The Impact of Laparoscopic Excision Versus Ablation of Ovarian Endometrioma on Ovarian Reserve: RCT

Thesis

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إلا ما علمتنا إنك أنت
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Mohamed Hussein Ali

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List of Abbreviations

Abbr.	Full term
AFC	: Antral follicular count
AMH	: Anti-mullerian hormone
BMI	: Body mass index
CI	: Confidence interval
COCPs	: Combined oral contraceptive pills
COH	: Controlled ovarian hyperstimulation
DNA	: Deoxyribonucleic acid
EST	: Ethanol sclerotherapy
FSH	: Follicular stimulation hormone
ICSI	: Intracytoplasmic sperm injection
IOT	: Immunotech
IV	: Intravenous
IVF	: In vitro fertilization
LOD	: Laparoscopic ovarian drilling
NSAIDs	: Non-steroidal anti-inflammatory drugs
OR	: Odds ratio
PCOS	: Polycystic ovarian syndrome
rASRM	: Revised American Society of Reproductive Medicine
SD	: Standard deviation
SPSS	: Statistical package for social science
WMD	: Weighted mean difference

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Abstract

Background: Endometriosis is a common condition associated with pelvic pain and infertility in women. It may be present in up to 22% of asymptomatic women and up to 45% of women with pelvic pain. It has been believed for almost a century by the majority of academic opinion that endometriosis is a disease caused by shedding of menstrual endometrium and its dissemination throughout the pelvis. **Aim of the Work:** to determine whether laparoscopic surgical excision or ablation is the optimum surgical management of ovarian endometrioma regarding ovarian reserve. **Patients and Methods:** This Randomized controlled trial was conducted on 66 women undergoing laparoscopic surgery for ovarian endometriomas at the maternity hospital, Ain Shams University. **Results:** The study showed insignificant differences between two groups regarding AMH level preoperative p-value 0.955 but postoperative there was significant decrease in excision group p-value 0.034. **Conclusion:** The comparison between laparoscopic ablation and laparoscopic excision for ovarian endometriomas showed better outcome of ablation regarding ovarian reserve but regarding recurrence and pain it was equal.

Key words: laparoscopic excision, ablation, ovarian endometrioma, ovarian reserve

Introduction

Endometriosis is a common condition associated with pelvic pain and infertility in women. Endometriosis is defined as the presence of ectopic deposits of endometrial tissue that are usually, but not exclusively, limited to the pelvis and may lead to infertility and pelvic pain. The deposits may be present in up to 22% of asymptomatic women and up to 45% of women with pelvic pain **(Farquhar, 2000)**.

For almost a century, it has been believed by the majority of academic opinion that endometriosis is a disease caused by shedding of menstrual endometrium and its dissemination throughout the pelvis **(Cullen, 1920)**.

Endometrioma are endometriotic deposits within the ovary. The origin of ovarian endometrioma is unknown, however it is generally believed that they result initially from a deposit of endometrium passed through the Fallopian tube (the transplantation theory) causing adherence of the ovary to the pelvic peritoneum and progressive invagination (folding inwards) of the ovary **(Nisolle, 1997)**.

If this is true, an endometrioma would be a pseudocyst (false cyst), the wall of which is the inverted ovarian cortex (centre). Hence the removal of this cyst wall might involve removal of normal ovarian tissue with possible adverse implications for future fertility **(Vercellini, 2003a)**.

The primary indications for treatment of ovarian endometrioma are the symptoms of pelvic pain and that the endometrioma may impair the positive outcome of fertility treatment **(Yanushpolsky, 1998)**.

There is also a small risk of malignant (cancerous) transformation. The evidence suggests that although medical treatment will result in a reduction in size of the endometrioma, by up to 57%, the most effective approach to treatment is surgical **(Farquhar, 1998)**.

In addition, if they are left, they have a risk of rupture and torsion as with any ovarian cyst. In recent years, laparoscopy has become the gold standard for the treatment of ovarian endometriotic cysts **(Yuen, 1997)**.

When compared to traditional surgery by laparotomy, operative laparoscopy is associated with shorter hospital stay, faster patient recovery, decreased costs and lower incidence of de novo adhesion formation **(Luciano, 1992)**.

Laparoscopic surgery for endometrioma does carry a risk of conversion to laparotomy. This is associated with the experience of the surgeon, the complexity of the surgery as well as patient factors, such as body mass index **(Sokol, 2003)**.

