

Removal of myomas in asymptomatic patients to improve fertility and/or reduce miscarriage rate: a guideline

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The purpose of this systematic review is to evaluate if uterine myomas impact the likelihood of pregnancy and pregnancy loss, and if myomectomy influences pregnancy outcomes in asymptomatic women. There is insufficient evidence to conclude that the presence of myomas reduces the likelihood of achieving pregnancy. However, there is fair evidence that myomectomy (open or laparoscopic) for cavity-distorting myomas (intramural or intramural with a submucosal component) improves pregnancy rates and reduces the risk of early pregnancy loss. There is fair evidence that hysteroscopic myomectomy for cavity-distorting myomas improves clinical pregnancy rates but insufficient evidence regarding the impact of this procedure on the likelihood of live birth or early pregnancy loss. In women with asymptomatic cavity-distorting myomas, myomectomy may be considered to optimize pregnancy outcomes. (Fertil Steril® 2017;108:416–25. ©2017 by American Society for Reproductive Medicine.)

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INTRODUCTION

Uterine myomas (leiomyomata, fibroids) are the most common tumor of the reproductive tract, with a cumulative incidence of 70% in women of reproductive age (1, 2). These benign monoclonal tumors are more common and are associated with the most severe symptoms in women of African descent (3, 4). Compared with Caucasian women with symptomatic myomas, women of African descent typically present to their provider at a younger age and with a significantly worse myoma burden (larger size and number) (3).

According to the US Census Bureau 2007 data, there were more than 355,000 myoma-related admissions (5). It is estimated that myoma-related hospitalizations, both surgical and nonsurgical, will increase 23% by 2050, mostly related to the changing

demographics of the country (5). According to the 2007 Nationwide Inpatient Sample (NIS) database (www.hcup-us.ahrq.gov), myomectomy accounts for only 30,000 of these admissions. The rate of myomectomy is reported to be 9.2 per 10,000 women years in black women and 1.3 per 10,000 women years in white women (5).

Prior studies illustrate the successful use of myomectomy for symptom relief and improvement of health-related quality of life (6). In contrast, there has been significant controversy regarding the impact of uterine myomas on fertility and pregnancy outcomes and whether removal of myomas in asymptomatic women improves fertility or pregnancy outcomes.

It is important to use consistent terminology for the location of fibroids to discuss the impact of various types of fibroids on reproduction. Most societies and clinical research trials use the In-

ternational Federation of Gynecology and Obstetrics (FIGO) staging scheme for fibroid location (7) (Fig. 1).

Limitations of the Literature

Data evaluating reproductive outcomes related to myomas are derived primarily from observational studies. Such studies are problematic as they are prone to selection bias and confounding variables. For example, women with myomas tend to be older, compared with women without myomas, and tend to represent different well-defined ethnic groups. Regarding the studies assessing the benefits of myomectomy, the literature mostly consists of level-II and -III studies which include small heterogeneous patient populations (infertile vs fertile; symptomatic vs asymptomatic), characterize myomas inconsistently (in terms of location, size, and number of myomas), and often do not consistently or comprehensively evaluate clinically relevant reproductive outcomes such as time to pregnancy, clinical pregnancy rate, live-birth rate, and miscarriage rate. In addition, heterogeneity

