REVIEW ARTICLE

Benefits and safety of myomectomy during cesarean section

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ABSTRACT

Uterine myoma is a tumor in the uterus that is generally benign. There are many types of uterine myomas. These tumors can grow on the outer wall of the uterus, on the uterine muscle, or it can also be on the inner wall of the uterus. The most frequent kind of uterine tumor is myoma. Uterine myoma mostly occurs in women over thirty years of age. Its prevalence ranges from 5.4% to 77%, with uterine fibroids accounting for up to 5% of pregnancies. The myomectomy procedure is an option for women who still want children but are concerned about the possibility of subsequent surgical intervention. The myomectomy cesarean section is indicated if there were complications related to the myoma in a previous pregnancy. It also avoids the possibility of repeat laparotomy for fibroid removal in the future. Myomectomy surgery should be planned based on fibroids' location, size, and quantity, using suitable imaging. Myomectomy cesarean section can be an option compared to cesarean section without myomectomy, especially if it is performed by experienced surgeons with proper hemostatic techniques and performed in tertiary-level health facilities. This article discusses the details of the benefits and safety of myomectomy during cesarean section so that it might be considered before performing this procedure.

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Highlights:

1. Myomectomy during cesarean section is a recommended and safe procedure.
2. This procedure benefits the patient because it avoids a second operation and anesthesia complications and is cost-saving.

INTRODUCTION

Myoma is the most common benign tumor of the reproductive organs, influencing 20-40% of reproductive-age women. This disease can result in significant illness and reduce the quality of life. Currently, there are many medical and non-invasive therapies. Still, data on long-term side effects and safety in obstetrics are insufficient; therefore, only short-term treatment outcome data are available. The most frequent benign tumor in women is uterine myoma. Its prevalence ranges from 5.4% to 77%, with uterine fibroids accounting for up to 5% of pregnancies.[1,2] Uterine myoma in pregnancy is a condition that can

cause problems because it can induce abortion, bleeding, premature labor, postpartum hemorrhage, and uterine compression in pregnant women caused by the increased size of myomas influenced by hormones in pregnancy, as well as complications related to degenerative changes.[3]

Medical therapy options, especially for short-term treatment, relieving clinical symptoms, and effective long-term treatment for reducing the volume of uterine myomas and massive bleeding, have not been found to date.[4] Also, there are few clinical trial studies on available medical treatment options.[5] Therefore, the risk of obtaining a myoma at the time of cesarean section has also increased. Some disadvantages of the technique during myomectomy cesarean section are the potential for postoperative bleeding, hysterectomy or postoperative morbidity after myomectomy cesarean section.[6]

More than a century ago, myomectomy cesarean section was first pronounced by Bonney. Several studies stated the presence of uterine hypotonia. Other contra-indications include congenital disabilities and coagulopathy diseases. Furthermore, myomectomy cesarean section should be avoided in several cases, for example, intramural, fundal, cornual, and posterior uterine wall myomas with higher surgical complications.[7] However, current research reported that myomectomy during cesarean section is a recommended treatment in some cases.[8] As a result, this study aims to explore the benefit and safety of myomectomy during cesarean delivery.

UTERINE MYOMA

Uterine myoma is a tumor in the uterus that is generally benign. There are many types of uterine myomas. These tumors can grow on the uterus's outer wall, the muscle of the uterine, or it can also be on the uterus's inner wall.[8] The most prevalent kind of uterine tumor is myoma. Uterine myoma mostly occurs in women over thirty years of age.[9] Uterine myomas are monoclonal benign tumors originating from smooth muscle cells in the uterus. These tumors are well-defined and composed of cells of smooth muscle tissue, fibroid connective tissue, and collagen. Uterine myomas are solid, relatively round, have a rubbery consistency and smooth walls, and are covered with a capsule on the outside.[10]

The cause of myoma is not known with certainty. Uterine myomas originate from normal muscle cells, immature muscles in the myometrium or embryonic cells in the uterine blood vessel walls. Tumor cell growth starts from multiple cells that are very small and spread in the myometrium.[11] These cells will grow slowly but progressively over the years under the estrogen hormone. Growth hormone levels decrease during pregnancy, but a hormone with a similar structure and biological activity, named human placenta lactogen (HPL), is seen in this period and may result in the quick development of uterine myomas in pregnancy synergistically with the estrogen hormone.[12]

