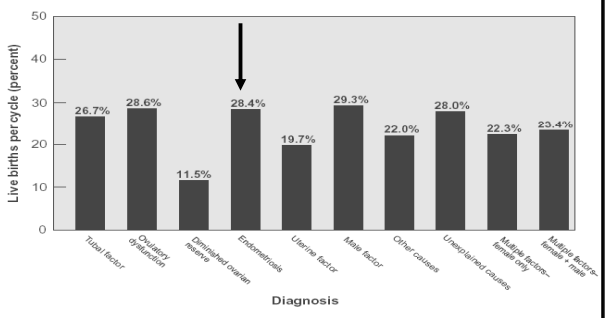
Cumulative pregnancy rate according to the type of surgery performed after 1 year. Vertical axis: cumulative pregnancy rate (%); horizontal axis: no. of months after the operation. Cystectomy is shown by the *circle-dashed line*, and fenestration and coagulation are shown by the *diamond-solid line*.



Is Laparoscopic Surgery less commonly employed today?

- It is generally agreed that laparoscopic surgery can improve Pregnancy rates !
- Higher sucess rates with IVF
- Fewer highly skilled laparoscopic surgeons
- Relatively poor managed – care insurance reimbursement for surgery

IVF Indications and Outcomes



SART, 2002

There was a significantly lower pregnancy rate per fresh embryo transfer after pooled cycles (1–4) among women with stage III/IV endometriosis (22.6%) compared to stage I/II group (40.0%) or tubal infertility (36.6%). After 1–4 IVF/ICSI treatments, including frozen embryo transfer, 56.7% of the women with stage III/IV endometriosis were pregnant and 40.3% gave birth.

Kuivasaari et al, Hum Reprod, 2005

IVF/ICSI in Endometriomas

- Laparoscopic ovarian cystectomy is recomended if an ovarian endometrioma larger than 4 cm in diameter is present to confirm diagnosis,reduce risk of infection,improve access to follicles and possibly improve the ovarian response (??).
- The women should councel regarding the risks of reduced ovarian function after surgery !

ESHRE Guideline for diagnosis and treatment of Endometriosis:Human Reproduction,2005

Endometriomas and IVF : Alternative Treatment Options

- Ultrasound Guided Aspiration :
  - Significant improvement in number of oocytes retrieved in women who failed to conceive a previous IVF cycle (Dicker et al.,1991)
  - LT-L/S , no treatment vs aspiration : a higher fertilization rate in the group of treated with aspiration (Suganuma et al.2002)

Aspiration of Ovarian Endometriomas Before ICSI

- Randomized study
- 41 women randomized for aspiration at the begining of ovarian stimulation,whereas 40 women who did not undergo aspiration were used as controls
- Number of oocytes retrieved , fertilization rate,implantation rate and pregnancy rate resulted similar

(Pabuccu et al., Fertil Steril,2004)

Endometrioma Cystectomy and IVF/ICSI

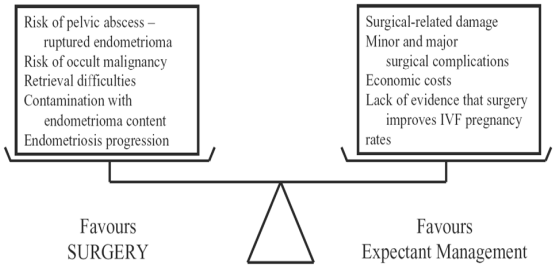
The average time between laparoscopic cystectomy and IVF cycle (6-24 m)

Whether cystectomy reduces response to COH and/or ART outcome ?

What is the impact of endometriosis on the results of ART?

1. Number of oocytes
2. Oocyte quality
3. Fertilisation
4. Implantation
5. Miscarriage rates

Should endometriomas be treated before IVF–ICSI cycles?



Edgardo Somigliana, 2006

Endometriomas and Ovarian Reserve

- **Mechanical streching**
  Meneschi et al.,1993

  May cyst per se damage the the surrounding ovarian tissue?
  Yes ! Maneschi et al.,1993- Using pathological sections of the ovarian cortex found reduced number of follicles
  Need for clinical studies in human comparing follicular growth in the affected and contralateral intact gonad !

