

Guidelines for the Management of Uterine Leiomyoma

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1 INTRODUCTION

Uterine leiomyoma, or uterine fibroid, is the commonest female pelvic tumour. Majority of this benign smooth muscle tumour are asymptomatic and do not require treatment. However, there are more than 3,000 hysterectomies and 1,800 myomectomies being done for uterine leiomyoma annually in Hong Kong. [1]

This guideline aims at providing evidence-based recommendations to help clinicians in the management of this common gynaecological problem. The levels of evidence and grading of recommendation will be according to the RCOG scheme. [2]

2 PREVALENCE

Valid population-based estimates of uterine leiomyoma prevalence are lacking. It is estimated that 20-40% of women of reproductive age have uterine leiomyoma and presentation occurs most commonly towards the end of the reproductive life. [3, 4] Leiomyoma may occur singly but more often are multiple. Pigmented races (i.e. African, Caribbean, Filipino etc.) are more likely to have this condition at a younger age. [5] Other risk factors include family history, low parity, subfertility and obesity. [6-8]

3 CLINICAL FEATURES

More than 50% of women with uterine leiomyoma are asymptomatic and the leiomyomas are discovered at routine pelvic examination or during pregnancy. [9] The site and size of the leiomyoma have major influence on the type and severity of

symptom expressed. Common symptoms of leiomyoma include menorrhagia, pelvic congestion and pain, pressure symptoms, or self-discovery of a mass in the abdomen. [10, 11] In general, the deeper the leiomyoma is situated (submucosal type), the more likely will menstrual symptoms occur while the superficial ones (subserosal type) of significant size may cause pressure symptoms.

The association of leiomyoma with heavy menstrual bleeding is thought to be due to an increase in endometrial surface area. Both submucosal and intramural leiomyomas have the potential to cause this. Other possible explanations include an increase in local prostaglandins production and the preferential compression on the venous return from the endometrium.

Pressure symptoms from leiomyoma may be expressed as urinary frequency or constipation depending on whether the subserosal leiomyoma arises from the anterior or posterior wall of the uterus. Symptoms may be more obvious premenstrually when the uterus is engorged.

Occasionally acute urinary retention may occur due to compression of the urethra by the leiomyomatous uterus. Acute pelvic pain may occur from degenerative change and rarely from torsion of a pedunculated leiomyoma.

4 EVALUATION

The accurate assessment of the number, size and location of leiomyomas is important in matching the patient's symptoms as well as in deciding on the appropriate treatment.

There is no single correct approach to evaluate uterine leiomyomas. Various options are available which differ considerably in cost and inconvenience to the woman.

- 4.1 Clinical assessment by bimanual digital examination remains the basis in detecting the condition. However the diagnosis may be missed if the leiomyomas are small and the woman is obese or is tensed up during the examination. Pelvic examination cannot detect submucosal leiomyoma.
- 4.2 Pelvic ultrasound, either trans-abdominal or trans-vaginal, is accurate in making the diagnosis. [12] Subserosal leiomyomas big enough to be felt abdominally are better viewed with the trans-abdominal approach while submucosal leiomyomas are better viewed trans-vaginally. Trans-vaginal sonohysterography (involving intrauterine injection of saline during vaginal scanning) further enhances diagnostic accuracy in the latter. [13]
- 4.3 Diagnostic hysteroscopy, which can be performed under local or no anaesthesia, is a useful procedure in differentiating submucosal leiomyoma from endometrial polyp and can assess the suitability of hysteroscopic resection of the leiomyoma. [14]
- 4.4 MRI provides a better image in delineating the exact location and characteristic of the leiomyomas, but the additional information provided may not be necessary for clinical management except when focused ultrasound therapy is contemplated. However, it should be considered for women in whom the nature of the pelvic mass is uncertain after pelvic ultrasound. It can also help to differentiate leiomyoma from adenomyoma, especially when myomectomy is contemplated. [15, 16]
- 4.5 There is insufficient evidence to recommend CT scanning in leiomyoma assessment.

5 EXPECTANT MANAGEMENT

Expectant management is a reasonable approach in most asymptomatic women. (C IV)

Information concerning the natural history of leiomyoma is deficient. In general, leiomyoma is expected to grow slowly during premenopausal years and reduce in size after menopause. [17] Expectant management is therefore a reasonable approach in asymptomatic women as surgical intervention carries a definitive morbidity. The American College of Obstetricians & Gynecologists stated that expectant management in an asymptomatic patient should be the norm. [18] (reaffirmed 2006) However, there is no published data directly comparing expectant management with other modes of surgical intervention. [19]

6 MEDICAL TREATMENT

There is insufficient data to recommend any medical treatment for the long term management of uterine leiomyomas. (C)

Various medical treatments were evaluated for the management of leiomyomas including GnRH agonists (with or without add-back therapy), progestins, mifepristone, selective estrogen receptor modulators (SERMs) and selective progesterone receptor modulator. [20] Most studies had short follow-up duration with the longest one being only 2 years. [21] There is therefore insufficient data to recommend any specific medical treatment for a prolonged period.

