The destiny of myomas: should we treat small submucous myomas in women of reproductive age?

Stefano Bettocchi, M.D.,[a] *Charalampos Siristatidis, M.D.,*[b] *Giovanni Pontrelli, M.D.,*[a] *Attilio Di Spiezio Sardo, M.D.,*[c] *Oronzo Ceci, M.D.,*[a] *Luigi Nappi, M.D.,*[d] *and Luigi Selvaggi, M.D.*[a]

[a] Department of Obstetrics, Gynecology and Neonatology, II Unit of Obstetrics and Gynaecology, University of Bari, Bari, Italy; [b] Third Department of Obstetrics and Gynecology, "Attikon" Hospital, University of Athens, Greece; [c] Department of Obstetrics and Gynecology, University of Naples "Federico II", Naples; and [d] Department of Surgical Sciences, Unit of Obstetrics and Gynecology, University of Foggia, Foggia, Italy

Objective: To carry out a thorough analysis aimed at demonstrating that a "wait-and-see" approach is no longer acceptable in women of reproductive age with small submucous myomas, even if they are asymptomatic.
Design: Review article.
Setting: University hospitals.
Patient(s): Women of reproductive age with small (<1.5 cm) submucous myomas.
Intervention(s): "See-and-treat" hysteroscopy performed in an outpatient setting.
Main Outcome Measures(s): a) The real endometrial surface and volume occupied by a submucous myoma; b) the high potential of a small myoma to grow during the reproductive age; c) its negative impact on reproduction through normal or assisted conception; d) the inability to perform a reliable and "safe" diagnosis, with respect to malignancy, without an eye-guided biopsy; and e) the effectiveness of "see-and-treat" hysteroscopy in removing small submucous myomas.
Result(s): Small myomas, as hormone-dependent benign tumors, have a high potential to grow and either to become symptomatic or to cause complications during natural or assisted conception and pregnancy. Furthermore, not withstanding the risk of malignancy is rare, even the most experienced operator cannot replace the histological analysis to exclude malignancy or premalignant lesions. "See-and-treat" hysteroscopy has been demonstrated to be safe and effective in removing such small submucous myomas.
Conclusion(s): A "wait-and-see" approach is no longer acceptable in women of reproductive age with small submucous myomas, especially if the lesion could be easily and safely removed in an outpatient setting with minimal patient's discomfort. (Fertil Steril® 2008;90:905–10. ©2008 by American Society for Reproductive Medicine.)

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Hysterectomy and laparotomic excision have long been considered the two standard routes of surgical treatment for symptomatic submucous myomas (1–5).

The development of endoscopy has made these myomas accessible and resectable from the inner surface of the uterus (6, 7). Currently, hysteroscopic surgery is considered to be the first-line conservative therapy for the management of symptomatic submucous myomas. It can be tailored to the woman's needs and geared toward alleviating her symptoms (8).

Resectoscopic myomectomy with monopolar or bipolar cutting loops still represents the standard surgical approach for the treatment of such myomas, with the first experiences being published almost 30 years ago (9, 10). However, such an approach has a number of disadvantages, including the need for an operating room and, subsequently, for personnel and more intensive postoperative surveillance, as well as the necessity of both cervical dilatation and general or epidural anesthesia. Furthermore, several quite-serious complications, such as hemorrhage, infection, genital tract trauma, and fluid overload (11), have been reported to occur in $\leq 5\%$ of resectoscopic myomectomies.

In the last 15 years, the development of smaller diameter hysteroscopes (<5 mm) with working channels and continuous flow systems has made possible the treatment of most uterine and cervical pathologies under an outpatient regimen, with no need for either cervical dilatation or any analgesia and/or local anesthesia.

This new philosophy (see-and-treat hysteroscopy) has reduced the differences between a diagnostic and an operative procedure by introducing the concept of a single procedure, in which the operative part is perfectly integrated in the diagnostic workup (12).

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Reprint requests: Attilio Di Spiezio Sardo, Department of Gynecology and Obstetrics and Department of Pathophysiology of Human Reproduction, University of Naples "Federico II," Via Pansini 5, 80131 Naples, Italy (FAX: 390817462905; E-mail: cdispie@tin.it).

Mechanical operative instruments (scissors, biopsy cup, grasping, corkscrew) have long been the only way to apply the see-and-treat procedure in an outpatient setting (13). The advent of bipolar technology, together with the introduction of electrosurgical systems dedicated to hysteroscopy, as well as several types of 5-Fr electrodes, have led to a remarkable increase in the number of pathologies that are treated by office operative hysteroscopy, including submucous myomas of <1.5 cm in diameter, which long have represented the cutoff for office hysteroscopic treatment (14).

