

# Surgical strategies in uterine adenomyosis

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## ABSTRACT

Uterine adenomyosis is defined by the presence of heterotopic endometrial glands and stroma at the myometrial level. Although imagistic studies improved, the incidence of adenomyosis is still underestimated, in a significant number of cases the final diagnostic of adenomyosis being established on the histopathological specimen of hysterectomy. The aim of the current paper is to discuss about the most efficient therapeutic strategies in adenomyosis.

**Keywords:** adenomyosis, hysterectomy, surgery

## INTRODUCTION

Defined as the presence of ectopic endometrium and stroma at the level of the myometrial layer, adenomyosis can remain asymptomatic for a long period of time or might be associated with unspecific symptoms such as debilitating pain pelvic at the time of the menstrual periods and infertility. Oppositely to endometriosis – which is present usually in young women – being diagnosed in the second and third decades of life -, adenomyosis is usually diagnosed in the fourth and fifth decades of life while the etiopathogenesis is not clearly known (1). However, two pathogenic theories have been incriminated: the first one refers to the invagination of the endometrial layer while the second one takes

into consideration the possibility of metaplasia of the embryonic stem cells (2). These mechanisms in association with other risk factors such as age, parity, previous uterine surgery, smoking, ectopic pregnancy or tamoxifen therapies seem to be responsible for the development of adenomyosis (3).

## DIAGNOSIS

Due to the fact that most often this entity, remains asymptomatic for a long period of time, a preoperative diagnostic can be hard to be established. However, the presence of hard menstrual periods dyspareunia and fertility dysfunctions might orientate the diagnostic (4,5). In such cases the development of ultrasound and magnetic resonance

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imaging led to an improvement of the diagnostic rate in these cases and therefore, the final diagnostic could be established more easily during the preoperative period and less extended surgical procedures could be taken in consideration (6,7).

## THERAPEUTIC STRATEGIES

Whenever the diagnostic of endometriosis is suspected the conservative, medical treatment should be taken in consideration. The main therapeutic agents which have been proposed were represented by anti-inflammatory drugs, aromatase inhibitors or selective progesterone receptor modulators (8-10). These agents offer an efficient alleviation of the symptoms when administrated but most often they do not treat the cause, therefore the symptoms will reappear at a certain moment of the disease. Meanwhile, severe side effects such as embolism might occur in certain cases (11). Therefore, attention was focused on identifying conservative surgical strategies which are able to remove the cause and which do not predispose the patient to further development of severe complications. Another significant desiderate which should be taken in consideration when talking about surgery in adenomyosis is related to the preservation of fertility. Therefore, at this moment the most widely investigated methods are represented by local excision of the adenomyotic lesions through high intensity focused ultrasound, hysteroscopy or through laparoscopy – in cases presenting limited, nodular lesions and uterine artery embolization in cases presenting diffuse lesions, as an alternative for hysterectomy; meanwhile, cases presenting extended, diffuse lesions which are associated with intractable symptoms and which do not deserve further fertility preservation will be further submitted to hysterectomy; however, the method is nowadays reserved for cases in which all the other therapeutic strategies have failed (12-16).

Hysteroscopic ablation represents one of the least invasive surgical approaches consisting of the resection of the nodular lesions by using thermal balloon ablation, yttrium aluminium garnet, microwave ablation or radiofrequency ablation followed by electrocoagulation (17). The method is a very comfortable one for the patient; however, it should be reserved for cases presenting limited, nodular lesions.

High-intensity focused ultrasound (HIFU) is another minimally invasive procedure which might be performed in patients with nodular areas of endometriosis; the principle of the method consists of delivering intense ultrasound energy at the level of

the abnormal tissues, their vascularization being destroyed through the cavitation effect. The method is usually performed under magnetic resonance imaging or ultrasound guidance; more recently, the effectiveness of HIFU was improved by the association of local administration of non-hormonal agents such as metformin or hormonal agents (such as gonadotropin releasing hormone) (18,19).

The idea of using uterine artery embolization in patients with adenomyosis was borrowed from cases diagnosed with uterine fibroids. The method consists of an arterial approach through the femoral or radial artery followed by a selective angiography of the internal iliac artery and embolization of different types of particles at the level of the uterine arteries. Therefore, local devascularisation is induced, therefore diminishing the vascular supply of the adenomyosis islands. The method proved to be efficient in treating uterine adenomyosis but might also induce the development of other complications, the most dangerous one being represented by uterine necrosis. Meanwhile, the overall diminishing of the vascularization might also affect the normal areas of the endometrial lining, issues of fertility being reported during the long term outcomes (20,21).

As expected, maybe the most effective and safe method in order to treat adenomyosis remains the surgical approach consisting of limited local resection. The method of minimally invasive resection was initially reported in 2004 and was submitted to continuous improvement (22-24). Nowadays the method consists of uterine section under direct laparoscopic visualization, identification through visualization and palpation of the adenomyosis islands, their removal and two or even three layers suture of the uterine wall in order to prevent uterine rupture if pregnancy occurs (22,23). Therefore, in the study conducted by Kwack et al. and published in 2017 the authors included 105 patients submitted to this therapeutic approach the authors demonstrated that the symptoms were significantly diminished in 93% of cases while the recurrence rate was of 10% (24).

## CONCLUSIONS

Adenomyosis represents a pathological condition which can be associated with diffuse pelvic pain, fertility issues, dyspareunia and heavy periods. In order to preserve fertility and to offer a good control of the symptoms different therapeutic strategies have been proposed, minimally invasive procedures of resection and reconstruction being nowadays associated with the best long term outcomes.

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