
بسم الله الرحمن الرحيم

less invasive alternative for treatment of ovarian endometriomas

Dr.Anvari

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TECHNIQUES AND INSTRUMENTATION

Sclerotherapy with 5% tetracycline is a simple alternative to potentially complex surgical treatment of ovarian endometriomas before in vitro fertilization

Jeffrey D. Fisch, M.D.,[a] *and Geoffrey Sher, M.D.*[a,b]

Sher Institute for Reproductive Medicine, Las Vegas, Nevada

In the era of assisted reproduction, endometriosis is treated for three main reasons:

- To alleviate symptoms of pain
- to improve natural fecundity
- in preparation for in vitro fertilization (IVF).

MATERIALS AND METHODS :

- Infertile women (n 32) with sonographic evidence of ovarian endometriomas were offered sclerotherapy in lieu of surgery.
- Patients ranged in age between 23 and 41 .
- Cysts ranged in size between 1.5 and 6.0 cm .
- Under conscious sedation and transvaginal ultrasound guidance
- An 18-gauge, single-lumen needle was inserted through the vaginal fornix into the endometrioma
- The cyst contents were then sequentially aspirated and flushed with increasing increments of sterile, normal saline, until all endometriotic debris was removed and the aspirated fluid was clear.
- This usually required the use of 50 to 100 mL of saline. If the aspirate appeared unusual in any way, it was sent for pathologic review.

MATERIALS AND METHODS :

- The aspirated fluid was clear, TCN 5% between 5 to 10 mL was used
- After the TCN was injected, approximately 100 to 300 mL of sterile saline was then instilled into the cul-de-sac
- Following gentle agitation for 2 to 3 minutes
- Majority of the fluid was aspirated from the pelvis.
- An ultrasound evaluation was performed 6 weeks

RESULTS

- In 24 (75%) of 32 patients were resolved at the 6-week follow-up
- Eight patients had a residual simple cyst
- Two patients needed an additional treatment with TCN.
- One patient failed to ultimately respond to treatment.
- There were no complications
- 28 have subsequently undergone IVF treatment.
- There was no sign of recurrence
- An ongoing gestation was identified in 16 (57%) patients .

DISCUSSION :

- Laparoscopy is still considered the gold standard for treatment of endometriosis and is the only way to definitively establish the diagnosis.
- Patients are not good surgical candidates :

❖ patients with fertility problems have several surgeries, some with multiple laparotomies and severe complications,

❖ many patients with endometriosis choose to undergo advanced fertility treatments to specifically avoid repeat surgery.

- The ongoing pregnancy rate of 57% after sclerotherapytestifies to the fact that future fertility is not significantly impaired.
- many other factors contribute to ultimate outcome
- Sclerotherapy is also less expensive than surgical intervention and can be performed in an office setting

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ORIGINAL ARTICLE

In situ methotrexate injection after transvaginal ultrasound-guided aspiration of ovarian endometriomas: A randomized controlled trial

