Laparoscopic surgical modalities for the treatment of recto-vaginal deep infiltrating endometriosis"

A Systematic Review of
Randomized Controlled Trials

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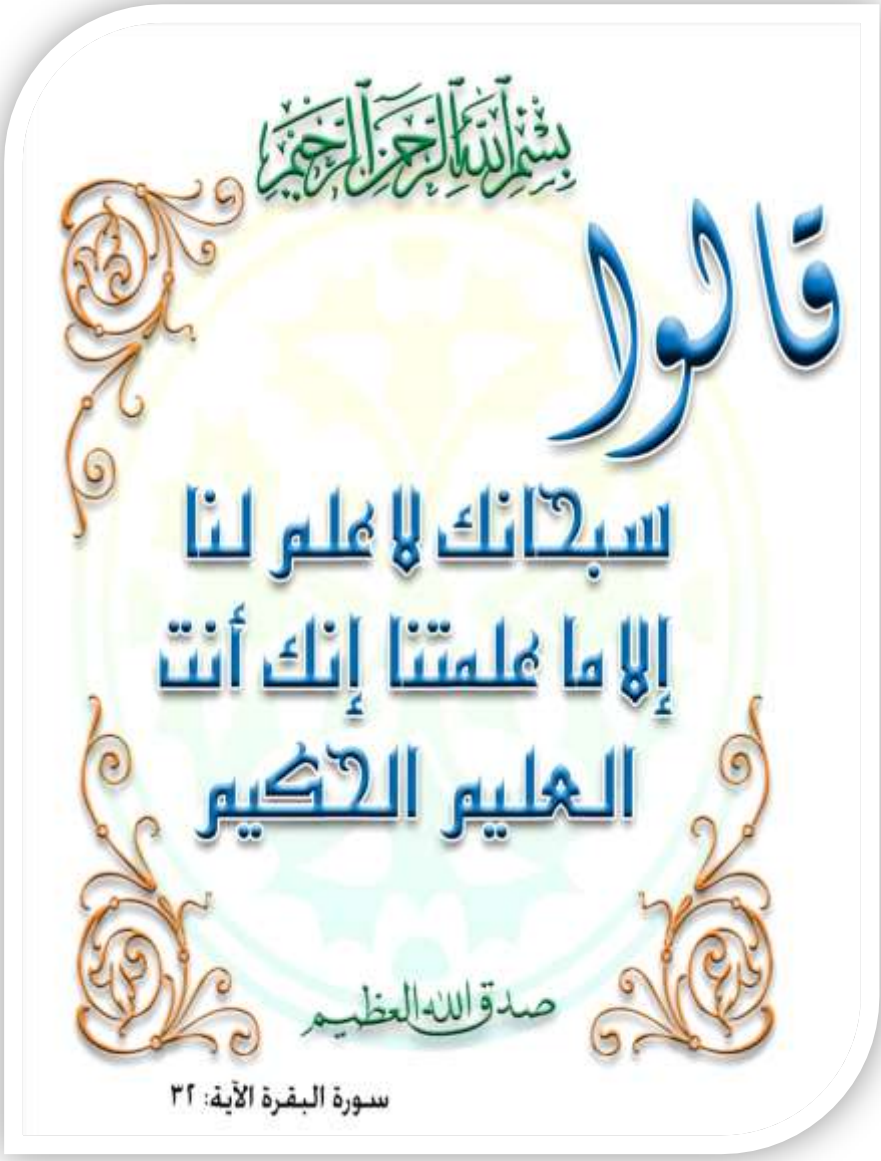
بسم الله الرحمن الرحيم
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سبحانك لا علم لنا
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List of Abbreviations

Abbr.	Full-term
ASRM	**:** American Society for Reproductive Medicine
CI	**:** Confidence interval
CO2	**:** carbon dioxide
DIE	**:** Deeply infiltrating endometriosis
EKB	**:** Egyptian knowledge Bank
ESHRE	**:** European society of human reproduction and embryology
FSFI	**:** Female Sexual Function index
GnRH	**:** Gonadotropin-releasing hormone
GRADE	**:** Grading of Recommendations, Assessment, Development and Evaluation
MD	**:** Mean difference
MRI	**:** Magnetic resonance imaging
NSAIDs	**:** Non- steroidal anti inflammatory drugs
PRISMA	**:** Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCT	**:** Randomized controlled trial
ROB	**:** Risk of bias
RR	**:** Risk ratio
SMD	**:** Standardized mean difference
TVUS	**:** Trans-vaginal ultrasound

Δ (Delta) **:** A symbol for non-inferiority margin that is the maximum acceptable extent of clinical non-inferiority of the experimental intervention. It should be predefined prospectively.