The procedure of drainage of the endometrioma alone is not recommended due to the high rate of recurrence of

symptoms. However, the most effective method of laparoscopic surgery (excisional or ablative) remains controversial **(Donnez, 1994)**.

Several alternative laparoscopic techniques have been described for the treatment of ovarian endometrioma. These are cyst wall laser vaporization (destruction by burning) preceded or not by medical therapy, drainage and coagulation, and stripping **(Brosens, 1996)**.

The effect of an ovarian endometrioma on fertility is unclear as it is rare to have a solitary endometrioma without surrounding pelvic endometriotic disease. Indeed, even minimal endometriosis is associated with subfertility and its treatment has been demonstrated to improve fertility **(Jacobson, 2003)**.

The presence of an endometrioma during in vitro fertilization (IVF) cycles has been associated with the need for greater ovarian stimulation and the production of fewer follicles following stimulation, suggesting that the endometrioma may be compromising ovarian function **(Al-Azemi, 2000)**.

Aim of the Work

The aim of this study is to determine whether laparoscopic surgical excision or ablation is the optimum surgical management of ovarian endometrioma regarding ovarian reserve.

Endometriosis

Endometriosis has such a wide ranging and pervasive sequelae that it has been described as nothing short of a public health emergency requiring immediate action **(Hatch, 2018).**

Population-based data suggest that more than 4 million reproductive-age women have diagnosed endometriosis in the United States. As daunting as this number is, it only tells part of the story, as an estimated 6 of 10 endometriosis cases are undiagnosed. Thus more than 6 million American women may experience repercussions of endometriosis without the benefit of understanding the cause of their symptoms or appropriate management **(Agarwal et al., 2019).**

When discussing the patient's experience with endometriosis, pain and infertility are usually of greatest concern, as they are 2 of the disease's more common symptoms. However, the real toll is even greater: women with endometriosis experience diminished quality of life, increased incidence of depression, adverse effects on intimate relationships, limitations on participation in daily activities, reduced social activity, loss of productivity and associated income, increased risk of chronic disease, and significant direct and indirect healthcare costs **(Agarwal et al., 2019).**

Epidemiology

The rates of endometriosis in the general population are difficult to quantify because the definitive diagnosis requires surgical visualization. Accordingly, estimates vary widely among different population samples and modes of diagnosis — all influenced by presenting symptoms and access to care. Despite this limitation, a study of women undergoing their first laparoscopic investigation in ten countries across five continents showed that endometriosis is a common global problem, with an incidence ranging from 35% to 100% in symptomatic women **(Nnoaham et al., 2011).**

Currently, no robust evidence can confirm that population-based prevalence varies among different ethnic groups because any observed variations cannot be disentangled from differential access to health care **(Peres et al., 2018).**

The prevalence estimated among women and adolescents (whereby adolescents are defined by the WHO as those aged 10–19 years and by the United Nations as those aged 15–24 years) whose symptoms warrant surgical evaluation is higher than the true prevalence in the general population; the prevalence estimated among asymptomatic women incidentally found to have endometriosis (for example, during a tubal sterilization procedure, in which fallopian tubes are removed, cut and tied or burnt) is an underestimate. In women investigated for infertility,

endometriosis prevalence varies widely (5–50%). For example, in studies of fertile women undergoing a laparoscopy for tubal sterilization, 4% were found to have endometriosis, and in a population cohort of unscreened women, 11% were diagnosed with endometriosis via MRI **(Buck Louis et al., 2011).**

Among the few studies that have investigated adolescents with severe dysmenorrhea (pelvic pain during menstruation), 50–70% were diagnosed with endometriosis. On the basis of the prevalence of pelvic pain and infertility in the general population, the estimated population prevalence of all endometriosis stages is 5–10% and <2% for moderate and severe disease (AFS/ASRM stages III and IV) — equating to an estimated 176 million women with endometriosis globally **(Janssen et al., 2013).**

Endometriosis can also recur after bilateral oophorectomy (removal of the ovaries) or in postmenopausal women, in particular those on hormone replacement therapy, although data mainly originate from case reports and accurate prevalence estimates are lacking **(Gemmell et al., 2017).**

Risk factors

Given the need for surgery for a definitive diagnosis, determining risk factors and identifying aetiological associations will be influenced by the population from whom data and biological samples are collected. Phenotypical differences