Epidemiological data globally shows that around 70% of cases of uterine myoma occur at the age of 50 years, of which around 30-40% of cases are in perimenopausal women, and 20-25% of cases in reproductive-age women.[13] Uterine myoma can occur in all races and are most common in blacks (18%).[14]

Management of uterine myomas or benign tumors of the uterine muscle includes observation, medication, and surgery. Observations are made if the patient has no symptoms, and it is hoped that during menopause, the tumor volume will shrink. Medical administration aims to reduce bleeding and tumor volume as a pre-operative procedure. Gonadotropin-releasing hormone (GnRH) agonists are one medication used to treat uterine fibroids. The mechanism of action is based on the downregulation of GnRH receptors, which reduces FSH and LH production and estrogen production. GnRH analogs can also be used preoperatively for the thirty-four months before surgery.[15] Types of surgery include hysterectomy and myomectomy. The surgery choice is adjusted to the patient's condition and wishes.[16]

Hysterectomy is recommended for uterine myoma patients over 40 years old and does not plan to have any more children. Myomectomy is recommended for patients who desire fertility-sparing.[15] According to The Society of Obstetricians and Gynecologists of Canada (SOGC), myomectomy surgery is a choice for women who still want to maintain reproductive function but has the potential for further intervention. Myomectomy surgery should be planned based on the location, size, and quantity of fibroids, as determined by adequate imaging.[17]

UTERINE MYOMA DURING PREGNANCY

Uterine fibroids during pregnancy are expected to become more common in the future years. The frequency of uterine myomas in pregnancy ranges from 0.1% to 12.5% and varies by ethnic group. Most women with uterine fibroids have no symptoms, but 10-30% have difficulties throughout pregnancy, labor, and the puerperium.[18]

Although steroid hormones are most likely involved in the genesis and proliferation of uterine myomas during

pregnancy, additional hormones and proteins released by the fetal, placental, and maternal compartments during early pregnancy may have a synergistic influence. Myomas can develop quickly during pregnancy because of the stimulation of hormonal and increased blood flow.[18]

Pregnancy loss, intrauterine growth retardation (IUGR), intrauterine fetal death (IUFD), early birth, placental abruption, and postpartum hemorrhage are all related to uterine myoma. Myomas with large sizes (>5 cm) are related to an increased risk of preterm birth and postpartum hemorrhage. The primary debate nowadays is whether or not to undertake myomectomy on big asymptomatic myomas. Although myomectomy does not affect obstetrical or newborn outcomes, eliminating big uterine myomas that induce uterine cavity, distortion can boost pregnancy rates and decrease miscarriage rates. According to research, patients should be educated about the likelihood of increasing negative obstetric outcomes and should be monitored often during pregnancy.[18,19]

MYOMECTOMY CESAREAN SECTION

Myomectomy cesarean section is a procedure for removing uterine myomas when a cesarean section is performed. Although the number of myomectomy procedures performed during cesarean sections is growing, there is still widespread worry about the potential morbidity and death associated with uncontrolled bleeding.[16]

Myomectomy is best performed during the first and second trimesters of pregnancy. Myomectomy in pregnancy increases the incidence of cesarean section. Myomectomy cesarean section can be performed safely and cost-effectively because it avoids the possibility of repeat laparotomy for fibroid removal in the future. Myomectomy cesarean section may be performed if fibroids are found that make it difficult to suture the uterine incision. A myomectomy is required to ease delivery when fibroids are more than six centimeters in diameter or subserosal fibroids are visible. If an enlarged myoma is found, a myoma with a size >5 cm in the area around the lower uterine segment, or torsion of a pedunculated myoma occurs, an antenatal myomectomy may be necessary.[20]

The indication for myomectomy cesarean section, according to SOGC, is if there are complications related to the myoma in a previous pregnancy. The incision in the uterus required for cesarean section myomectomy is commonly more minor than that required for interval myomectomy because the uterus raises more rapidly than myomas in pregnancy. Due to puerperal contraction and involution, the uterus is more equipped to regulate bleeding after delivery. In addition, suture placement is easier in the gravid uterus because it increases elasticity and reduces fragility. Uterine muscle fibers become hypertrophic in the gravid uterus and contract more forcefully against the blood vasculatures. The administration of uterotonics in the case of myomectomy cesarean section can further enhance these contractions. The potential long-term benefits of cesarean section myomectomy are symptom and quality-of-life enhancement, removal of the risks and costs of repeat surgery and anesthesia. Furthermore, myomectomy cesarean section procedures prevent patients from complications due to myoma during puerperium and future pregnancies.[7,17]