- **Biochemical negative influence**
  Khamsi et al.,2001
- **Adhesions which typically surround affected ovaries.In a rabbit model of endometriosis endometrial implants in the gonads decreased ovulation points**
  Kaplan et al.,1989

Damage Machanisms

- **Surgery-mediated damage**

  Negative effect of SURGERY !?

Presence of healthy ovarian tissue adjacent to removed the cyst wall

Muzzi et al.,2002;Hachisuga and Kawarabayashi,2002

Excission of healthy ovarian cortex with follicles

Brosens et al.,2004

Surgery related local inflamation and electrocoagulation during haemostasis

La Torre et al.,1998;Marconi et al.,2002;Fedele et al.,2004

Histopathological analysis of laparoscopically treated ovarian endometriotic cysts with special reference to loss of follicles

Toru Hachisuga[1] and Tatsuhiko Kawarabayashi

Department of Obstetrics and Gynecology, Fukuoka University School of Medicine, 45-1, 7-chome, Nanakuma, Jonan-ku, Fukuoka 814-0180, Japan

Human Reproduction Vol.17, No.2 pp. 432–435, 2002

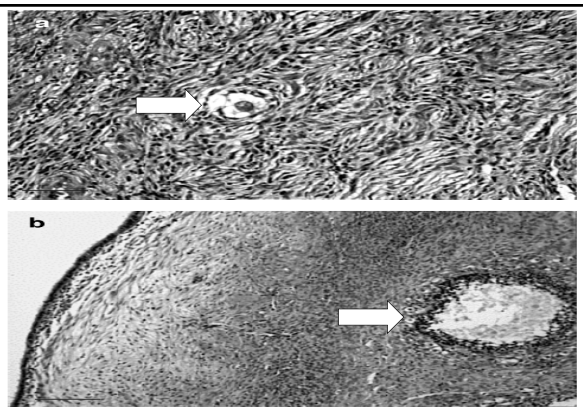


Figure 2. (a) A primordial follicle in the wall of a group 1 cyst. (HE. Scale bar = 40 μm). (b) A follicle in the wall of a group 1 cyst (scale bar = 100 μm).

Endometrioma Cystectomy

- Recognizable ovarian tissue inadvertently removed 54% of the cases
- Close to the ovarian hilus ovarian tissue remove by endometriomas consisted of mostly primary and secondary follicles

GREAT CAUTION SHOULD BE UNDERTAKEN TO AVOID OVARIAN DAMAGE WHİLE STRIPPING THE CYST CAPSULE AND HEMOSTASIS NEAR THE HILUS !

Muzzi et al. Fertil Steril 2002;Human Reprod,2005

IVF/ICSI:Endometriomas, Endometriosis and Tubal Factor Infertility

Ovarian response during IVF–embryo transfer cycles after laparoscopic ovarian cystectomy for endometriotic cysts of >3 cm in diameter.
Canis et al., Hum Reprod 2001

- The number of oocytes and embryos obtained was not significantly decreased by laparoscopic cystectomy.
- In experienced hands this procedure may be a valuable surgical tool for the treatment of large ovarian endometriomas.
- However, great care must be taken to avoid ovarian damage!!!

Before IVF Should be removed endometriomas ?

- Follicular reserve ⇩
- Decraesed ovarian response to COH ⇩
- Cycle cancel rate ⇧

Loh FH. Fertil Steril 1999

CONTROVERSY: IS THE OUTCOME OF IVF AFFECTED BY ENDOMETRIOSIS?

FERTILITY AND STERILITY®
VOL. 81, NO. 5, MAY 2004

Removal of endometriomas before in vitro fertilization does not improve fertility outcomes: a matched, case–control study

Juan A. García-Velasco, M.D.,[a] Neal G. Mahutte, M.D.,[b] José Corona, M.D.,[a] Víctor Zúñiga, M.D.,[a] Juan Gilés, M.D.,[a] Aydín Arici, M.D.,[b] and Antonio Pellicer, M.D.[c,d]

Instituto Valenciano de Infertilidad, Rey Juan Carlos University, Madrid, Spain; Hospital Universitario Dr Peset, Valencia University, Valencia, Spain; and Yale University School of Medicine, New Haven, Connecticut

TABLE 1

Patient characteristics and controlled ovarian hyperstimulation parameters.

