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# Fertility outcome after laparoscopic treatment of advanced endometriosis in two groups of infertile patients with and without ovarian endometrioma

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ABSTRACT

*Objective:* To evaluate the result of laparoscopic endometrioma excision in fertility outcome of advanced endometriosis patients.
*Study design:* The study was designated as historical cohort, in a private referral center of advance laparoscopy. 111 infertile patients, diagnosed as endometriosis, were divided in two groups: DIE (deep infiltrative endometriosis) and endometrioma (case group), and patients with only DIE (without endometrioma ((control group). All patients underwent global laparoscopic resection of DIE lesion (both groups) and laparoscopic excisional cystectomy of endometrioma (case groups). Patients were followed for fertility outcomes and data were analyzed by Kaplan–Meier test and COX regression using SPSS software.
*Results:* After adjusting covariates, the Kaplan–Meier analysis of cumulative pregnancy rates (CPR) did not show any statistical significance between cases (35.6%) and controls (39.5%) (Log-rank *P*-value = 0.959). The COX regression analysis of covariates showed there is no significant relationship between cystectomy and fertility outcome. It showed statistical significance effect of age (hazard ratio [HR] = 0.772), years of infertility (HR = 0.224), and previous endometrioma surgery (HR = 0.180), on fertility chance.
*Conclusion:* In advanced endometriosis with DIE and infertility, fine excision and stripping of the endometrioma along with radical resection of DIE improves fecundity without any significant adverse effect in comparison with patients with intact ovaries.


## Introduction

Endometriosis primarily involves patients at reproductive ages, it mainly represents infertility [1,2] and also pelvic pain [3]. Although the prevalence of endometriosis in infertile patients is not clear, some studies suggest the incidence of the disease could be as high as 30–50% [4].

The mechanism of infertility is not clear, but it seems that inflammatory cytokines, pelvic adhesions, and distorted pelvic organ anatomy may play a crucial role [4,5]. Every type of endometriotic lesions; superficial, deep infiltrative and ovarian endometrioma cysts impair fertility by above-mentioned mechanisms [6–10].

Some authors support the notion that surgery is the main therapeutic approach in relieving pain or improving fertility in endometriosis patients [11], however fertility improvement in higher stages of disease is controversial. The severity of distorted pelvic anatomy may decrease the fecundity rate [4,12,13]. Additionally, the effectiveness of ovarian endometrioma treatment is substantially associated with selection of surgical techniques and experience of the surgeon [12,14]. By reviewing available

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literature, excisional cystectomy is the preferred technique for treatment of ovarian endometrioma. Nevertheless, alteration of ovarian reserve due to surgery-related damage and its impact on achieving pregnancy is still controversial. This study was designated to assess the effectiveness of ovarian endometrioma excision on fertility outcome of the patients with advanced endometriosis (Figs. 1–3).

## Material and methods

### *Samples*

The study was performed as a historical cohort. Patients were selected from infertile women (with at least 1 year history of infertility) referred to a referral clinic of advanced laparoscopic surgery center between 2005 and 2011 in Tehran, Iran (Prof. A. Shervin's clinic). All patients were diagnosed with advanced endometriosis laparoscopically and then confirmed by histopathology. Patients' clinical and surgical data were analyzed retrospectively and patients who were interested in achieving pregnancy were followed for fertility and other surgical outcome. All the medical records of the patients were assessed by researchers in a privacy preserving manner. All data were anonymized and encoded and the patient's information was not revealed retrospectively. This study was approved by ethics committee of Avicenna Research Institute. From 156 infertile women with confirmed endometriosis, 111 patients were interested in conceiving and were followed closely. To determine the