According to previous research, myomectomy during cesarean section is a safe and practical surgery in nearly all situations. This procedure was reported to be successful in all cases in this study. There were no statistically significant differences between the groups in preoperative hemoglobin, postoperative hemoglobin, mean hemoglobin, or length of hospital stay. Both myomectomy groups had significantly longer operation times. Only two (15.38%) patients in the group with myomectomy greater than 5 cm required a blood transfusion. Cesarean myomectomy surgery, when performed by qualified surgeons, has no harmful effects other than increasing the duration of the procedure and can be conducted safely.[21]

Ramya et al. reported cesarean myomectomy to be a safe and practical technique in expert hands. It has the advantage of avoiding a second surgery in certain people. The majority of patients were discharged on the fifth day of surgery. There were no cases of postpartum pyrexia or surgical site infections.[11] The cesarean myomectomy procedure is also reported to be safe and effective under an expert physician and in the tertiary healthcare centers of the selected patients. The myomectomy procedure only added fifteen minutes to the surgery time and one day to the length of hospital stay, but there was no significant postoperative morbidity. Cesarean myomectomy was also proven to be a safe and successful surgery in patients with big myomas, with the researchers concluding that the size of the myoma had no more impact on the higher risks of complications.[22]

Another study showed that myomectomy cesarean section did not increase complications or transfusion rates, indicating safe management. Between the patients who underwent cesarean section with myomectomy and without myomectomy, the reduction in hemoglobin level, rate of complications, and several transfusions

were similar. The duration of the procedure, however, was greater in the group that had a cesarean myomectomy.[23] Other studies also reported a similar result that myomectomy during cesarean section is safe and does not enhance peripartum maternal morbidities. It has been discovered that although it may lengthen the operational time and postoperative hospital stay period, it may have several benefits, such as the avoidance of further operation for fibroid removal. There is no substantial variance between the myomectomy group and the control in the amount of blood transfusion and postoperative hemoglobin level in this study.[24]

In the systematic review and meta-analysis studies in 2020, it was stated that a total of 6545 women who underwent cesarean section myomectomy and classified into 4702 (71.85%) women in the myomectomy cesarean section group and 1843 (28.15%) women in the cesarean section group. This study found that myomectomy cesarean section was insignificant in increasing operating time, bleeding volume, and hospitalization, specifically with large and multiple myomas. Myomectomy cesarean section can be an option compared to cesarean section without myomectomy, especially if it is performed by experienced surgeons with proper hemostatic techniques and performed in tertiary-level health facilities.[25]

Cesarean myomectomy has several benefits, such as a smaller incision on the serosal surface, ease of performance during cesarean delivery, simple suture insertion, and two surgeries in one. In addition, cesarean myomectomy improved the patient's quality of life. However, they found that cesarean myomectomy's benefit and risk ratio should be reconsidered, and more study is required.[26] There are also absolute contraindications for myomectomy cesarean section procedures. Those are multiple myomas, cornual myomas, posterior myomas, asymptomatic myomas and other conditions that can cause bleeding in the future.[20] In the future, it is necessary to conduct a larger study of the safety and benefits of this procedure. In addition, it is also necessary to standardize the implementation of this procedure.

CONCLUSION

From the studies reviewed, myomectomy during cesarean delivery is considered a safe and recommended management. This procedure benefits the patient because it avoids second operation and anesthesia complications and is cost-saving. However, myomectomy cesarean section should be avoided in some cases, and the successful outcome depends on the patient selection, pre-operative planning, and postoperative care. In the future, it is necessary to standardize the implementation of myomectomy during the cesarean section procedure, including the appropriate selection criteria, surgical techniques, and hemostatic options to enhance the procedure's overall result.

DISCLOSURES

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Conflict of interest

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Author contribution

The author was involved in all aspects of this study, including planning, article search, drafting, and manuscript approval for publication.

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