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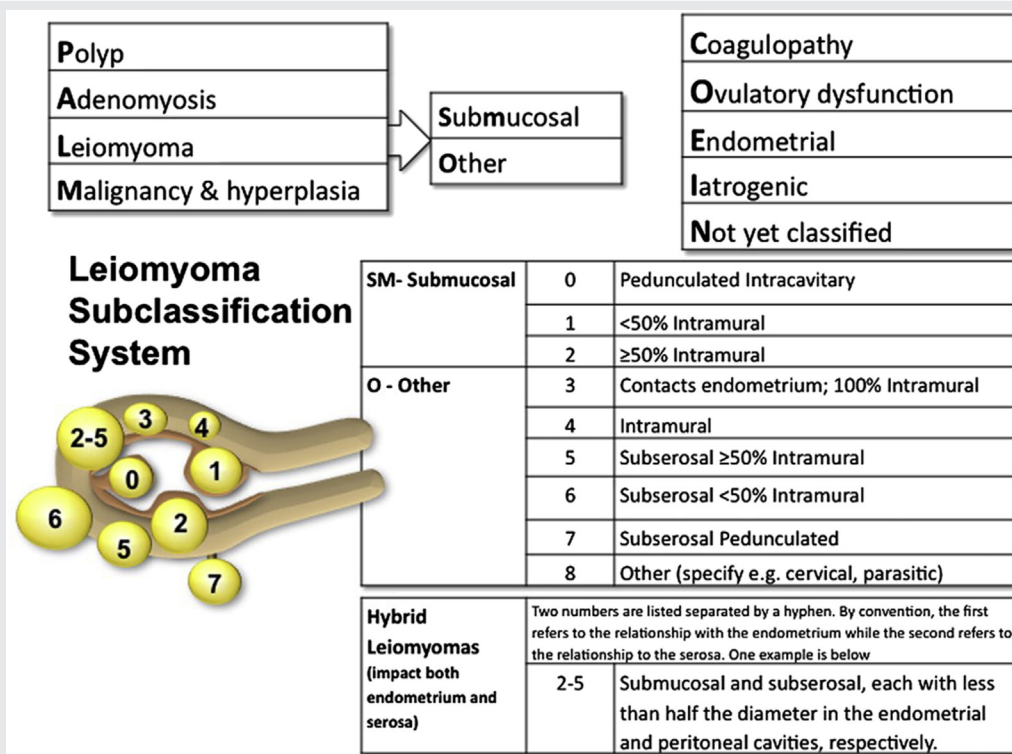
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FIGURE 1



International Federation of Gynecology and Obstetrics (FIGO) classification system for fibroid location. (Adapted from Munro MG, Critchley HO, Broder MS, Fraser IS; for the FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. *Int J Gynecol Obstet* 2011;113:3-13. Published by Elsevier Ireland Ltd. Reprinted by permission of Elsevier [7].).

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seen in the size and location of myomas makes it difficult to generalize results as both these variables are inconsistently characterized in studies and both modify the associated symptoms and surgical outcomes. Laparoscopic studies more commonly include patients with subserosal myomas and rarely include patients with myomas with a submucosal component—more common in abdominal myomectomy series, which are usually comprised of patients with a large myoma burden. Additionally, many studies focus on the assisted reproductive technology (ART) population; however, others include “infertile” women and lack descriptive results about the mode of conception postoperatively. The majority of systematic reviews include subjects with spontaneous conceptions as well as pregnancies from advanced reproductive technologies. Furthermore, most studies are small, with insufficient power to detect clinically relevant associations. As a result, interpreting data regarding the impact of different surgical routes of myomectomy on conception and the rate of pregnancy loss has been difficult. Definitive clinical recommendations are difficult to generate because of the heterogeneity seen in location and size of leiomyomata, the variety of resulting clinical symptoms, and the range of methodology and endpoints of available literature. The purpose of this systematic review is to evaluate if there is evidence that uterine myomas impact the likelihood of pregnancy and early preg-

nancy loss, respectively, and if myomectomy influences pregnancy and live-birth rates in asymptomatic women of reproductive age. While obstetrical outcomes are important to consider, discussion of them is outside the scope of this document.

METHODS

This clinical practice guideline was based on a systematic review of the literature performed in the electronic database MEDLINE through PubMed on March 3, 2016. No limit or filter was used for the time period covered or English language, but articles were subsequently culled for English language. This electronic search and examination of reference lists from primary and review articles yielded 1,785 studies, of which 88 studies were included.

A combination of the following medical subject headings or text words were used: abortion; ART; assisted reproductive techn*; birth; embolization; embolization/therapeutic; embryo transfer; endoscopic; endoscopy; fertility; fertilization in vitro; fibroid; fibroma; fibromyoma; hysteroscopy; intra-uterine; intrauterine insemination; intrauterine pathology; intrauterine pathologies; in vitro fertilization; in vitro fertilisation; IUI; IVF; laparoscopic; laparoscopy; laparotomy; leiomyoma; metroplast*; miscarriage; myoma; myomect*;

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