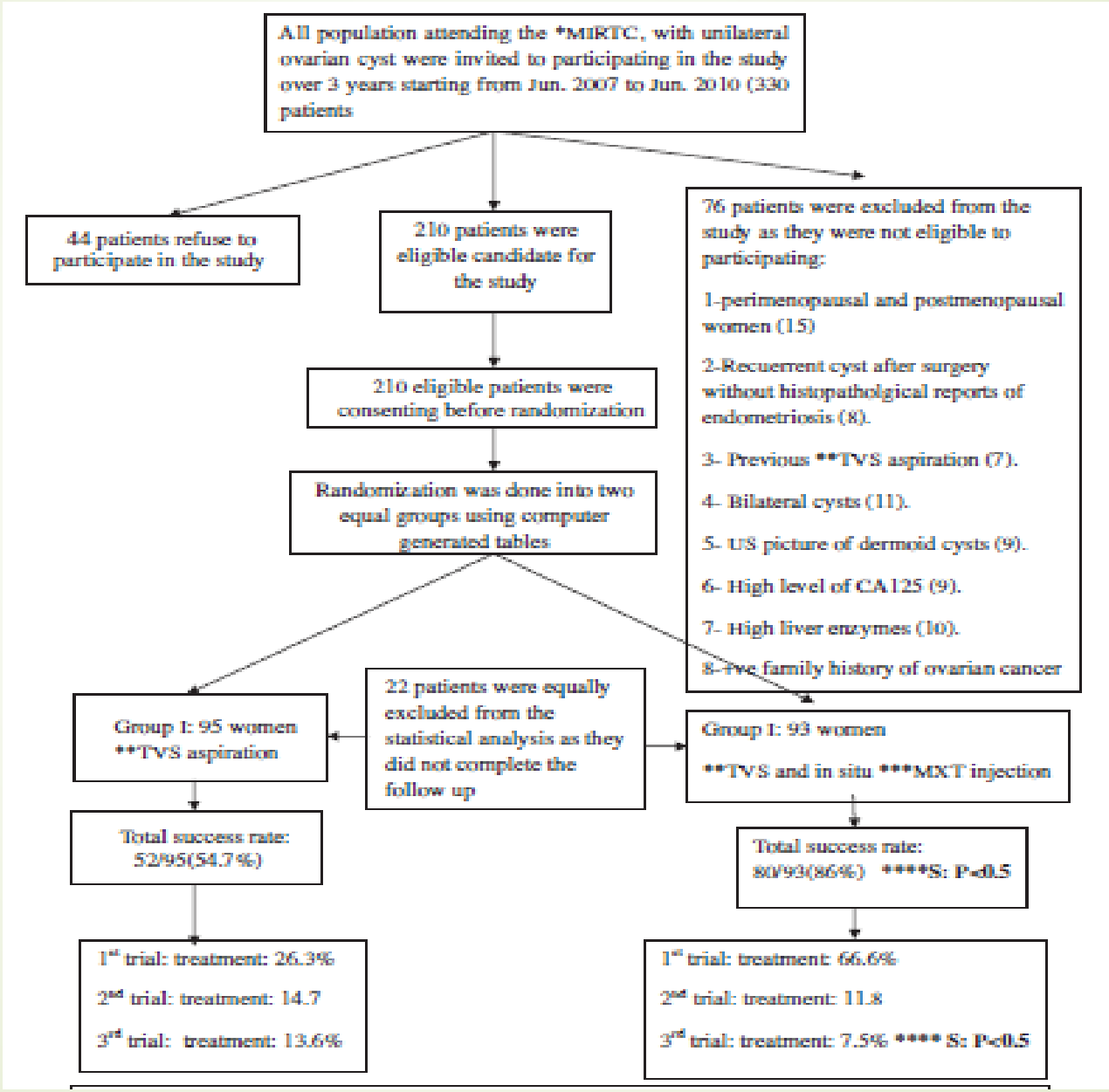
Hossam Eldin Shawki *, Mahmoud Elmorsi, Ahmed Samir, Mostafa K. Eissa

Obstetrics and Gynecology Department, Faculty of Medicine, El-Menya University, Egypt

Introduction :

- Ovarian endometriomas were found in 17–44%
- Medical treatment alone of ovarian endometrioma is inadequate
- surgical treatment carry risks of recurrence, infertility and pelvic pain symptomatology
- The ultrasound-guided aspiration leads to four main problems: recurrence, infection, inadequacy of cytology,and adhesions; so it is not a first-line but is not totally contraindicated
- Us-guided aspiration combined with methotrexate injection into the cyst, it might suppress fluid production by the cyst wall

Patients and methods :



Inclusion criteria :

- All patients with unilateral cystic ovarian masses during their reproductive age that had persisted for more than 6 months before the procedure or since the last surgery and designated as benign on the basis of sonographic architectural features and Color Doppler flow characteristics were aspirated .

exclusion criteria :

- Recurrent cyst after previous surgery
- who did not have a histopathological report documenting the nature
- Lesions that had mural irregularity
- thick septations, especially when associated with focal high-velocity, low-impedance flow
- Cystic lesions compatible with dermoid cyst
- Patients with large amount of free fluid in the pouch of Douglas

Procedure

- All procedures were carried out by two of the authors, under General anesthesia
- The perineum and vagina were prepped with povidone–iodine
- All patients were advised to use clindamycin vaginal cream as a prophylaxis
- After puncture of the cyst wall a single dose of methotrexatewas injected
- All the patients received tetracycline 200 mg and metronidazole 200 mg every 6 h for 3 days
- In patients with recurrence or persistence 2nd trail was performed with increasing the dose of methotrexate to 40 mg
- If recurrence occurred a 3rd trail was performed using methotrexate dose of 50 mg

Follow up

- All the patients were followed up with US at 2 days, 1 week immediately after the procedure, then 1, 3, 6 and12 months after the procedure
- The main outcome were the disappearance of the cyst
- The secondary outcomes were the presence or absence of any side effects related to the procedure or the drug used.

