

## **A Case Report of Laparotomic Myomectomy After the Use of GnRH Analogue in A Brazilian Woman**

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### **ABSTRACT**

Uterine leiomyoma is the most common genital benign tumor in the female population. It is estimated that about 20 to 40% of women will have leiomyoma during their reproductive stage. IBGE (Brazilian Institute of Geography and Statistics) estimated the Brazilian population to be over 200 million Brazilians, of which half are women and approximately 50% are of reproductive age; hence, by calculating the prevalence of leiomyomatosis, there would be just over 6 million

**women with symptomatic fibroids in Brazil that require clinical or surgical treatment.[1-3-4] Due to its presence during the reproductive period, it can be caused by infertility or recurrent spontaneous pregnancy loss. Hence, myomectomy can be necessary when the fibroid itself causes distortion of the endometrial cavity, or competes with the embryo for the same place, or when conservative treatment was ineffective. This report describes a case of myomectomy which was performed after treatment with goserelin acetate with considerable reduction of fibroids volume, probably facilitating surgical approach, decreasing the blood loss and the risk of hysterectomy conversion. In addition, other GnRH analogue benefits before surgery such as doctor's impression of decrease in size and better mobility of the tumor and patients feeling of decrease of the abdominal volume and the bleeding. This subjective approach can optimize the timing of surgery and establish the number of injections.**

**Keywords:** Uterine myomectomy, GnRH, myoma

## INTRODUCTION

Uterine leiomyoma is the most common benign tumor in the female genital tract and it originates from smooth muscle cells and increased extracellular matrix. Black women have more risk of having clinically relevant myomas, while other risk factors are obesity, nulliparity, early menarche and late menopause. There is a strong relation between sexual steroids (estrogen and progesterone) and the growth of myomas, thus being hormonal exposure a risk factor.

The prevalence in women of reproductive age is 20-40% and 40% in women above age of 40. About 20-50% of women over 40 years old will present anemia, dysmenorrhea, pelvic pain, constipation and changes in urinary habit because of the location or size of the tumor. Myomas can also cause obstetric complications like reduced fertility, miscarriage, anomalous placenta implantation, preterm labor and pos-partum hemorrhage [3-4].

The diagnosis can be suspected by physical examination by noticing an enlarged and irregular uterus during the vaginal exam, but it is confirmed through imaging. Imaging exams (MRI or ultrasound) allow a better understanding of the tumor, its localization, measurements and a more strategic surgical planning.

The main treatment for symptomatic patients was to surgically remove the uterus; however, new treatments are being studied, targeting the preservation of women's fertility and avoiding invasive procedures. These new treatments are the laparotomic, laparoscopic or endoscopic myomectomy, use of drugs and uterine artery embolization.

Drug options include GnRH analogues, which have shown good efficacy. This medication initially improves gonadotropin production and release, leading to down regulation, desensitization and hypogonadotropic hypogonadism status. This case report aims to discuss the associated use of the therapeutic options in uterine leiomyoma, specially laparotomic myomectomy and GnRH analogue.

## CASE REPORT

A nulligravid, caucasian, 34-year-old woman who wants to get pregnant was forwarded from primary care to the ambulatory surgical service in Leonor Mendes de Barros Maternity Hospital due to large volume uterine myomas, diagnosed through ultrasound. No comorbidities or previous surgeries were related. BMI 34,3 kg/m<sup>2</sup>.

Clinical complaints included abnormal uterine bleeding, abdominal pain and increasing abdominal volume in the last 2 years. The patient also presented iron deficiency anemia, treated with iron III-hydroxide saccharate tablets.

At clinical examination, the tumor extended from the pubic symphysis to the xiphoid process, size compatible with 32 weeks of pregnancy, with diffuse pain on abdominal palpation. To vaginal examination, an indurated mass was identified. There was no vaginal bleeding at first evaluation.

The MRI scan revealed more detailed results (images 1 and 2). One tumor located on the fundal wall, suggesting subserosal leiomyoma, extended to the epigastric area, measuring 28,4x13,4x22,9 cm. It also revealed other myomas: in the right wall (5,7x4,4 cm) and left wall (3,9x4,3 cm). Laboratory tests evidenced anemia (hemoglobin 9,3 and hematocrit 28,4%).

