# VALUE OF MAGNETIC RESONANCE IMAGING IN DIAGNOSIS OF OVARIAN TUMORS

*Essay*

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# دور التصوير الطبي بالرنين المغناطيسي
# فى تشخيص أورام المبيض

رسالة

توطئة للحصول علي درجة الماجستير في
الأشعة التشخيصية

مقدمة من

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# SUMMARY

Ovarian carcinoma is an insidious disease, and patients often present with an advanced (extra pelvic) stage of disease. Despite clinical advance and improved surgical techniques, it remains the deadliest form of gynecologic malignancy.

The primary goal of imaging in the evaluation of an adnexal mass is to differentiate malignant and benign diagnoses in order to direct patients to the appropriate treatment algorithm.

Magnetic resonance (MR) imaging has been proved useful for characterizing benign and malignant ovarian tumors; moreover, it enables a specific diagnosis to be made for certain pathologic types. For example, MR imaging is well known to provide accurate information about hemorrhage, fat, and collagen.

Gadolinium-enhanced MR imaging serves as a problem-solving modality in cases of indeterminate adnexal masses. A combination of T1-weighted images and T1-weighted images with fat saturation helps to differentiate most common benign adnexal masses from malignant ones.

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# INTRODUCTION

Ovarian tumors are the leading indication for gynecological surgery. The main goal of imaging techniques in this setting is to identify tumors that are likely to be malignant in combination with clinical findings. Indeed, preoperative characterization of ovarian tumors is crucial to inform women on the risks associated with radical and conservative treatment and to determine the surgical route *(Curtin, 1994)*.

Although TVUS is the first imaging technique used to investigate suspected pelvic masses, it has a limited capacity for tissue characterization. Regarding MRI, In addition to morphological characteristics, many tissue parameters such as $T_1$, $T_2$, Perfusion, and Diffusion contribute to signal intensity. Therefore, MRI is able to identify various types of tissues contained in pelvic masses. Hence, MRI helps to locate large solid masses and to distinguish benign from malignant ovarian tumors, with an overall accuracy of 88% to 93% for the diagnosis of malignancy *(Bazot et al., 2008)*.

MRI contributes to the characterization of adnexal masses based on criteria highly suggestive of

benignity (e.g., fatty components, shading on $T_2$-weighted images) *(Kinkel et al., 2005)* or malignancy (e.g., vegetations and solid portions within cystic masses) *(Brown et al., 2001)*.

[T2-weighted Fast Spain Echo (FSE)], is the only technique which visualizes the normal ovarian parenchyma, so preoperative location of the normal ovarian parenchyma could facilitate laparoscopic cystectomy with conservation of the normal parenchyma *(Bazot et al., 2000)*.

The diagnostic accuracy with contrast-enhanced MR imaging is better than that with precontrast MRI imaging or TVUS because of its ability to demonstrate internal details and soft tissue contrast *(Yamashita et al., 1995)*.

The appearance of blood and lipid in ovarian tumors is sufficiently different on lipid- and water suppression MR images and allows an accurate distinction between the two. The two techniques should be useful in the differential diagnosis of lesions that appear isointense on routine MRI *(Kier et al., 1992)*.

MRI is a cost-effective next step when the results of the US evaluation are indeterminate. MR