Results :

- The overall success rate after complete follow up was 54.73% in group I versus 86.02% in group II
- 25 patients (26.3%) needed single aspiration, 14 patients (14.7%) needed two aspiration, and 13 patients (13.6%) needed three aspiration in study group I
- 62 patients (66.6%) needed single injection, 11 patients (11.8%) needed two injections and 7 patients (7.5%) needed three injections in group II

Discussion :

- the overall success rate after complete follow up was 54.73% in group I versus 86.02% in group II, with cyst persistence in 45.3% among patients in group I versus 14% among patients in group II
- minor complications were observed among both groups and were treated conservatively
- Major complications as pelvic abscess or generalized peritonitis were not observed
- theories about developing an abscess in the endometrioma : an altered immune environment ,collection of altered menstrual type of blood in the ovary ,wall is theoretically weak.
- Two main steps to decrease the incidence of such major complications. Screening and treatment of bacterial vaginosis before the procedure and great care not to penterate the intestine or the colon

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Research Article

Aspiration versus retention ultrasound-guided ethanol sclerotherapy for treating endometrioma: A retrospective cross-sectional study

Abbas Aflatoonian M.D., Nasim Tabibnejad M.D., Ph.D.

Research and Clinical Center for Infertility, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

Introduction :

- surgical treatment have a detrimental effect on ovarian reserve due to the removal of healthy tissue next to the cyst wall , besides excessive ovarian coagulation
- Oral contraceptive pills, progestins, gonadotropin-releasing hormone agonists as well as aromatase inhibitors are effective to recover symptoms, reduce cyst size, and decrease the risk of post-surgery occurrence
- The majority of cases show symptom reappearance by withdrawing medical treatment

Materials and Methods :

Inclusion criteria :

- Women with Follicle stimulating hormone (FSH) < 10, aged > 20 but < 39 yr, postsurgical recurrent endometrioma or bilateral endometrioma without surgical indication

exclusion criteria :

- cysts with features indicative of dermoid cysts, women with ascites, an abnormal coagulation test, history of gynecologic cancer, who were lost to follow-up

Results :

Variables	Aspiration (n = 25)	Retention (n = 13)	P-value*
Chemical pregnancy	13 (52)	7 (53.8)	0.593
Ongoing pregnancy	11 (44)	6 (46.2)	0.584
Live birth	10 (40)	6 (46.2)	0.490
Recurrence rate	13 (52)	6 (46.2)	0.500

Discussion :

- both aspiration and left in situ of ethanol 95% have the same effect on the treatment of ovarian endometrioma in terms of pregnancy rate as well as the recurrence rate.
- the result of a systematic review and meta-analysis revealed that the pregnancy rate was similar after endometrioma sclerotherapy compared with patients who underwent laparoscopic cystectomy
- simple ultrasonography aspiration of endometrioma lead to a high recurrence rate by the range of 53-97.6%
- risk of cyst recurrence was significantly lower in women who were treated with the use of prolonged ethanol washing than those treated with the use of short ethanol washing
- the cyst size in the ethanol retention group has a positive correlation with the recurrence rate

RESEARCH ARTICLE

Endometrioma ethanol sclerotherapy could increase IVF live birth rate in women with moderate-severe endometriosis

Laura Miquel[1☯*], Lise Preaubert[1☯], Audrey Gnisci[1], Noémie Resseguier[2], Audrey Pivano[1], Jeanne Perrin[1,3], Blandine Courbiere[1,3]

1 Department of Obstetrics Gynecology and Reproductive Medicine, Pôle femmes parents enfants, IVF Unit/ CECOS, AP-HM La Conception University Hospital, Marseille, France, **2** Research Unit EA 3279, Department of Public Health, Aix-Marseille University, Marseille, France, **3** Aix Marseille Univ, Avignon Université, CNRS, IRD, IMBE, Marseille, France

☯ These authors contributed equally to this work.
* lo.miquel@yahoo.fr

Materials and methods :

- Infertile women aged 18 to 43 years old presenting with rAFSstage III or IV endometriosis with at least one endometrioma and an indication for IVF
- 96% ethanol was injected at 60% of the initial volume of the endometrioma
- The maximum volume of 96% ethanol for intracystic injection was 60 ml.
- Ethanol remained in the cyst for 10 minutes and was completely reaspirated.
- The EST procedure was considered successful if the remaining endometrioma measured less than 20 mm after three months
- The IVF protocol was an ultra-long-agonist protocol
- Controlled ovarian stimulation was initiated 2 weeks after the EST procedure
- The primary outcome was the CLBR per IVF cycle

Results :

Table 1. Characteristics of infertile women with moderate-severe endometriosis: Ethanol sclerotherapy (EST) (n = 37) vs. No-EST group (n = 37).

