



Resection of Degenerated Leiomyoma by Laparotomy during Second Trimester of Pregnancy with Favorable Outcome: A Case Report and Review of Literature Regarding Leiomyomas during Pregnancy

**Theodoros Felekis^{1*}, Christodoulos Akrivis¹, Ioannis Korkontzelos¹
and Panagiotis Tsirkas¹**

¹*Department of Obstetrics and Gynecology, G. Hatzikosta General State Hospital,
Makrygianni Avenue, 45445 Ioannina, Greece.*

Authors' contributions

This work was carried out in collaboration between all authors. Author CA was in charge of the medical treatment of the patient and authors IK, PT and TF continued the follow-up of the patient. Author TF wrote the first draft of the manuscript and managed the literature searches. All authors read and approved the final manuscript.

Case Study

Received 23rd May 2014
Accepted 25th July 2014
Published 8th August 2014

ABSTRACT

Aims: We present a case of degenerated leiomyoma in pregnancy causing pain that deteriorated with conservative management and was successfully treated with myomectomy.

Presentation of Case: A 37-year-old woman with a known asymptomatic subserosal leiomyoma was admitted to the obstetrics clinic of our hospital at the gestational age of 18+3 weeks due to gradually worsening constant right quadrant lower abdominal pain of acute onset. Clinical examination, laboratory investigation and abdominal ultrasonography led to the conclusion that the pain was due to the degeneration of the leiomyoma. The initial conservative approach was not effective so the subserous leiomyoma was resected by laparotomy. The pregnancy progressed normally until the delivery of a healthy neonate at 37+5 weeks gestational age by cesarean section due to the prior myomectomy. The

*Corresponding author: E-mail: dr.felek@hotmail.com;

pathologic examination revealed a nodular 6,5x5x3cm tumor with histological features of leiomyoma with regional hydropic and focal hyaline degeneration.

Discussion: Prevalence of leiomyomas during pregnancy is reported as 0, 3-3, 9% according to epidemiologic studies. They usually remain asymptomatic but they can also cause complications in 10% of all cases. Management of uterine leiomyomas in pregnancy is based on conservative treatment, but there are cases where surgical intervention is necessary.

Conclusion: We present data from relative literature, showing that myomectomy during pregnancy can under circumstances be an inevitable treatment choice to this medical condition, in favour of the best outcome for the ongoing gestation.

Keywords: Leiomyomas; degeneration; pregnancy; laparotomy.

1. INTRODUCTION

Uterine leiomyomas (myomas or fibroids) are the most common benign tumors of the female urogenital system [1]. 20-40% of women aged 30-50 years old present with leiomyomas—more common women of Afro-Caribbean descent [1-3]. Histologically, leiomyomas contain more estrogen and progesterone receptors than myometrium and thus are considered to be hormonal dependent. This is demonstrated by the reduction of their dimensions in menopause and increase of their size in pregnancy [1,4]. During pregnancy, leiomyomas undergo the normal process of hyperplasia and hypertrophy like the rest of the myometrium, as a response to the increasing circulating levels of estrogen and progesterone. Their size increases during the first trimester while their dimensions generally remain the same during the second and third trimester [1,5]. Prevalence of leiomyomas during pregnancy is reported as 0,3-3,9% according to epidemiologic studies [5,6]. This relatively low percentage despite their high prevalence among women of reproductive age seems to be associated with the high infertility and low pregnancy rates in women with leiomyomas [7]. For these reasons, the diagnosis of uterine leiomyoma in pregnancy needs careful evaluation in order to be treated appropriately. Close ultrasound monitoring of leiomyomas during the gestation and conservative treatment of complications is the general rule. However, when necessary, myomectomy can be performed under circumstances in carefully selected patients. There is a lot of controversy in pregnancy around this subject. We present the case of laparotomic resection of a degenerated leiomyoma in a second trimester pregnancy with favorable outcome of the ongoing gestation.