	Endometrioma removed (147 cycles)	Endometrioma present (63 cycles)	*P* value
Age (y)	34.7 ± 0.3	33.9 ± 0.5	.158
Basal FSH (IU)	7.5 ± 0.6	7.6 ± 0.8	.778
Basal E_2 (pg/mL)	68.2 ± 10.5	37.8 ± 5.4	.064
Total FSH/hMG (IU)	3,880 ± 129	3,404 ± 162	.035
Days of stimulation	10.2 ± 0.3	10.3 ± 0.3	.780
Peak E_2 levels (pg/mL)	1,910 ± 106	2,472 ± 261	.018

Note: Data are presented as mean ± SEM.

Endometriomas >3 cm

TABLE 2

In vitro fertilization/intracytoplasmic sperm injection cycle outcomes in women with an endometrioma present at the beginning of the stimulation compared with women with a previously removed ovarian endometrioma by laparoscopic cystectomy.

	Endometrioma removed (147 cycles)	Endometrioma present (63 cycles)	*P* value
No. of oocytes retrieved	10.8 ± 0.6	11.8 ± 0.9	.378
No. of mature oocytes	8.7 ± 0.6	8.4 ± 0.8	.780
Fertilization rate (%)	76.5	69.9	.051
No. of embryos/cycle	6.0 ± 0.4	6.4 ± 0.6	.582
No. of embryos transferred	2.7 ± 0.1	2.8 ± 0.1	.281
Implantation rate (%)	12.8	14.1	.958
Positive β-hCG (%)	30.2	28.8	.480
Clinical pregnancy rate (%)	25.4	22.7	.776
Multiple pregnancy rate (%)	7.9	12.1	.545
Biochemical pregnancy (%)	3.9	3.0	.817
Miscarriage rate (%)	3.9	6.1	.636
Cancellation rate (%)	6.3	7.6	.844

Note: Data are presented as mean ± SEM or %.

Influance of Endometrioma Cytectomy on Ovarian reserve

- Low peak E2 levels and higher gonadotropin requrements were documented in the operated patients
- Number of oocytes retrieved, number of embryos obtained and pregnancy rates were similar in both groups !!

The Presence of Ovarian Endometriomas is Associated with Reduced Responsiveness to Gonadotropins ?

- 36 patients (56 IVF cycles)
- Endometrioma(s) in one ovary, intact contralateral ovary
- The median between diagnosis and the IVF cycle - 10 months
- Duration of infertility- 4.3-2.2 yrs
- Dimeters of endometriomas (which are mainly small !)
- Histological confirmation of the diagnosis is missing in most of the patients

Somigliana et al.,FS,2006

Human Reproduction Vol.18, No.11 pp. 2450–2453, 2003 DOI: 10.1093/humrep/deg432

Does laparoscopic excision of endometriotic ovarian cysts significantly affect ovarian reserve? Insights from IVF cycles

E.Somigliana[1], G.Ragni, F.Benedetti, R.Borroni, W.Vegetti and P.G.Crosignani

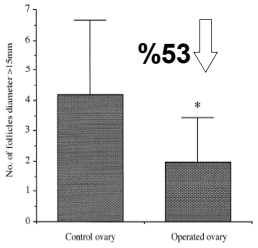


Figure 1. Number of follicles >15 mm on the day of hCG administration in the operated and in the contralateral intact ovary. Values are mean ± SD. *$P < 0.001$.

Table III. Ovarian response in previously operated and in contralateral ovaries according to cyst diameter

Variable	Cyst diameter	
	≤3 cm	>3 cm
No. of cases[a]	18	20
No. of follicles >15 mm		
Control ovary*	4.2 ± 2.0	4.4 ± 2.7
Operated ovary*	2.1 ± 1.7	1.9 ± 1.4
P	0.003	0.001
Basal volume (cm^3)[b]		
Control ovary*	8.8 ± 4.8	11.0 ± 8.5
Operated ovary*	6.9 ± 4.8	8.3 ± 7.0
P	0.20	0.12

The Presence of Ovarian Endometriomas is Associated with Reduced Responsiveness to Gonadotropins ?