	EST group (n = 37)	No-EST group (n = 37)	p-value
Age (years)	31.5 ± 4.5	33.0 ± 3.8	0.13
Tobacco smoker	8 (21.6)	6 (16.2)	0.55
BMI (kg/m^2)	22.8 ± 4.7	24.6 ± 6.2	0.16
Day 3 FSH (IU/L)	6.5 ± 2.1	7.7 ± 3.4	0.08
Day 3 estradiol (pg/mL)	44.0 ± 21.2	44.2 ± 18.6	0.97
AMH (ng/ml)	3.2 ± 2.6	3.1 ± 2.2	0.90
AFC	11.1 ± 6.3	12.4 ± 5.6	0.36
Duration of infertility (years)	4.4 ± 3.1	4.3 ± 2.4	0.82
Male factor associated	12 (32.4)	10 (27.0)	0.61
Number of previous IVF cycles	0.4 ± 0.9	0.2 ± 0.4	0.11
History of operative laparoscopy for endometriosis global treatment	14 (37.8)	13 (35.1)	0.81
Extra ovarian endometriosis	26 (70.3)	25 (67.6)	0.80
Number of endometrioma	2.1 ± 1.3	2.1 ± 1.3	0.86
Bilateral endometriomas	22 (59.5)	17 (45.9)	0.24
Median endometriomas size	33 [22–39]	27 [25–33]	0.33
Type of extra ovarian endometriosis			
Rectovaginal space or vaginal	11 (29.7)	15 (40.5)	0.33
Uterosacral and cardinal ligaments	21 (56.8)	15 (40.5)	0.16
Rectosigmoid	13 (35.1)	11 (29.7)	0.62
Bladder or ureter	2 (5.4)	4 (10.8)	0.67
Other bowel involvement and extragenital localizations	2 (5.4)	2 (5.4)	1.00
Adenomyosis	5 (13.5)	3 (8.1)	0.71

Table 2. Cycle characteristics and IVF outcomes in women with moderate-severe endometriosis: Ethanol sclerotherapy (EST) vs. No-EST group.

	EST group (n = 67 cycles)	No-EST group (n = 69 cycles)	p-value
Total gonadotropin dose (IU)	3316.4 ± 1374.8	2871.1 ± 1082.6	0.10
E2 on HCG day (pg/ml)	2250.5 ± 1295.9	2613.6 ± 1534.7	0.25
Stimulation days	11.0 ± 2.0	10.7 ± 2.2	0.43
No. of mature oocytes	5.5 ± 3.3	5.8 ± 3.8	0.71
Fertilization rate (%)	62.3 ± 30.3	58.2 ± 27.7	0.46
No. of diploid embryos	3.4 ± 2.4	3.4 ± 3.0	0.97
No. of "Top" embryos	0.3 ± 0.8	0.3 ± 0.6	0.68
No. of cryopreserved embryos	0.7 ± 1.3	0.4 ± 0.9	0.12
No. of embryos transferred	1.9 ± 1.4	1.7 ± 1.0	0.31
Total number of embryos transfers	**(n = 81)**	**(n = 70)**	**p-value**
No. of frozen embryos transfers	26 (28.0)	12 (14.8)	0.08
No. of "Top" embryos per transfer	0.2 ± 0.5	0.1 ± 0.4	0.24
Implantation rate	21.0 ± 37.8	10.7 ± 28.1	0.06
Cumulative pregnancy outcomes per cycle	**(n = 67 cycles)**	**(n = 69 cycles)**	**p-value**
Live birth rate	21 (31.3)	10 (14.5)	**0.03**
Clinical pregnancy rate	25 (37.3)	11 (15.9)	**0.01**
Biochemical pregnancy rate	29 (43.3)	16 (23.2)	**0.01**
Pregnancy loss rate	8 (26.7)	6 (37.5)	0.45

Discussion :

- EST before IVF in women with moderate-severe endometriosis was associated with significantly increased CLBR compared with IVF performed with endometrioma left in situ
- IVF does not worsen endometriosis-related pain symptoms or increase the risk of endometriosis recurrence
- Several hypotheses could explain increased IVF CLBRafter EST.