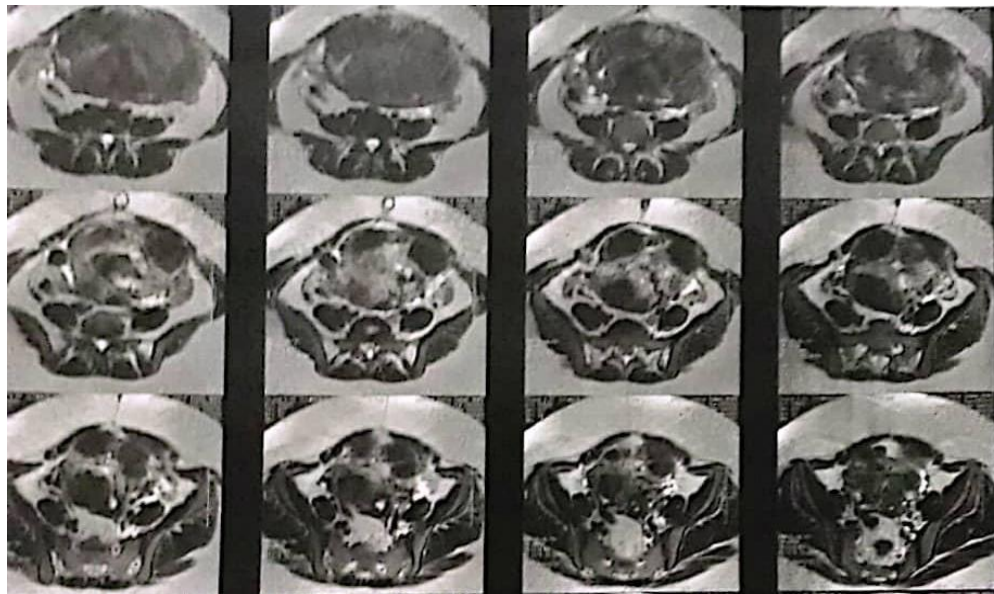


Image 1: axial view

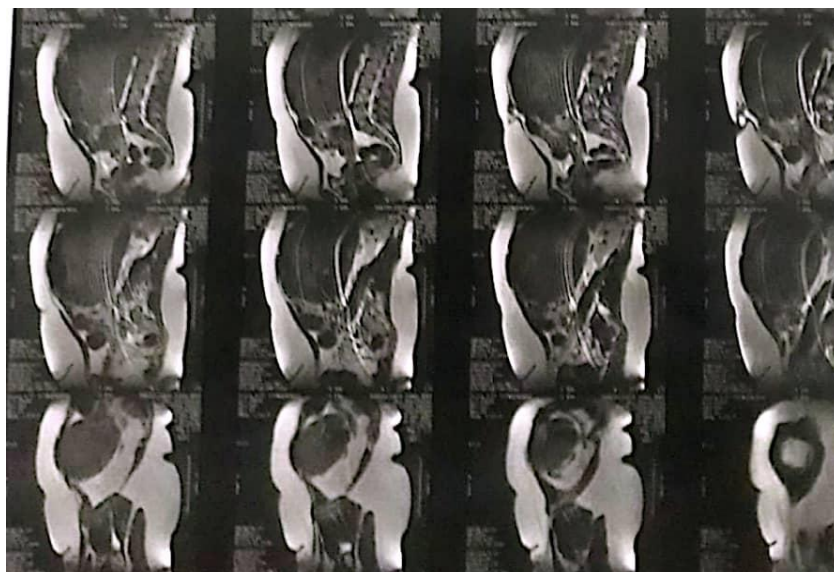


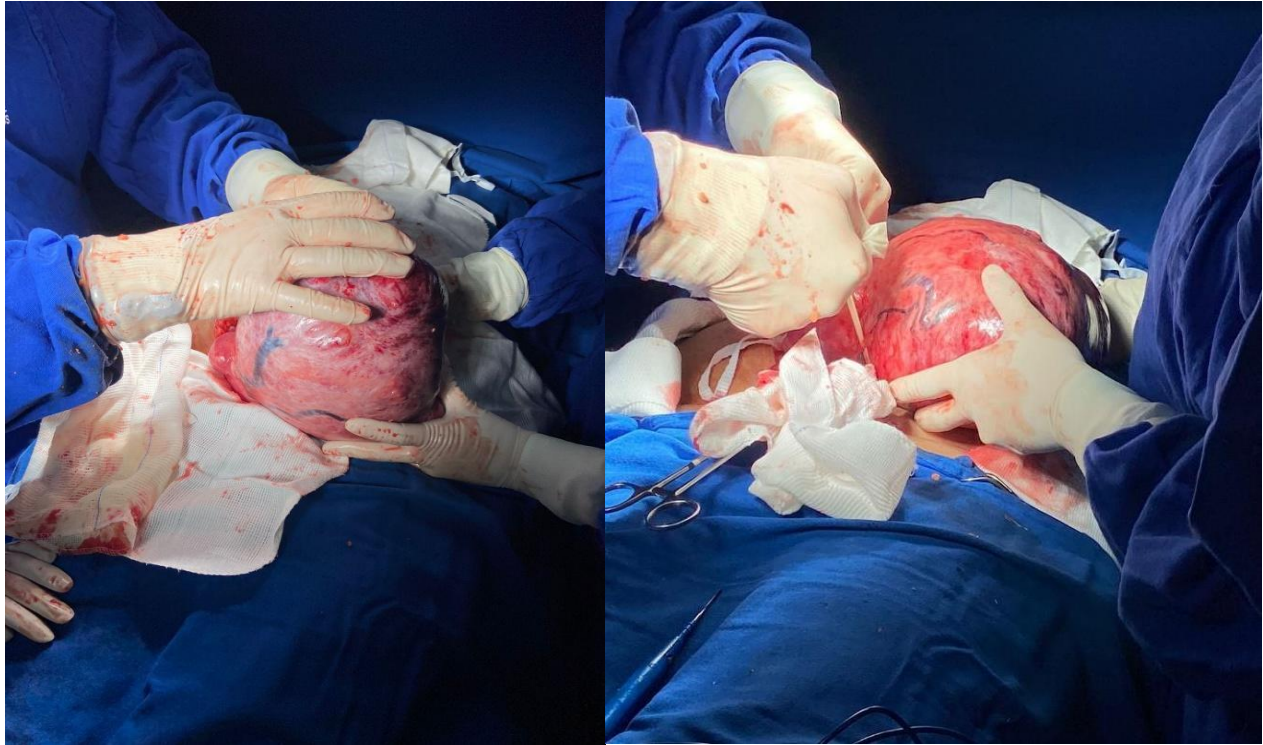
**Image 2: sagittal view**

Three doses of goserelin 10,8 mg were administered consecutively and the mass volume decreased significantly, as shown on the new ultrasound exam performed on February, 2022 (uterine volume 310 cm<sup>3</sup>, with three myometrial nodules - 41x39 mm, 24x29 mm and 37x35 mm). It was also observed an increase on hematimetric parameters (hemoglobin 13,5 and hematocrit 43,5%). Besides, new gynecologic examination was done, which evidenced a decrease of the tumor size (compatible with 30 weeks of pregnancy), as well as more mobility and lower pain in the palpation evaluation (abdominal and vaginal).