- The number of condominant follicles developing in the affected gonad reduced
- In women with larger endometriomas follicle number decrease more significantly
- Poorer response with more than one cyst
- The differance between healthy and affected gonads was particularly relavent in women who were more responsive to gonadotropin stimulation ??

Somigliana et al.,FS,2006

RBM Online - Vol 12 No 5. 2006 639-643 Reproductive BioMedicine Online; www.rbmonline.com/Article/2182 on web 17 March 2006

Article

Effect of endometrioma cystectomy on IVF outcome: a prospective randomized study

Aygül Demirol[1,4], Suleyman Guven[1], Cem Baykal[2], Timur Gurgan[1,3]
[1]Clinic Women Health, Infertility and IVF Centre, Cankaya Caddesi, no. 20/3, Ankara; [2]Yeditepe University Hospital, Department of Obstetrics and Gynaecology, Istanbul; [3]Department of Obstetrics and Gynaecology, Division of Reproductive Endocrinology and Infertility, Hacettepe University Faculty of Medicine, Ankara, Turkey
[4]Correspondence: Tel: +9 312 4427404; Fax: +9 312 4427407; e-mail: ademirol@gmail.com

Table 1. Patient characteristics and ovarian stimulation parameters for those who underwent ovarian endometrioma cystectomy (group I) and those who did not (group II).

Characteristics	Group I (n = 49)	Group II (n = 50)	P-value
Age (years)	35.2 ± 0.3	34.9 ± 0.2	NS
Basal FSH (mIU/ml)	8.2 ± 0.38	7.9 ± 0.36	NS
Total FSH dose (IU)	4575 ± 530.54	3675 ± 792.58	0.001
Stimulation days (day)	14.0 ± 2.5	10.8 ± 2.6	0.001
Peak oestradiol (pg/ml)	1170 ± 417.14	1680 ± 428.69	0.001

Data are presented as mean ± SD. NS = not statistically significant.
The Student t-test was used for statistical analysis.

Demirol A, Guven S, Baykal C, Gurgan T

RBM Online, 12(5), 639-43, 2006

Table 2. Comparison of intracytoplasmic sperm injection cycle outcome parameters between patients who underwent ovarian endometrioma cystectomy (group I) and those who did not (group II).

Characteristics	*Group I (n = 49)*	*Group II (n = 50)*	*P-value*
Number of mature oocytes retrieved	7.8 ± 3.07	8.6 ± 2.82	0.032[a]
Fertilization rate (%)	86.2	88.3	NS[b]
Number of embryos transferred	3.2 ± 0.84	3.4 ± 0.67	NS[a]
Implantation rate (%)	16.5	18.5	NS[b]
Clinical pregnancy rate (%)	34.4	38.2	NS[b]

Data are presented as mean ± SD or percentages. NS = not statistically significant.
[a]Student *t*-test, [b]Yates corrected chi-squared test, and [c]Fisher's exact test were used for statistical analysis.

Demirol A, Guven S, Baykal C, Gurgan T
RBM Online, 12(5), 639-43, 2006

Conclusion

- **In the ovarian surgery group stimulation period was significantly longer, total rec-FSH dose was significantly higher and peak E2 levels and mean number of mature oocytes were significantly lower**
- **There was no difference in terms of fertilization, implantation and pregnancy rate**

Demirol et al., RBM Online,2006

Outcome of in vitro fertilization/intracytoplasmic sperm injection after laparoscopic cystectomy for endometriomas

Ibrahim Esinler, M.D.,[a] *Gurkan Bozdag, M.D.,*[a] *Funda Aybar, M.D.,*[b] *Ulku Bayar, M.D.,*[c] *and Hakan Yarali, M.D.*[a]

[a]Department of Obstetrics and Gynecology, Hacettepe University Faculty of Medicine and [b]Anatolia Women and IVF Health Center, Ankara; and [c]Department of Obstetrics and Gynecology, Zonguldak Karaelmas University Faculty of Medicine, Zonguldak, Turkey

TABLE 1

The baseline characteristics and controlled ovarian hyperstimulation response of the unilateral cystectomy, bilateral cystectomy, and control groups.