2. PRESENTATION OF CASE

A 37-year-old woman (gravida 1, para 0) with a known asymptomatic subserosal leiomyoma discovered as an incidental finding in routine ultrasound evaluation three years before the present pregnancy, was admitted to the obstetrics clinic of our hospital at the gestational age of 18+3 weeks due to gradually worsening constant right quadrant lower abdominal pain of acute onset 24 hours before. Her past medical history was unremarkable, except for appendectomy 10 years before. On admission the woman was afebrile, without any gastrointestinal symptoms. On clinical examination she appeared unwell, in pain and had normal vital signs, normal bowel sounds, normal findings from respiratory and circulatory system and diffuse abdominal tenderness, especially on lower right quadrant. On gynecological examination there was no abnormal vaginal discharge, vaginal bleeding or cervical dilation. The laboratory investigation revealed a white blood cell count of 13.900/uL.

(83% neutrophils) and an hematocrit of 39%. Platelets count, prothrombin (PT) and activated partial thromboplastin time (aPTT) and biochemical markers were within normal limits while C-reactive protein (CRP) was negative and urinalysis was normal. Abdominal ultrasonography demonstrated a large heterogeneous oval mass of 5.4cm maximum dimension, without blood supply, sited on the right anterolateral wall of the uterus (Fig. 1). No other abnormal findings were revealed in the detailed ultrasound examination of the abdomen. The intrauterine gestation was viable. The diagnosis of degenerated leiomyoma was established based on these findings, the clinical situation and exclusion of other causes of abdominal pain in pregnancy. The initial conservative approach with analgesics–non steroidal anti-inflammatory drugs and finally pethidine-and antibiotics was not effective and the clinical situation of the patient was worse 60 hours later. So, the resection of the subserous leiomyoma by laparotomy was decided after 70 hours of hospitalization. Laparotomy was preferred to laparoscopy. Laparotomy performed under general endotracheal anesthesia using a Pfannenstiel incision confirmed a large subserous leiomyoma showing benign degenerative changes while uterine adnexa were normal. The fibroid was carefully removed with the use of bipolar tissue surgical diathermy, with special attention to hemostasis and an intra-abdominal drain was placed for one day. The total content of the drainage was 60ml. There were no complications during the surgery and no blood transfusions were required. The patient received ritodrine for four days postoperatively and the postoperative course was uneventful. The pregnancy progressed normally until the delivery of a healthy 3190g birthweight neonate with no structural anomaly at 37+5 weeks gestational age by cesarean section due to the prior myomectomy. The pathologic examination revealed a nodular 6,5x5x3cm tumor with histological features of leiomyoma with regional hydropic and focal hyaline degeneration.



Fig. 1. Ultrasound and doppler examination shows a large heterogeneous oval mass of 5.4cm maximum dimension, without blood supply, sited on the right anterolateral wall of the uterus