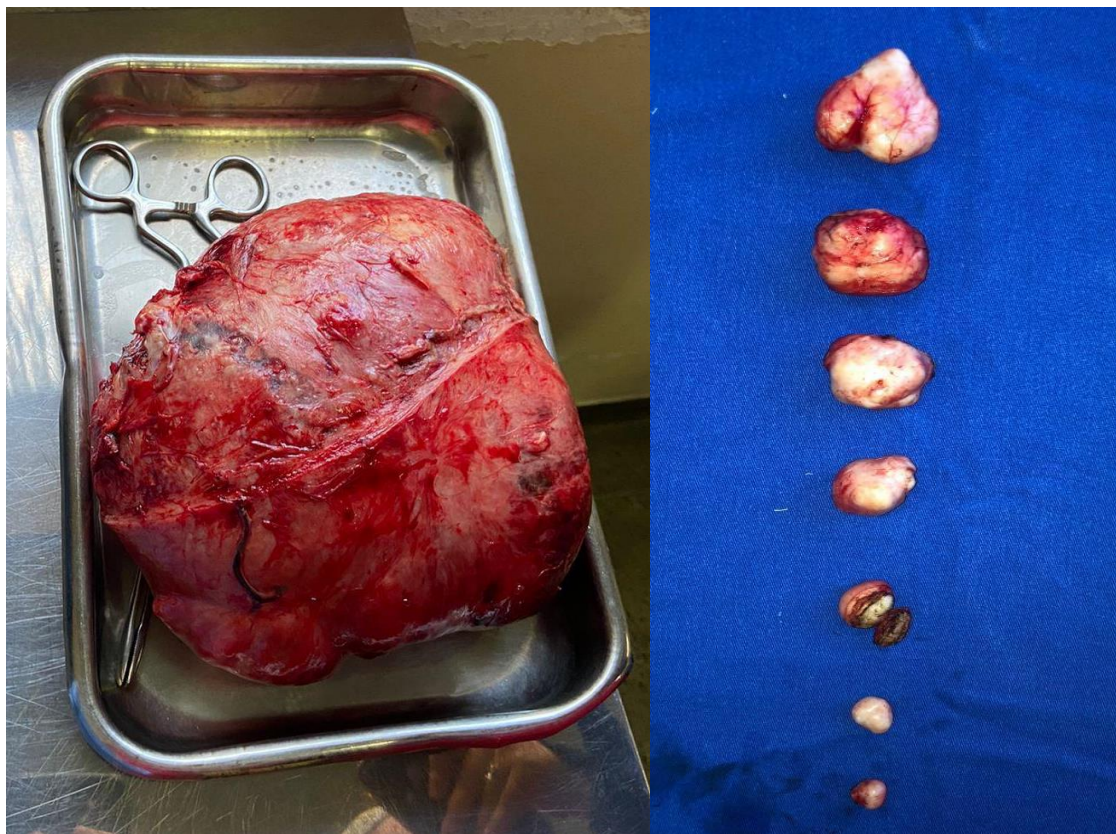
Alaparotomic myomectomy was performed successfully. The biggest myoma weighed 2414 g and the other 7 smaller nodules were resected (images 3 to 7). Rectal misoprostol 400 mcg was administered 1 hour before the surgery and, during the procedure, a tourniquet was applied around the uterus in order to temporarily block the uterine arteries. The anatomopathological result was 8 leiomyomas, non-malignant



**Image 3**



**Images 4 and 5**



**Images 6 and 7**

## DISCUSSION

### When to Perform Myomectomy After GnRh Analogue

**The adoption of a short pre-treatment with GnRH analogue** has been extensively investigated in a variety of situations. An evaluation of the advantages and disadvantages of GnRH analogue treatment before surgery convey that the surgery usually becomes easier and there is less blood loss [3-4]. The use of one or two goserelin quarterly depends on the evaluation of the decrease of symptoms and uterus volume and mobility of the uterus.

After 27-38 months of follow-up, the recurrence was not associated with pre-operative treatment or uterine volume, although it was increased when at least 4 myomas were resected [3].

The decrease of the uterine and myoma volume and intraoperative bleeding may be considered important advantages of the pre-treatment with GnRH analogue in laparoscopic myomectomy, especially on subserosal myoma (FIGO 5-7). Theoretically, the removal of intramural myoma may be compromised by damage in the cleavage plan and make the excision more difficult, but we did not observe it in this case. In addition, there is possibility of damage in the cleavage plan due to anatomical and blood supply before treatment, and the analogues must be used before the surgery considering its benefits, e.g., intraoperative bleeding decrease, even a modification of the myoma consistence [3].

Laparoscopic myomectomy, compared to the laparotomic technique, is related with an increase of the recurrence risk in 5 years due to the decrease of fibroid size or, when small, it may become imperceptible during surgery, exposing the patients to a greater risk of recurrence. One important advantage of the laparotomic technique is the intraoperative palpation and the possibility to remove more than one fibroid through the same uterus incision [3].