❖ Decreasing the size of the endometrioma could reduce the compression of the ovarian cortex and enhance the vascular flow

❖ EST could increase IVF LBR by decreasing pelvic and intraovarian inflammation that is associated with moderate-severe endometriosis

❖ Differentially expressed genes and potential serum biomarkers in women with endometrioma before and after EST

❖ The duration of ethanol instillation inside the cyst would be of major relevance given that EST is more efficient if the instillation lasts 10 minutes or more

ORIGINAL ARTICLE

Reproductive Medicine and Biology

WILEY

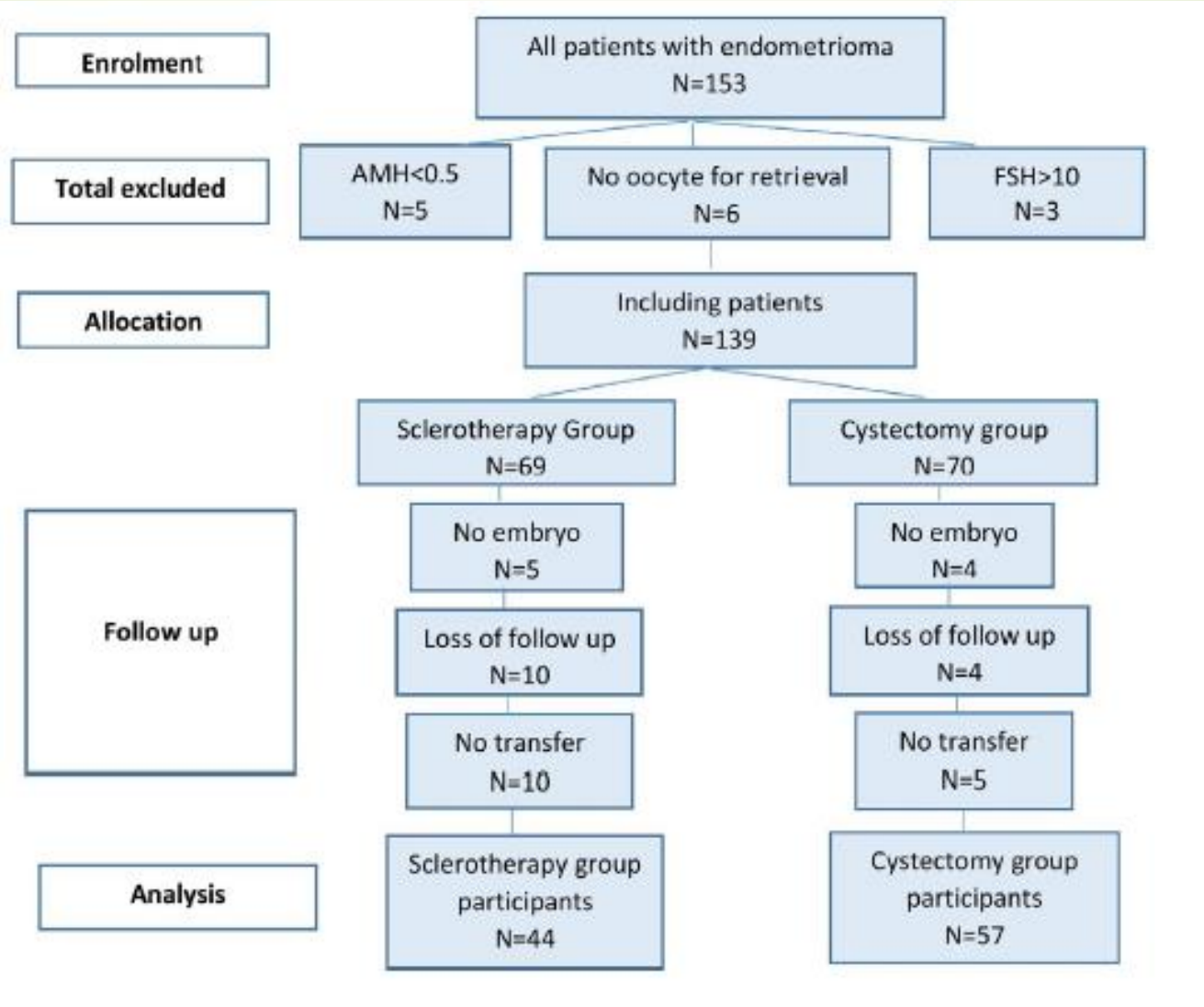
Assisted reproductive technique outcomes in patients with endometrioma undergoing sclerotherapy vs laparoscopic cystectomy: Prospective cross-sectional study