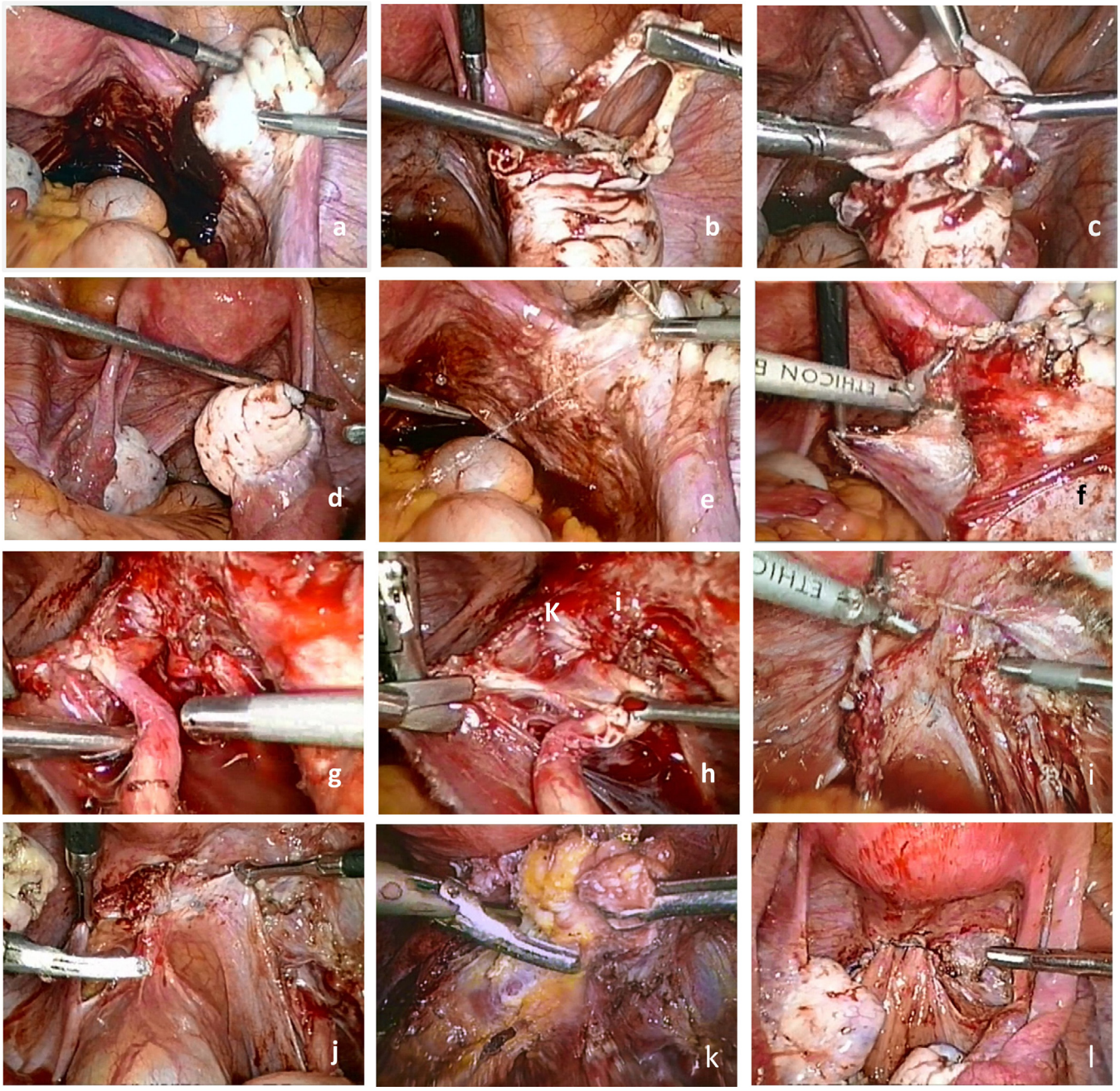


**Fig. 1.** Laparoscopic treatment of ovarian endometrioma with excisional cystectomy. (a) Endometrioma with ovarian & peritoneal site of invagination. (b) Trimming. (c) Stripping. (d) Closed ovary after stripping. (e) Peritoneal site of invagination. (f) Resection of peritoneal site of invagination. (g) Ureteral involvement by DIE at peritoneal site of invagination. (h) Depth of DIE at peritoneal site of invagination. (i) Specimen peritoneal site of invagination. (j) Resection of remaining DIE. (k) Removed DIE Cul de sac. (l) Final view after closure of cul de sac.