Characteristic	Unilateral cystectomy (n = 34)	Bilateral cystectomy (n = 23)	Control (n = 99)	*P* value
No. of canceled cycles (n, %)	3 (8.8)	5 (21.7)	9 (9.1)	NS
Female age (y)	31.3 ± 3.9	31.2 ± 4.4	31.9 ± 4.0	NS
Body mass index (kg/m^2)	24.1 ± 2.4	24.9 ± 4.6	24.8 ± 3.8	NS
Duration of infertility (mo)	72.2 ± 40.5	85.3 ± 35	83.6 ± 42	NS
Time interval between cystectomy and ICSI (mo)	34.4 ± 15.6	42.7 ± 22.3	—	NS
Day 3 FSH level (mIU/mL)	7.1 ± 2.2	8.1 ± 2.5	7.3 ± 3.3	NS
Day 3 antral follicle count	10.0 ± 4.1	7.1 ± 2.6[a]	11.3 ± 3.9	<.05
Duration of stimulation (d)	11.3 ± 3.1	10.7 ± 1.5	10.3 ± 2.1	NS
Total dose of FSH used (IU)	2655.8 ± 1449.1	3423.4 ± 1682.3[a]	2519.4 ± 964.9	<.05
E_2 level on the day of hCG administration (pg/mL)	2536.4 ± 1514.7	1730.6 ± 1060.8	1949.4 ± 1323.2	NS
Endometrial thickness at hCG administration (mm)	10.3 ± 2.4	11.2 ± 2.2	9.9 ± 2.1	NS

Note: Values are expressed as mean ± SD or n (%). NS = not significant.
[a] Statistically different from unilateral cystectomy and control groups.

Esinler. ICSI outcome after endometrioma cystectomy. Fertil Steril 2006.

Variable	Operated Ovary (n=33)	Contralateral Normal ovary (n=33)	*P* value
No. of oocyte-cumulus complexes	4.5±4.0	6.6±3.5	<.05

Values are expressed as mean ±SD

TABLE 2

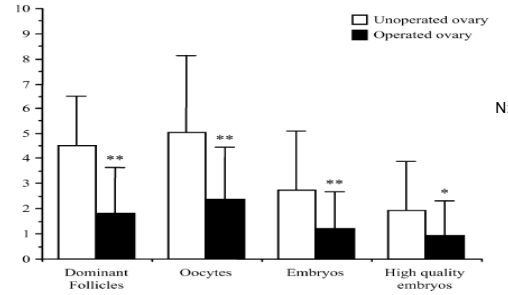
The embryological data and pregnancy outcome of the unilateral cystectomy, bilateral cystectomy, and control groups.

Characteristic	Unilateral cystectomy (n = 34)	Bilateral cystectomy (n = 23)	Control (n = 99)	*P* value
No. of oocyte-cumulus complexes	10.8 ± 6.2	7.1 ± 4.4[a]	11.1 ± 6.1	<.05
No. of metaphase II oocytes	8.1 ± 5.4	5.5 ± 3.2[a]	8.7 ± 4.8	<.05
Metaphase II oocytes/total oocytes (%)	76.4	79.7	76.6	NS
2-pronuclei/metaphase II oocytes (%)	71.9	68.6	73.6	NS
No. of 2-pronucleated oocytes	6.6 ± 3.1	3.9 ± 2.3[a]	6.7 ± 4.4	<.05
No. of transferred grade I embryos[b]	0.6 ± 0.2	0.4 ± 0.2	0.9 ± 0.1	NS
No. of transferred grade I embryos/No. of embryos transferred (%)	22.1	14.6	25.5	NS
No. of transferred grade 2 embryos[b]	2.0 ± 0.2	2.1 ± 0.3	1.9 ± 0.1	NS
No. of embryos transferred	2.9 ± 1.3	2.7 ± 1.2	3.0 ± 1.3	NS
Clinical pregnancy/embryo transfer (%)	45.2	44.4	47.8	NS
Implantation rate (%)	23.2	27.0	19.1	NS
Multiple pregnancy rate (%)	36	38	38	NS
Twin (%)	29	26	31	NS
Triplet (%)	7	12	7	NS
Miscarriage rate (n, %)	2 (14.2)	1 (12.8)	6 (13.9)	NS

Note: Values are expressed as mean ± SD, unless stated otherwise. NS = not significant.
[a] Statistically different from unilateral cystectomy and control groups.
[b] Mean ± SEM.