Saeed Alborzi[1] | Elham Askary[2] | Pegah Keramati[3] | Shaghayegh Moradi Alamdarloo[2] | Tahereh Poordast[2] | Mohammad Ali Ashraf[3] | Zahra Shomali[3] | Behieh Namavar Jahromi[1] | Ziba Zahiri Sorouri[4]

Materials and Methods :

- The **exclusion criteria** were two or more operations for endometriosis, low ovarian reserve, use of estrogen-suppressing drugs such as oral contraceptive pills, danazol, or gonadotropin-releasing hormone (GNRH) agonists 6 months prior to the study, >40 years of age, severe male factor infertility (OAT and teratozoospermia or sperm count < million/mL), the plan to use surrogate uterus, egg, or embryo donation, a cyst size of <3 cm or over than 6 cm, or bilateral OMA.
- Ovarian cystectomy was done after a sharp incision was made on the antimesenteric surface of the cyst ,all adhesions were lysed and excised by sharp dissection to fully mobilize the ovaries
- 80% of cyst volume ethanol was injected in the cyst and leave in
- The antagonist protocol was selected for all the patients

Results :


Enrolment
All patients with endometrioma
N=153
Total excluded
AMH<0.5
N=5
No oocyte for retrieval
N=6
FSH>10
N=3
Allocation
Including patients
N=139
Sclerotherapy Group
N=69
Cystectomy group
N=70
Follow up
No embryo
N=5
No embryo
N=4
Loss of follow up
N=10
Loss of follow up
N=4
No transfer
N=10
No transfer
N=5
Analysis
Sclerotherapy group participants
N=44
Cystectomy group participants
N=57

	Surgery group (n = 57)	Sclerotherapy group (n = 44)	*P*-value
Total dose of gonadotropin (IU)	4375 ± 806.69	4544.12 ± 749.12	.35
Estradiol on the day of triggering (pg/mL)	1361.63 ± 355.03	1330 ± 577.71	.77
Duration of gonadotropin therapy	10 ± 1.39	10.08 ± 1.46	.78
Number of Oocytes < 3	17 (29.8)	6 (13.6)	.05
Number of total oocytes	6.11 ± 5.11	7.95 ± 5.18	.08
Number of MII oocytes	5.77 ± 4.03	6.66 ± 4.69	.31
Number of embryos	4.48 ± 3.1	5.18 ± 3.84	.32
Embryo A	3.53 ± 0.46	4.07 ± 0.72	.51
Embryo B	1 ± 0.25	1.28 ± 0.35	.51
Embryo C	0.1 ± 0.05	0.28 ± 0.84	.22
Fresh transferred patients	23 (54.8)	16 (45.7)	.43
Frozen-thawed transferred patients	19 (45.2)	19 (54.3)	

	Surgery group (n = 57)	Sclerotherapy group (n = 44)	*P*-value
Clinical pregnancy	24 (42.1)	15 (34.1)	.41
Birth rate	22 (38.6)	13 (29.5)	.34

Discussion :

- Many studies have reported the negative effect of endometriosisand OMA on fertility.
- In their systematic review and meta-analysis, Cohen et al42 reported no difference in CPR between EST and cystectomy groups.
- surgical pretreatment was not necessary for ovarian endometrial cyst before ART, but cyst aspirationmight be beneficial after several failed attempts of IVF
- We concluded that there was no difference between cystectomy and EST in terms of CPR, LBR, and other COH markers when both groups had similar baseline characteristics.
- The overall recurrence rate of endometrioma after EST ranged from 0% to 62.5%
- Recurrence rates for excision of endometrioma were reported to vary between 7.31% and 32% within 1-6 years after excision.
- sclerotherapy with 95% ethanol can be used as an appropriate alternative therapy to significantly reduce the pain in patients with recurrent endometriomas

Thanks for your Attention