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Introduction

Endometriosis is defined as the presence of functioning endometrial tissue outside the endometrial cavity. This endometrial tissue consists of endometrial glands, stroma, and smooth muscle cells **(Ota *et al*., 2018).**

It affects about 2-10% of women in the reproductive age groups (between 15-49 years) but it was found that it affects about 50% of infertile women **(Meuleman, *et al*., 2009)**. It is also one the most common diseases represented as pelvic pain **(Ruffo *et al.*, 2012).**

Deeply infiltrating endometriosis is a distinct entity of endometriosis that is characterized by infiltrating endometriotic nodules >5 mm under the peritoneal surface **(Koninckx *et al*., 1991).**

The most common site of deeply infiltrating nodules is the utero-sacral ligament. However, bowel involvement is observed in (7%-19%) **(Ota *et al*., 2018).**

The most common sites for bowel involvement are the distal sigmoid colon and rectum **(Seracchioli *et al*., 2015).**

It's widely agreed that treatment of DIE is surgery that help in DIE associated pain relief and improvement of infertility. However, the determination of the surgical

technique to be used still to be a debatable issue with no standard criteria for choosing the technique and without enough RCTs.

Aim of the Work

To determine which surgical technique used in laparoscopic surgery (shaving, full thickness disc excision or resection anastomosis) is the optimum technique for improvement of quality of life regarding its both physical and mental component, relief of different types of pain resulting from endometriosis like dysmenorrhea, dyschezia, dyspareunia, or chronic pelvic pain and sexual performance improvement. In addition, to assess the safety of the techniques by assessing their postoperative complications.

Definition and prevalence of Endometriosis

Endometriosis is defined as the presence of functioning endometrial tissue outside the endometrial cavity. This endometrial tissue consists of endometrial glands, stroma, and smooth muscle cells **(Ota *et al*., 2018).**

The prevalence of endometriosis varies from one study to another and usually the true prevalence rates are not known as diagnosis of endometriosis is delayed and overlooked by primary care doctors **(Eisenberg et al., 2017)**

However, the prevalence estimates of endometriosis reported are around 10% of women in the reproductive age (15-49 years) **(Eisenberg et al., 2017).** These estimates may decrease in some studies reaching 2%-10% in some studies (**Meuleman, *et al*., 2009**) or its range increase up to 15% in other studies **(Parasar et al.,2017).**

This prevalence increase markedly if the woman has an unspecific symptom whom one of its causes maybe endometriosis. For example, endometriosis is found in 70% of patients with chronic pelvic pain **(Parasar et al., 2017)** and in 50% of patients with infertility **(Meuleman, *et al*., 2009).**

Staging & types of endometriosis

Generally endometriosis is divided into three distinct types: superficial or peritoneal endometriosis, ovarian endometriosis, and deep infiltrating endometriosis (DIE) **(Donnez & Roman, 2017).**

Peritoneal endometriosis develop as red peritoneal lesions that has a histological structure similar to that of proliferative eutopic endometrium and liable to developing into the glandular proliferative status as normal endometrium. These lesions develop systemically on the peritoneal surface and may contain hyperplastic area (**Nissole and Donnez, 1997).**

On the other hand, ovarian endometriotic lesions are represented as the ovarian endometrioma that may progress into chocolate cyst with the risk of its subsequent rupture. There is usually a debate whether the peritoneal adhesion induce ovarian endometrioma formation or the rupture of chocolate cyst causes peritoneal adhesions as a result of its rupture and spillage of its content (**Nissole and donnez., 1997).**

Finally, the deep infiltrating endometriosis is considered the an entity of endometriosis that usually causes obliteration of the cul-de-sac and penetrate beneath the peritoneum with a varying depth with the recto-vaginal

septum endometriotic nodule considered to be the deepest form of endometriosis **(Nissole and Donnez, 1997).**

Recently, endometriosis is classified according to the American Society for Reproductive Medicine (**ASRM**) into 4 stages based on severity where stage I represents the minimal form of the disease and stage IV the most severe form of the disease. This staging system is based on number, location, and depth of implants and presence of filmy or dense adhesions **(Appendix 4).**

Pathogenesis of endometriosis

There is no unifying theory for the pathogenesis of endometriosis.

Theories generally divides into two major hypothesis; one propose that endometriotic lesions arise from the endometrium, the other propose that implants arise from outside the endometrium **(Burney *et al.*, 2012)**

Theories of non-uterine origin of the disease include ceolomic metaplasia which is the transformation of normal peritoneal tissue into abnormal ectopic uterine tissue. However, the inductive factors are poorly understood **(Burney *et al.*, 2012).**

Another related theory in the same category is the inductive theory that is similar to ceolomic metaplasia but

suggests an endogenous inductive factor; hormonal or immunologic factor to trigger the metaplastic events in the peritoneum **(Burney *et al.*, 2012)**

The theory of embryonic Mullerian rests, or mullerianosis, suggests that residual cells from embryologic Mullerian duct migration maintain the capacity to develop into endometriotic lesions when exposed to estrogen at puberty **(Burney *et al.*, 2012)**

The more recent theory in this category suggests that extra uterine progenitor cells usually from the bone marrow differentiate into endometriotic tissue **(Sasson et al., 2008**)

Among the theories of uterine origin of implants come the metastatic theory and retrograde menstruation theory suggested by Sampson at 1927 on the top of the list **(Burney *et al.*, 2012)**.

Clinical presentation of endometriosis

Although endometriosis can be asymptomatic, it's usually clinically represented by pain that takes several forms of pelvic pain (dysmenorrhea, chronic pelvic pain, deep dyspareunia, dyschezia and dysuria) and may be associated with inter-menstrual bleeding **(Parasar *et al*., 2017).**

According to ESHRE guidelines, in addition to the previous symptoms, endometriosis may also be represented