Esinler. ICSI outcome after endometrioma cystectomy. Fertil Steril 2006.

Damage to ovarian reserve associated with laparoscopic excision of endometriomas: A quantitative rather than a qualitative injury



N: 38

Guido Ragni, 2005

Surgery prior to IVF

bilateral endometrioma

Human Reproduction Vol.23, No.7 pp. 1526–1530, 2008
Advance Access publication on April 26, 2008
doi:10.1093/humrep/den133

IVF–ICSI outcome in women operated on for bilateral endometriomas

Edgardo Somigliana[1], Mariangela Arnoldi[1,2], Laura Benaglia[1,2,3], Roberta Iemmello[1,2], Anna Elisa Nicolosi[1,2] and Guido Ragni[1]

Somigliana et al. Human Reprod 2008;23:1526-1530.

Surgery prior to IVF

bilateral endometrioma

Table III. Characteristics of the IVF–ICSI cycles in patients operated for bilateral endometriomas (cases) and controls.

Characteristics	Cases n= 68	Controls n= 136	*p*
Cancelled cycle			<0.001
Hyper-response	1 (2%)	20 (15%)	
Poor response	17 (28%)	8 (6%)	
Dosage of rFSH/die	333 ± 133	212 ± 112	<0.001
Duration of stimulation (day)[a]	11.5 ± 2.3	11.8 ± 2.4	0.58
Number of follicles 11–15 mm[a]	3.2 ± 2.8	4.6 ± 3.3	0.009
Number of follicles >15 mm[a]	5.2 ± 2.8	6.5 ± 2.7	0.006
Number of oocyte retrieved[a]	5.7 ± 4.0	7.2 ± 3.6	0.024
Number of oocyte used[a,b]	2.8 ± 2.3	3.8 ± 2.7	0.034
Number of embryos obtained[a,b]	2.0 ± 1.9	2.8 ± 2.0	0.024
Number of transfers not performed[a]	14 (28%)	16 (15%)	0.08
Number of embryos transferred[a]	2.0 ± 0.6	2.2 ± 0.7	0.20
Clinical pregnancy rate (PR)			
Number of pregnancies	5	26	
PR per starting cycle	7%	19%	0.037
PR per oocyte retrieval	10%	24%	0.051
PR per embryo transfer	14%	28%	0.11
Implantation rate	5 (7%)	33 (16%)	0.048
Delivery rate (DR)			
Number of deliveries	3	23	
DR per starting cycle	4%	17%	0.013
DR per oocyte retrieval	6%	21%	0.02
DR per embryo transfer	8%	25%	0.049

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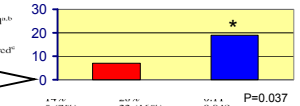

PR/ sarting cycle

Somigliana et al. Human Reprod 2009;23:1526-1530.

Embryo quality before and after surgical treatment of endometriosis in infertile patients

Table 2 IVF parameters in cycles before and after laparoscopic treatment of endometriosis (*N*=30)

	IVF cycle before surgery	IVF cycle after surgery
Days on OCPs	20.3±3.2	18.4±4.6
Days of stimulation	10.5±2.4	10.9±1.9
Amount of gonadotropins in IU	4,950±540	5,025±420
Endometrial lining in mm	10.0±1.2	10.1 +/1 1.8
Number of follicles	15.2±2.6	12.8±1.8
Number of oocytes	11.6±2.3	9.9±3.3
ICSI	17%	23%
Fertilization rate	65% IVF 70% ICSI	68% IVF 75% ICSI
Assisted hatching	53%	67%
Number of ET	2.8±1.1	3.3±0.9
Number of eight cell day 3 embryos	2.6±1.1	2.3±0.9
Number of day 3 embryos six cell & Grade I or II	3.8±1.2	3.3±1.6
Cycles with day 5 transfers	13%	20%
Number of blastocysts frozen	2.1±1.3	2.8±2.1

