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Laparoscopic Myomectomy and Traditional Open Laparotomy as Surgical Treatment for Uterine Myoma

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Abstract

Uterine fibroids (also known as leiomyomas or myomas) are common clonal neoplasms of the uterus. Fibroids have both smooth muscle and fibroblast components, in addition to a substantial amount of fibrous extracellular matrix, which all contribute to the pathogenetic process. Fibroids are extremely heterogeneous in their pathophysiology, size, location and clinical symptomatology. They are also a part of a range of disease in which some variants have facets of malignant behaviour but overall are benign. Risk for fibroids is associated with race; black women have a higher risk of developing fibroids earlier in life than their white counterparts and also develop more-severe forms of the disease. The majority of fibroids are asymptomatic and require no intervention or further investigations. For symptomatic fibroids such as those causing menstrual abnormalities (e.g. heavy, irregular, and prolonged uterine bleeding), iron defficiency anemia, or bulk symptoms (e.g., pelvic pressure/pain, obstructive symptoms), hysterectomy is a definitive solution. However, it is not the preferred solution for women who wish to preserve fertility and/or their uterus. The selected treatment should be directed towards an improvement in symptomatology and quality of life. The cost of the therapy to the health care system and to women with fibroids must be interpreted in the context of the cost of untreated disease conditions and the cost of ongoing or repeat investigative or treatment modalities.

Keywords: Myomectomy, Uterine Myoma, Laparoscopic.

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1. Introduction

Uterine fibroids or leiomyoma are the most common benign tumor affecting women. Fibroids originate from uterine smooth muscle cells (myometrium) whose growth is primarily dependent on levels of circulating estrogen. Further information regarding the pathogenesis of fibroids is poorly understood. Fibroids can either present as an asymptomatic incidental finding on imaging, or symptomatically [1]. Common symptoms include abnormal uterine bleeding, pelvic pain, disruption of surrounding pelvic structures (bowel and bladder), and back pain. Uterine fibroids typically seen in three significant locations: subserosal (outside the uterus), intramural (inside myometrium), and sub mucosal (Inside the uterine cavity). They can further be broken down to pedunculated or not [2]. Fibroids are classically diagnosed by physical exam and ultrasound imaging, which carries a high sensitivity for this pathology. Fibroids continue to be leading indication for hysterectomy. This pathology places a financial burden on health care costs worldwide [3]. The standard treatment for symptomatic uterine fibroids has always been surgical, either hysterectomy or, in women who wish to preserve their fertility, the more conservative procedure of myomectomy. Fibroids represent one of most frequent indications for major surgery in pre-menopausal women and as such, they constitute a major public health cost. Myomectomy can be carried out via hysteroscopy, laparoscopy, or classically as an abdominal procedure [4].

- ***Hysteroscopic myomectomy***

Submucosal fibroids (FIGO 0 - 1) can often be removed by hysteroscopic myomectomy. This can be performed under general or regional analgesia, and in some centers, it is performed as an office procedure, depending on type and size of the fibroid(s). Although it is widely applied and its effect on bleeding complaints is well-known, there is surprisingly little randomized evidence to support this [5]. The most common perioperative complications associated with hysteroscopic myomectomy are hemorrhage, uterine perforation, cervical laceration, and fluid overload by intravasation of distension fluid. Delayed complications from hysteroscopic surgery may include intrauterine adhesions and infertility. The average reported incidence is around 10% at second-look hysteroscopy, but it seems to be higher in certain conditions, for instance in the resection of multiple, opposing fibroids [6]. Submucous fibroids or intramural fibroids with

a sub mucosal component may decrease clinical pregnancy and implantation rates, and removal of sub mucous fibroids can lead to a significant increase in pregnancy rate and a decrease in miscarriage rate [5].

