Management “fertility sparing” degli endometriomi

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Both medical and surgical treatments for endometriosis are effective and choice of treatment must be individualized.
Endometrioma recurrence rates, which reportedly vary between 30 and 50% after two to five years of follow-up

Prevention of recurrence

Adequate first surgery
...the Endoscopy Revolution

"...the endoscope will revolutionize gynecologic surgery..."

and the obituary of laparotomy...
CONCLUSION

Laparoscopic ovarian surgery is certainly evolving as a primary mode of management for ovarian cysts. Ultrasonography is the most useful adjunct to pre-operative management, as characterization may be made before any intervention. Cytology is less useful because of the variability between laboratories in performing cytologic examination.

Pelvic adhesive disease is a major contributing factor in infertility; thus attempts to decrease adhesion formation are important. From a reproductive endocrinologist’s perspective, approaching the ovary laparoscopically has some advantages. These include minimizing tissue trauma and maintaining the tissue moist, thus decreasing the likelihood for formation of pelvic adhesions. Second-look laparoscopy reports minimal adhesion formation in patients so treated [11,22]. With either of the latter two procedures, the remaining ovarian cortex is preserved, thus ensuring continued ovarian function. Operative time, especially in the hands of a less-experienced laparoscopist, may be prolonged as compared to laparotomy; however, patient morbidity and post-operative recovery time is minimal. DeCherney [23] in 1985 stated that “the obituary of laparotomy for pelvic reconstructive surgery has been written; it is only its publication that remains. Reconstructive surgery with the use of the endoscope will revolutionize gynecologic surgery.” Certainly as operative laparoscopy becomes a skill of all gynecologists, the trend will be for the vast majority of benign ovarian cysts to be managed in this manner.
...a counter-revolution in the XXI century... studies reporting smaller ovarian volumes after surgery...

GENERAL OBSTETRICS AND GYNECOLOGY: GYNECOLOGY

Laparoscopic removal of endometriomas: Sonographic evaluation of residual functioning ovarian tissue

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Original article

Ovarian recovery after laparoscopic enucleation of ovarian cysts: Insights from echographic short-term postsurgical follow-up

Massimo Candiani, MD, Maurizio Barbieri, MD, Barbara Bottani, MD, Cario Bertulessi, MD, Michele Vignali, MD, Benedetta Agnoli, MD, Edgardo Somigliana, MD, and Mauro Busaca, MD
...worse performances at IVF after surgery...

**CONTROVERSY: IS THE OUTCOME OF IVF AFECTED BY ENDOMETRIOSIS?**

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

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


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**Rate of severe ovarian damage following surgery for endometriomas**

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Human Reproduction, Vol.05, No.0 pp. 1–5, 2010
doi:10.1038/humrep-dep464
premature ovarian failures after surgery (2.4% for bilateral endometriomas)...

Postsurgical ovarian failure after laparoscopic excision of bilateral endometriomas

Mauro Busacca, MD, Jennifer Riparini, MD, Edgardo Somigliana, MD, Giulia Oggioni, MD, Stefano Izzo, MD, Michele Vignali, MD, PhD, Massimo Candiani, MD

Ovarian surgery for bilateral endometriomas influences age at menopause

Maria Elisabetta Coccia, Francesca Rizzello, Giulia Mariani, Carlo Bulletti, Antonio Palagiano, Gianfranco Scarselli
...and lower levels of AMH after surgery...

FIG. 2. Meta-analysis. Weighted mean difference in serum AMH after surgery for endometrioma: pooled results for all studies.
Endometrioma and infertility

**Ovarian endometriomas occur in 17–44% of patients with endometriosis**

Redwine DB et al, Fertil Steril 1999

- Anovulation may occur in 15-25% of patients with endometriosis
  - Haney AF et al, JCEM 1996

- Destruction of germinal epithelium, abnormal rates of follicular development and premature follicular rupture with asynchrony of oocyte maturation
  - Doody MC et al, Fertil Steril 1988

- Inflammatory reaction and fibrosis in surrounding normal ovarian cortex
  - Donnez J. et al, Fertil Steril 2011

- Increased tissue oxidative stress inducing oocyte apoptosis and necrosis
  - Donnez J. et al, Fertil Steril 2011
Surgical treatment of endometrioma-associated infertility

The problem of co-existing endometriomas in a context of infertility raises two main questions:

1. Is there a conservative laparoscopic procedure that offers better fertility outcomes?

2. Should we, or should we not, operate on endometriomas in patients scheduled for ART?

Is there a conservative laparoscopic procedure that offers better fertility outcomes?

Laparoscopic cystectomy for ovarian endometriomas is better than drainage and ablation

Cystectomy results in a lower recurrence rate (6.4%), higher cumulative pregnancy rate and greater pain relief than ablation (18.4%)

Consistent amount of ovarian tissue containing follicles is unintentionally removed during cystectomy

Bipolar coagulation at bleeding sites close to ovarian hilus leads to destruction of the ovarian blood supply
Is there a conservative laparoscopic procedure that offers better fertility outcomes?