Stage I 20%
Stage II 47%
Stage III 13%
Stage IV 20%

Lora K. Shahine, 2009

Surgery prior to IVF

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human reproduction **OPINION**

Management of endometriomas in women requiring IVF: to touch or not to touch

Juan A. Garcia-Velasco[1,*] and Edgardo Somigliana[2]

Garcia-Velasco and Somigliana Human Reprod 2009;24:496-501.

Surgery prior to IVF

Table I Clinical variables to be considered when deciding whether to perform surgery or not in women with endometriomas selected for IVF

Characteristics	Favours surgery	Favours expectant management
Previous interventions for endometriosis	None	≥ I
Ovarian reserve[a]	Intact	Damaged
Pain symptoms	Present	Absent
Bilaterality	Monolateral disease	Bilateral disease
Sonographic feature of malignancy[b]	Present	Absent
Growth	Rapid growth	Stable

[a]Ovarian reserve is estimated based on serum markers or previous hyperstimulation cycles; [b]sonographic feature of malignancy refers to solid components, locularity, echogeniety, regularity of shape, wall, septa, location and presence of peritonal fluid.

Garcia-Velasco and Somigliana Human Reprod 2009;24:496-501.

Endometriomas and Ovarian Reserve: Insigths from IVF-ICSI Cycles in Women with Endometriomas

- **Contralateral gonad may adequately compansate for the reduced function of the affected gonad**
- **The number of follicles developed in the cystectomized ovary significantly reduced when compared to the contralateral intact gonad!**
- **Bilateral cysts may elevated risk of ovarian function impairement (19%-28% bilaterality)**

Prefumo et al.,2002;Al-Fozan and Tulandi,2003.Esiner et al.2006

Ovarian Endometriomas

- **Ovarian endometriosis is unilateral in the vast majority of the cases- 72%-82%**
- **The contralateral intact ovary adequately compansate the ovarian function !**
- **Overall, studies suggest that surgery does not benefit asymptomatic women preparing to undergo IVF-ICSI who are found to have endometrioma**

Endometriomas and IVF/ICSI

Individualized treatment plan can be developed ,executed and modified as necessary based on :

- **Bilaterality**
- **Number of endometriomas**
- **Size of the endometrioma**
- **Surgical technic**
- **Previous ovarian surgery**
- **Ovarian reserve**
- **Other factor(s) which contribute(s) to infertility**

Management of endometriomas in women requiring IVF: to touch or not to touch

Juan A. Garcia-Velasco[1,*] and Edgardo Somigliana[2]

[1]IVI Madrid, Rey Juan Carlos University, Av. del Talgo 68, Madrid 28023, Spain [2]Infertility Unit, Ospedale Maggiore Policlinico, Mangiagalli and Regina Elena, Milan, Italy

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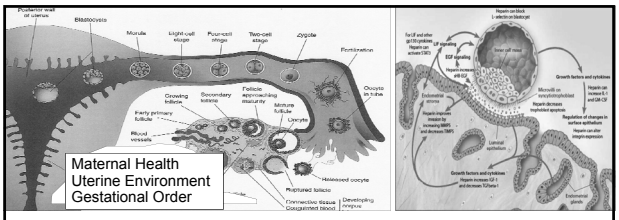
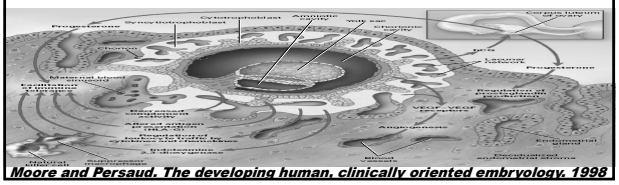
Conclusions and Recommendations

- **Recommend generally proceeding directly to IVF to reduce time to pregnancy, to avoid potential surgical complications and to limit patient costs.**



Endometriosis : Pr resistance,Reduced integrin,LIF expression,reduced IL 11,IL15 receptors



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