Data available in the international literature regarding the necessity of treating such small myomas (although they usually are asymptomatic), apart from the surgical route (referred to as office or resectoscope treatment), are scant and controversial. However, the current clinical trend clearly is shifted toward a wait-and-see approach (15, 16), and expectant management has been suggested as the norm (17, 18).

However, let us suppose, for a moment, that during a diagnostic hysteroscopy performed on a 30-year-old woman who is trying to conceive, we decide not to remove an accidental, small (<1.5 cm), submucous myoma. How could we confidently answer the patient then about the risks that such a lesion could impair her fertility? Could we absolutely exclude that the myoma would become bigger before or during pregnancy, thus posing greater risk for complications either during gestation or during an operative procedure? And yet, let us consider a small submucous myoma in an asymptomatic 40-year-old woman who is undergoing diagnostic hysteroscopy after an ultrasonography that is suspicious for intrauterine growth. How could we reassure such a patient about the nature of the mass or, most important, about the future occurrence of any lesion-related symptom?

Using our current knowledge and presenting what we considered the best available evidence, we performed a thorough analysis aimed at demonstrating that a wait-and-see approach is no longer acceptable in women of reproductive age with small submucous myomas, even if they are asymptomatic, especially if the lesion may be easily and safely removed in an outpatient setting during the diagnostic workup, with minimal patient discomfort.

DESTINY OF MYOMAS

It is (or should be) widely accepted that even a 0.5-cm mass invading the uterine cavity may exert a more detrimental effect than a 3-cm lesion that is located in the uterine serosa. We will try here to explain that. The destiny of a myoma primarily depends upon the combination of its location, size, shape, and number. This is mainly due to the special features of the uterine cavity. Its form is that of an isosceles triangle with incurved sides. The length of the cavity in a woman of reproductive age is about 3 cm, with the breadth between the fallopian tubes' os being 1.7 cm, and <1 cm at the center of the cavity. The volume of the uterine cavity in its physical condition (with the walls collapsed) shows an average value of 1 mL, whereas in pregnancy, it can exceed 10 L (19, 20).

A so-called intramural myoma is not a permanent pragmatic entity. Most myomas arise right from the inner myometrial fibers of the uterine walls and show an intramural growth. Thus, they can be undetectable at laparoscopy and/or hysteroscopy, at $\leq$1.5 cm in size. Therefore, a purely intramural myoma represents a temporary status, and its growth is dependent on the existing hormonal conditions of the woman. Once the myoma starts to grow inside the myometrium, it can displace the adjacent muscle fibers (by producing dislocation, compression, and stretching, but not rupture), moving toward either the mucosa or the serosa. In the latter case, it may become detectable either in the uterine or the abdominal cavity.

Purely subserosal myomas usually have a longer existence, because they may grow inside the abdomen and reach a considerable size (even 10 cm in diameter, or more) before becoming symptomatic.

Whether they are intramural and submucous or purely submucous, the destinies of myomas in a woman of reproductive age are different. Indeed, life spans and biological behaviors of such lesions are rather different. However, in both cases, the earlier that symptoms appear, the quicker will be recognition and treatment.

Because myomas usually are spherical in shape, it is easy to calculate by simple mathematics both their volumes and surfaces (Figs. 1 and 2), as follows:

$$\text{volume} = 4/3\ \ \pi^3 \text{ and surface} = 4\ \ \pi^2, \text{ where } \pi = 3.14$$

We would like to focus the reader's attention on the following two simple observations. First, linear growth in the diameter of a myoma corresponds to squared growth in its surface and to cubic growth in its volume. And second, a submucous myoma with a diameter of 2 cm, demonstrating a volume of 3.57 cm^3 and a surface of 11.34 cm^2, would exceed the volume and the surface of a normal uterine cavity.

Hormonal Influence on Myomas

As has been well established in the literature, myomas are estrogen-dependent tumors (21). In women of reproductive age, one could logically expect myomas to change in size. In this respect, and as soon as there exists for them the positive stimuli of estrogens, even small myomas (1 or 2 cm) have a high growth potential and may result in a lesion that is more difficult to treat. We are not aware of any evidence of differing growth potential according to the myoma's position (e.g., whether they are subserosal, intramural, or submucous). Likewise, there is no definitive answer that can be given a patient who wonders whether an asymptomatic myoma will ever cause symptoms in the future. Such an answer becomes even more uncertain when the question involves pregnancy-related complications, because hormonal variations become more evident in such a case.