The prescription of GnRH analogue is recommended 3 to 6 months before surgery. During this treatment, the uterus and the fibroids become smaller and thus the surgery becomes easier. The second MRI exam after hormonal treatment is essential for pre-operative planning. However, the decision of time to perform surgery depends on clinical evaluation, considering the decrease of the tumor, better mobility of the mass and improvement of anemia [6].

The use of GnRH analogue in women who want to preserve fertility has great importance in patients with fibroids that deform endometrial cavity (0-2 and 2-5 fibroids), associated with anemia. The decrease of the myoma volume and the improvement of anemia must be checked after 3 months of the first dose.

### Amount of Doses

GnRH analogues are neuropeptides that regulate pituitary function in women and are considered effective clinical treatment for uterine leiomyoma. Initially, it increases the gonadotropin release, followed by down-regulation and desensitization, leading to a hypogonadotropic hypogonadism, mimetizing menopause [4].

Most women develop amenorrhea and a significant decrease of uterine volume (25 to 80%) during treatment, with best effect in 12 weeks. There can be climacteric symptoms related to the use of GnRH analogues, such as bone mass loss and lipidic disorders [4].

The isolated GnRH analogue treatment should not exceed 6 months, due to risk of developing osteoporosis. Patients with contraindication to surgical treatment, under clinical treatment to uterine leiomyoma, should be evaluated every 6 months. In case of need to use the GnRH analogue for over a year, the patient should be evaluated by an specialized service in gynecology. Usually, after menopause, there is a natural decrease of hormones and the treatment is no longer needed [4].

Goserelin dosage forms are 3,6 mg (administered subcutaneously into the anterior abdominal wall monthly) or 10,8 mg (administered the same way, every 3 months). Most studies are favorable to treatment with goserelin with application of 10,8 mg as a single dose, with more positive results. Comparative studies evaluating different goserelin therapeutic regimen show favorable results to 10,8 mg as a single dose (54% uterine volume decrease against 43% uterine volume decrease when using monthly doses) [4]. The timing of surgery depends of many factors, e.g volume decrease observed in imaging exams, improvement of anaemia, better mobility of the mass, physicians' and patients' perception of abdominal volume decrease.

### **Anaemia Improvement: When to Perform Surgery**

Many observational studies have shown an association between anemia and morbidity; however, it is not clear if anemia treatment will decrease mortality. Although these studies suggest severe anemia is related to a negative outcome, data from randomized studies have shown that aggressive treatments do not improve outcome. It was demonstrated that, long term, a restrictive transfusional strategy leads to less transfusions and it does not improve greater complications related to anemia [2]. Based on recent studies, there is a tendency to adopt a restrictive strategy with hemoglobin threshold of 7 to 8 g/dl to most clinical and surgical patients with hemodynamic stability. These values are safe for most patients and tend to reduce unnecessary transfusions [2].

Patients with symptomatic anemia (hemoglobin levels < 10 g/dl) should receive blood transfusion to improve hemodynamic stability and symptoms of myocardial ischemia. When considering asymptomatic patients, transfusion is considered to maintain hemoglobin level > 8 g/dl [2].

### **How Much Does the Size of The Myoma Decrease?**

A recent Cochrane review observed that treatment using GnRH analogue can decrease uterus volume and the size of the isolated myoma, when compared to patients without treatment [3]. Parsanezhad et al have demonstrated that the use of GnRH analogue can reduce uterine volume up to 33,2% to ultrasound evaluation [9]. Ichigo et al showed in a study that GnRH analogue use can reduce up to 60% of the uterine volume to MRI evaluation [9-11], suggesting that GnRH analogues are recommended to patients that need a preoperative preparation to decrease surgical time and blood loss, to reduce the need of bigger skin incisions or for vaginal approach [5-8-10].

### **Physician and Patients Perception**

Physicians must compare clinically by examination 3 months after the use of the analogue and decide if the second dose will be necessary. This includes a decrease of volume and a better mobility of the uterus.

In addition, patients' sensation of decreased abdominal volume and pain must be considered.

### CONCLUSION

The use of GnRH analogues must be considered in women who desire to get pregnant. Anatomical changes may or may not occur in the cleavage plan, but the benefits of the use of these drugs probably exceed their harm. The timing of myomectomy depends on the response of each woman, after the first or second quarterly injection.

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