Laparoscopic myomectomy

Laparoscopic myomectomy has long been the minimally invasive therapy of choice for symptomatic uterine fibroids before the introduction of UAE and other minimally invasive therapies. It is still widely used for symptomatic subserosal fibroids and can even be used for intramural fibroids, depending on the position of the fibroid and the skills of the surgeon [7]. Blood loss is an important clinical problem during laparoscopic myomectomy. Many reviews found significant reductions in blood loss with misoprostol, vasopressin, bupivacaine and epinephrine, tranexamic acid, peri-cervical tourniquet, and gelatin–thrombin matrix. There was no evidence of an effect on blood loss with oxytocin [4]. It's a longer procedure in the operating room, but it carries fewer risks than abdominal myomectomy. There is less bleeding during surgery, so patients are less likely to need a blood transfusion. It also causes less trauma to the abdominal wall, which lowers the risk of adhesions. Patients recover faster and with less pain [7]. Similar to the abdominal approach, robotic-assisted and laparoscopic procedures require uterine incisions that weaken the myometrium. The incisions of the myometrium seen with the abdominal, laparoscopic and robotic approaches to myomectomy can increase the risk of uterine rupture during pregnancy and labor, so women who have had these procedures need C-sections during delivery [8].

Abdominal myomectomy

Several cohort studies compared perioperative morbidity between women who underwent abdominal myomectomy or abdominal hysterectomy. They reported no significant difference in overall morbidity between them. There was significantly lower prevalence of hemorrhage and performance of an unintended procedure in myomectomy group than in hysterectomy [9]. Abdominal myomectomy is a lengthier procedure but is associated with significantly less blood loss. The average hospital stay is significantly shorter in the myomectomy. Overall, no clinically significant difference in perioperative morbidity between myomectomy and hysterectomy was detected. Myomectomy may be considered a safe alternative to hysterectomy [4]. Abdominal myomectomy might improve reproductive outcomes in patients with myomas. The reproductive performance is particularly good when the patients are younger and have previous pregnancies prior to the surgery. Myomectomy is associated with lower miscarriage rate after pregnancy, compared to those prior to the surgery [9].

The detailed procedure steps include [10]:

- In the initial phase of the surgery, an abdominal incision is made across the abdomen. The incision made is of horizontal nature.
- After the incision has been carved, the top skin covering is pulled apart in order to uncover the abdominal muscles. To accomplish this, a retractor is used. After the skin is separated, the surgeon will be able to access your abdominal muscles.
- In the next stage, the plan is to access the uterus and cut out the fibroid. In order to accomplish that, another incision is made on the abdominal muscles which is vertical in nature. The surgeon goes via this incision and gets a better view at the uterus.
- After the uterus has been reached, along with the fibroids, the surgeon can now separate out the fibroids with ease. Forceps will be used to hold the fibroids and the uterus separately.
- In the next step, the tissue that is holding together the uterus and fibroid is removed with utmost care and the fibroid is removed. The tissue should be removed with extreme care so as to avoid any nerve damage.
- The last and the final step is the closure of incisions. This is done with the help of stitches. In the end, a sterile bandage is applied to the abdomen.

Hysterectomy

Hysterectomy is the definitive procedure and carries an outstandingly good outcome and guarantees complete cessation of periods with no risk of fibroid recurrence. Hysterectomy can be done via the vaginal, abdominal, or laparoscopic (total or laparoscopic-assisted vaginal) route. Each carries its own advantages and disadvantages [11]. The traditional surgical approach to hysterectomy involves a large abdominal incision, 2–5-day hospital stays, and significant requirements for postoperative analgesia. Laparoscopic techniques have many advantages over laparotomy, including reduced postoperative pain, shorter length of hospital stay, better cosmesis, and quicker resumption of regular activity [12]. Hysterectomy should be considered only when other treatment options have failed, are contraindicated, or are declined by the woman, there is a wish for amenorrhea, the woman (who has been fully informed) requests it, and the woman no longer wishes to retain her uterus and fertility [2]. Most importantly, hysterectomy carries some serious risks including damage to the bowel, bladder and/or ureter, hemorrhage requiring blood transfusion, return to theatre because of bleeding/wound dehiscence, pelvic abscess/infection, and venous thrombosis or pulmonary embolism [13].

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