The post-operative serum AMH levels significantly decreased in comparison to the preoperative levels in patients with endometriomas

1. Is there a conservative laparoscopic procedure that offers better fertility outcomes?

Decresing AMH after surgery are influenced by:

- Surgical technique
- Age
- Bilateral/unilateral localization
- rASRM score

Hirokawa W. et al, Hum Reprod, 2011
The effect of surgery for endometrioma on ovarian reserve evaluated by antral follicle count: a systematic review and meta-analysis

Ludovico Muzii, Chiara Di Tucci, Mara Di Feliciantonio, Claudia Marchetti, Giorgia Perniola, and Pierluigi Benedetti Panici

no significant change in the mean AFC was observed after surgery
The effect of surgery for endometrioma on ovarian reserve evaluated by antral follicle count: a systematic review and meta-analysis

Ludovico Muzii, Chiara Di Tucci, Mara Di Felicianonio, Claudia Marchetti, Giorgia Perniola, and Pierluigi Benedetti Panici

non-excisional techniques appeared not to affect AFC values after surgery

Figure 3 Meta-analysis. Weighted mean difference in AFC before and after non-excisional surgery for endometrioma performed at laparoscopy (LPS).
affected ovary, either with the endometrioma present before surgery, or after surgical excision, showed reduced AFC compared with the contralateral ovary supporting the hypothesis of damage to the ovarian tissue that is already present before surgery, and therefore due to the disease itself, and not to the surgical procedure.
Comparison between the Stripping Technique and the Combined Excisional/Ablative Technique for the Treatment of Bilateral Ovarian Endometriomas: A Multicentric, Randomized Study

36 patients of reproductive age with pelvic pain and/or infertility affected by bilateral endometriomas larger than 3 cm

complete removal by stripping on one side versus the combined technique, consisting of partial excisional cystectomy followed by ablative surgery with bipolar coagulation of the final part on the hilus, on the other side

Ovarian volume and AFC 1/3/6 months after surgery

Muzii et al 2014
Comparison between the Stripping Technique and the Combined Excisional/Ablative Technique for the Treatment of Bilateral Ovarian Endometriomas: A Multicentric, Randomized Study

Ovarian volume

10.2 ± 5.6 for the stripping technique versus 7.5 ± 4.2 for the combined technique

AFC

3.9 ± 1.9 for the stripping technique versus 4.4 ± 2.3 for the combined technique

The stripping technique and the combined technique for the treatment of endometriomas appear to be similar in terms of postoperative ovarian reserve.

Muzii et al 2014
The impact of ovarian endometriomas on assisted reproductive technology (ART) outcomes is controversial.

The management of an asymptomatic ovarian endometrioma in a woman with infertility is controversial.
Should we, or should we not, operate on endometriomas in patients scheduled for ART?

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

Laparoscopic cystectomy for ovarian endometriosis does not offer any additional benefit in terms of fertility outcomes

1. The quality of the oocytes retrieved in IVF cycles is not improved after surgery
2. Patients going through an operative procedure might extend the time to pregnancy
Should we, or should we not, operate on endometriomas in patients scheduled for ART?

In vitro fertilization outcomes were similar in women undergone to cystectomy compared with women with tubal factor infertility


No reduction in the number of oocytes retrieved and embryos obtained are observed after cystectomy


Careful laparoscopic surgery in experienced hands does not impair ovarian function in women committed to ART treatment
Should we, or should we not, operate on endometriomas in patients scheduled for ART?

Outcomes from ART were not affected by the time interval between surgery and ART

After surgery, couples must attempt to conceive naturally for at least 1 year, in women younger than 35 years

If this attempt fails, it is recommended to go directly to ART
Should we, or should we not, operate on endometriomas in patients scheduled for ART?

Medical treatment with 3–6 months of gonadotropin-releasing hormone analogues improves the outcome of ART in women with endometriosis.

Ovarian suppression before ART augments outcome by correction of endometrial alterations encountered in endometriosis, thus, amplifying endometrial receptivity.

De Ziegler D. et al, Lancet 2010
Should we, or should we not, operate on endometriomas in patients scheduled for ART?

Results from large randomized trials are needed to elucidate whether or not ovarian endometriomas should be treated before undergoing an IVF–ICSI cycle and which treatment is more suitable.

There are strong indications to surgical removal of the ovarian endometrioma, particularly in case of associated pain or infertility.

The best available evidence recommends complete excision of the cyst (stripping) as opposed to alternative techniques.

Good surgical technique is pivotal to reduce the damage to the healthy ovarian tissue.

The damage may be due to the disease itself, to the surgery, or to the surgeon himself: it may be the singer, not only the song...

* J Minim Invasive Gynecol. 2011
Endometrioma and infertility

- **Expectant**
  1. Surgical-related damage
  2. Surgical complications
  3. Economic costs
  4. Lack of evidence that surgery improve IVF pregnancy rates

- **Surgery**
  1. Risk of pelvic abscess and cyst rupture
  2. Risk of occult malignancy
  3. Retrieval difficulties
  4. Contamination with endometrioma content
  5. Endometriosis progression

Individualization of treatment
Ovarian Endometrioma: What the Patient Needs

Endometriosis Treatment Italian Club

- Previous surgery
- Volume/Size
- Age
- Desire of pregnancy
- Symptoms