3. DISCUSSION

The prevalence of myoma during pregnancy is 0, 3-3,9% [5,6]. However most myomas remain asymptomatic during pregnancy and only 10% [5,7] -40% [8,9] of women with leiomyoma according to several series suffer any kind of complications. Only 2.6% of them need surgical intervention [5]. Generally, leiomyomas are localized in the uterine body (95%) [10] and are categorized into four types: subserosal, intramural, submucosal and intraligamentous. Most leiomyomas in pregnancy are subserosal or intramural. Submucosal fibroids are usually removed prior to pregnancy since they tend to be symptomatic and are associated with infertility [5,11]. Regular ultrasonography performed during pregnancy allows the evaluation of these lesions and early detection of any possible complications. A series of recent studies has shown that the majority (49–60%) of leiomyomas show no significant change in size during pregnancy [8,9]. In other studies enlargement of leiomyomas of all sizes is found to occur-mainly during the first trimester [1,5,8]. In our case, although the patient was aware of the occurrence of the uterine fibroid for three years, there was no medical record of the size prior to the pregnancy. Despite the benign course of these leiomyomas, they can rarely cause complications. The rate of fetal loss is higher in patients with multiple fibroids [12]. There is also a substantial risk of spontaneous abortion, preterm labour, placenta abruption, prolonged rupture of membranes (PROM), fetal malpresentation, labour dystocia, cesarean delivery and uterine atonia leading to postpartum hemorrhage and hysterectomy [13]—caused mainly by intramural myomas that may interfere with normal transmission of contractions [1]. There has also been reported a high incidence of fetal anomalies caused by large submucosal myomas that deform uterine cavity such as malpresentation, dolichocephaly, torticollis, limb malformations [1] etc. Sarcomatous change is rare, presenting with rapid abnormal growth and should be referred urgently [2]. Abdominal pain in a pregnant patient with uterine leiomyoma can be attributed to degenerative changes of the leiomyoma [14]. Degeneration of leiomyoma is categorized as hyaline, cystic/ hydropic, red or calcific [15]. The most common type of degeneration is hyaline, accounting for approximately 60% of all degenerated leiomyomas complicating pregnancy [14,16]. Cystic (hydropic) degeneration occurs in approximately 4% of leiomyomas and typically occurs after hyaline degeneration [16]. Hydropic change may be present in a focal form in up to 50% of leiomyomas [8]. A common complication is the syndrome of painful myoma which is due to red or carneous degeneration and occurs in 5-8% of myomas during pregnancy [5,13]. The degeneration may have occurred as a result of hormonal changes, or may have been due to mechanical reasons such as venous obstruction, hemorrhagic infarction and extensive necrosis and is usually attributed to rapid growth associated with pregnancy [15]. Growth may also lead to torsion of a pedunculated myoma [15]. This medical condition may present with localized pain and tenderness of acute onset, fever, and an elevated white blood cell count. The histologic report of the leiomyoma in our case revealed hyaline degeneration with hydropic changes of this type. Ultrasound scan is the imaging tool of choice for evaluation of clinically suspected maternal abdominal or pelvic abnormalities [8]. The sonographic appearance of the majority of leiomyomas is that of a solid hypoechoic mass. Hyalinization, calcification and other degenerative changes manifest as non specific areas on ultrasound. Diffuse hydropic changes in ultrasonography can manifest as cystic areas [8]. In cases where ultrasound is not diagnostic, magnetic resonance imaging (MRI) can provide more information and contribute to the diagnosis. The Safety Committee of the Society for MRI has concluded that prenatal MRI is indicated when other non-ionizing methods are inadequate or when the MRI examinations will provide critical information that would otherwise require the use of ionizing radiation [17]. Pain caused by degeneration of a leiomyoma is treated conservatively with medication like analgesics-mainly nonsteroidal anti-inflammatory drugs and even opioids if necessary-

intravenous fluids and antibiotics. It has been reported that if symptoms persist, then surgical intervention must be considered [5,18]. Indications for myomectomy during pregnancy include severe abdominal pain due to torsion of subserous pedunculated myomas or degeneration not responding to medical treatment after 72 hours, and a rapid increase in myoma size causing abdominal discomfort and obstruction to other abdominal/pelvic organs. Surgery is usually performed between the 15th and 19th week of gestation [5]. Controversy persists about myomectomy being performed during pregnancy since it is not easy to perform, hemostasis is difficult and abortion rates are not trivial. Laparoscopy or laparotomy can be performed, based on the surgeon's experience and the clinical situation of the patient. Although long-term effects of laparoscopic surgery during pregnancy on the fetus have not been well studied [19], laparoscopy has been increasingly used in surgical procedures in pregnant women and according to literature no increase in adverse outcomes has been reported [20,21]. Myoma excision with bipolar energy as used in our case is associated with less blood loss, less postoperative complications and less recurrence of myoma [22]. There are two basic complications of myomectomy during pregnancy: abortion and hemorrhage. The abortion rates after myomectomy in pregnancy in literature varies from 7, 7% [5] to 18% [6] in contrast with 25-35% in 1957 [23]. There is also no evidence to contraindicate myomectomy during a cesarean section if it is necessary [11]. The mean blood loss from myomectomy at the time of caesarean section is 260ml (200-700ml), and 5% of patients who undergoing myomectomy were transfused [24]. Finally, in the absence of data, a routine myomectomy after delivery is not indicated if a complication attributable to the leiomyoma occurred during pregnancy and subsequently the patient became asymptomatic again [11].

4. CONCLUSION

In conclusion, surgical removal of leiomyomas during pregnancy should be performed in selected cases and when symptoms persist- like in the described case report, which presents a problem that every obstetrician can encounter in common practice.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Vitale SG, Tropea A, Rossetti D, Carnelli M, Cianci A. Management of uterine leiomyomas in pregnancy: Review of literature. *Updates Surg.* 2013;65(3):179-82.
2. King R, Overton C. Management of fibroids should be tailored to the patient. *Practitioner.* 2011;255(1738):19-23;2-3.

