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Role of Magnetic Resonance Imaging in Diagnosis of Endometriosis

Thesis
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By

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List of Abbreviations

Abb.	Full term
ADC	Apparent diffusion co-efficient
CBC	Complete blood count
Cm	Centimeters
DWI	Diffusion weighted images
FOV	Field of view
MHz	Mega Hertz
ML	Milliliters
MM	Millimeters
MRI	Magnetic resonance imaging
NPV	Negative predictive value
PPV	Positive predictive value
SPAIR	SPectral Attenuated Inversion Recovery
T	Tesla
T1WI	T1 weighted image
T2WI	T2 weighted image
TE	Time of echo
TR	Time of repetition
TVUS	Transvaginal ultrasound
US	Ultrasound
USLs	Utero-sacral ligaments

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Introduction

INTRODUCTION

Endometriosis is defined as the presence of functional endometrial glands and stroma outside of the uterine cavity primarily as implants in the ovaries and pelvic peritoneum. This ectopic tissue responds to hormonal changes resulting in cyclical haemorrhage and pain, giving the disease its clinical features ***(Bulun, 2009).***

Endometriosis is a common gynaecological condition affecting women of reproductive age, with some patients remaining asymptomatic while others suffer significant symptoms. The estimated prevalence varies between 2% and 10% within the general female population, although it may be as high as 50% in infertile women ***(Meuleman et al., 2009).***

The pathogenesis of endometriosis is complex and has not yet been fully elucidated. Several pathogenic processes have been hypothesized, including implantation of endometrial glands and stroma on the peritoneum from retrograde menstruation, hematogenous and lymphatic dissemination, celomic metaplasia, stem cell migration from bone marrow, epigenetic factors, and polygenicmultifactorial inheritance ***(Sasson et al., 2009).***

Secondary dysmenorrhea, deep dyspareunia, sacral backache with menses, perimenstrual diarrhea, cramping and dyschezia, dysuria, and hematuria are the most common and

relevant clinical manifestations. Endometriosis-related pain may not correlate with the disease stage but may be associated with the lesion infiltration depth ***(Chapron et al., 2002).***

The definitive diagnosis of endometriosis relies on histological confirmation of endometrial glands and stroma outside of the endometrial cavity ***(Clement, 2007).***

Laparoscopy is the gold standard for the diagnosis of endometriosis. Sometimes, surgical exploration can be complicated, as deep endometriotic plaques may be hidden under extensive adhesions or may not be visible due to a subperitoneal location. One-step surgery (i.e., diagnosis and complete excision of the lesions at the same time) is essential for the successful treatment of endometriosis and, therefore, presurgical mapping of the endometriotic lesions becomes an important issue ***(Dunselman et al., 2014).***

Currently, ultrasound is preferred for the initial assessment of both endometriomas and deep pelvic endometriosis. However, transvaginal ultrasound, even with adequate bowel preparation and use of high-frequency probes has important limitations, because of the relatively small field-of-view and operator dependency ***(Bazot et al., 2016).***

MRI is being increasingly used for the evaluation of endometriosis, with reported sensitivity and specificity values ranging from 69—92% and 75—98%, respectively ***(Bazot et al., 2016).***

The use of MRI offers the following advantages:

1) Excellent at demonstrating the haemorrhagic content (new and old) of endometriomas.

2) Used in identifying the presence of deeply-infiltrating endometriotic implants.

3) Particularly useful in pre-operative assessment of disease distribution and the presence of adhesions, especially within the posterior compartment and pouch of Douglas which helps guide subsequent laparoscopic surgery.

4) Vital as a problem-solving tool when assessing an ultrasound-indeterminate adnexal mass, helping differentiate ovarian cystic and solid lesions from endometriomas and also in the detection of malignant transformation within an endometrioma ***(Coutinho et al., 2011).***

Aim of the Work

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The aim of this study is to evaluate the accuracy of Magnetic Resonance Imaging in diagnosis of Endometriosis.