3. Baird DD, Dunson DB, Hill MC, Cousins D, Schectman JM. High cumulative incidence of uterine leiomyoma in black and white women: Ultrasound evidence. *American Journal of Obstetrics & Gynecology*. 2003;188(1):100-107.
4. Gupta S, Jose J, Manyonda I. Clinical presentation of fibroids. *Best Pract Res Clin Obstet Gynaecol*. 2008;22(4):615-26.
5. Lolis DE, Kalantaridou SN, Makrydimas G, Sotiriadis A, Navrozoglou I, Zikopoulos K, et al. Successful myomectomy during pregnancy. *Human Reproduction*. 2003;18(8):1699-1702.
6. Glavind K, Palvio DHB, Lauritsen JG. Uterine myoma in pregnancy. *Acta Obstet Gynecol Scand*. 1990;69:617-619.
7. Katz VL, Dotters DJ, Droegemueller W. Complications of uterine leiomyomas in pregnancy. *Obstet. Gynecol*. 1989;73, 593-596.
8. Heffernan E, Kobel M, Spielmann A. Hydropic leiomyoma of the uterus presenting in pregnancy: imaging features. *The British Journal of Radiology*. 2009;82:164–167.
9. Ouyang DW, Economy KE, Norwitz ER. Obstetric complications of fibroids. *Obstet Gynecol Clin N Am*. 2006;33:153–69.
10. Ballweg ML. The endometriosis sourcebook. The Endometriosis Association. Contemporary Books; 1995.
11. Marret H, et al. Therapeutic management of uterine fibroid tumors: Updated French guidelines. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 2012;165:156–164.
12. Benson CB, Chow JS, Chang-Lee W, Hill JA, Doubilet PM. Outcome of pregnancies in women with uterine leiomyomas identified by sonography in the first trimester. *J. Clin. Ultrasound*. 2001;29:261-264.
13. Phelan JP. Myomas and pregnancy. *Obstet. Gynecol. Clin. North Am*. 1995;22:801-805.
14. Wittich AC, Salminen ER, Yancey MK, Markenson GR. Myomectomy during early pregnancy. *Mil Med*. 2000;165(2):162-4.
15. Han SC, Kim MD. Degeneration of leiomyoma in patients referred for uterine fibroid embolization: Incidence, imaging features and clinical characteristics. *Yonsei Med J*. 2013;54(1):215–219.
16. Ueda H, Togashi K, Konishi I, Kataoka ML, Koyama T, Fujiwara T, Kobayashi H, Fujii S, Konishi J. Unusual appearances of uterine leiomyomas: MR imaging findings and their histopathologic backgrounds. *Radiographics*. 1999;19(No):131-45.
17. Shellock FG, Kanal E. Policies, guidelines, and recommendations for MR imaging safety and patient management. SMRI safety Committee. *J Magn Reson Imaging*. 1991;1:97–101.
18. Burton C, Grimes D, Charles M. Surgical management of leiomyomata during pregnancy. *Obstet Gynecol*. 1989;74(5):707-9.
19. Jackson H, Granger S, Price R, et al. Diagnosis and laparoscopic treatment of surgical diseases during pregnancy: An evidence-based review. *Surg Endosc*. 2008;22(9):1917–1927.
20. Reedy MB, Källén B, Kuehl TJ. Laparoscopy during pregnancy: A study of five fetal outcome parameters with use of the Swedish Health Registry. *Am J Obstet Gynecol*, 1997;177(3):673–679.
21. Al-Fozan H, Tulandi T. Safety and risks of laparoscopy in pregnancy. *Curr Opin Obstet Gynecol*. 2002;14(4):375–379.
22. Liberis V, Tsikouras P, Ammari A, Zografou C, Valentina D, Kafetzis D, Maroulis G. Assessment of the feasibility of bipolar coagulation use to reduce hemorrhage in myomectomy performed by minilaparotomy. *Minim Invasive Ther Allied Technol*. 2010;19(2):75-82.

23. Davids AM. Myomectomy in the relief of infertility and sterility and in pregnancy. Technique and results. Surg Clin North Am. 1957;37:563-77.
24. Mu YL, Wang S, Hao J, Shi M, Yelian FD, Wang XT. Successful pregnancies with uterine leiomyomas and myomectomy at the time of caesarean section. Postgrad Med J. 2011;87(1031):601-4.

© 2014 Felekis et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history.php?iid=625&id=38&aid=5687>