GnRH agonist may be used for a short period to facilitate hysterectomy or myomectomy. (A Ia)

7 SURGICAL MANAGEMENT OF UTERINE LEIOMYOMAS

Hysterectomy and myomectomy remain the main surgical procedures for uterine leiomyoma. (C)

The decision depends on the woman's age, her desire to retain reproductive potential,

her desire to retain the uterus and the position and number of the leiomyomas. There are no randomized controlled studies comparing the morbidity associated with hysterectomy and myomectomy. It is generally believed that myomectomy is associated with greater operative blood loss, longer surgical time and higher risk of post-operative haemorrhage than hysterectomy. [22]

Abdominal myomectomy requires a longer procedure than abdominal hysterectomy although there is no difference in the morbidity rate between the two. [23] There is no study comparing the peri-operative morbidity between laparoscopic myomectomy and hysterectomy.

Pre-operative GnRH agonists prior to either hysterectomy or myomectomy has been shown to improve pre- and post-operative haemoglobin level. Uterine volume and size, as well as leiomyoma volume are all reduced, as are pelvic symptoms. Hysterectomy is rendered easier, with reduced operating time, and a greater proportion can be done vaginally rather than abdominally. Blood loss and rate of vertical incision are reduced for both myomectomy and hysterectomy. Duration of hospital stay is also reduced. There is no data regarding the change in post-operative fertility. The disadvantages of GnRH agonists include cost, menopausal symptoms and osteoporosis. An increased risk of leiomyoma recurrence has been reported but the Cochrane Review found equivocal evidence for this. [24] Myomectomy might be more difficult after preoperative GnRH agonists because of the destruction of tissue planes. Its use is associated with longer operating time and higher risk of conversion in laparoscopic myomectomy.

7.1 Hysterectomy

Hysterectomy is the definitive treatment for symptomatic leiomyomas and is associated with improved quality of life and a high level of both short term and long term satisfaction. [25-27] Indication for hysterectomy is symptomatic leiomyoma in a woman who has no desire for future pregnancy and/or preserving her uterus. [25] For

asymptomatic leiomyoma, the only indication is rapid enlargement, especially after menopause, though the risk of leiomyosarcoma is still very rare (0.27%). [28, 29]

Hysterectomy should not be recommended as a prophylactic treatment to avoid operative morbidity associated with future growth. (C)

There is no increase in peri-operative complications in women undergoing abdominal hysterectomy for uterus greater than 12 weeks' size compared with smaller uterus. [30, 31] However, risk of blood transfusion increases with increasing uterine weight in abdominal hysterectomy, especially when the uterine weight is over 500 gm. [32] Increasing uterine size may limit the possibility of laparoscopic approach but it is uncertain whether the peri-operative risk is increased or not.

The effect of hysterectomy on the ovarian function remains controversial and is most likely dependent on the patient's age at the time of surgery. A recent prospective cohort study measuring serum FSH in women after hysterectomy and a control group for 5 years showed that hysterectomised women reached menopause 3.7 years (95% CI 1.5-6.0) earlier with preservation of both ovaries and 4.4 years (95% CI 0.6-7.9) earlier if only one ovary is removed.

Current evidence consistently suggests that the majority of women have unchanged or improved sexual function 1-2 years after hysterectomy. [26, 27] However, the long term effects remain largely unknown.

There is no evidence to support that supra-cervical hysterectomy performed by laparotomy is associated with improved sexual function or lower rates of incontinence and constipation. The operating time is shorter; intra-operative blood loss and fever are reduced. However these women who underwent a supra-cervical

hysterectomy are more likely to experience ongoing cyclical bleeding up to a year after surgery when compared to those who underwent a total hysterectomy. [33] There are no comparative studies regarding to the laparoscopic approach.

The current evidence based on the literature suggests that vaginal hysterectomy should be performed in preference to abdominal hysterectomy where possible because of the improved outcomes. Where vaginal hysterectomy is not possible, laparoscopic hysterectomy may avoid the need for abdominal hysterectomy. However the length of the surgery increases as the extent of the surgery performed laparoscopically increases, particularly when the uterine arteries are divided laparoscopically. Furthermore, laparoscopic approaches require greater surgical expertise. [34]

Most (92.3%) of the vaginal hysterectomies in Hong Kong were performed for genital prolapse. [1] Although performing vaginal hysterectomy for uterine fibroids in the absence of genital prolapse is feasible, a recent retrospective review reported significant bleeding related complications including intra-operative conversion (2%), re-operation (3%), transfusion risk (9.6%) and vault haematoma (11.7%). [35] Vaginal hysterectomy for enlarged uterus in the absence of genital prolapse requires significant surgical expertise and may not achieve the same result as reported in the literature.

The surgical approach to hysterectomy should be discussed with the patient in light of the relative benefits and hazards, taking into consideration of the expertise and experience of the surgeon. [34] (C)

7.2 Myomectomy

Myomectomy is appropriate for women who wish to preserve their uterus or child bearing potential.

Resolution of symptoms may not be complete. The rate of resolution of menorrhagia is close to 90% while that of pelvic pain is only 67%. [36] Risk of hysterectomy during myomectomy is low (< 1%) even when the uterine size is substantial. [37, 38]

Following myomectomy, there is a risk of persistence and recurrence of leiomyomas. Risk of recurrence increases when there is more than one leiomyoma and with the use of pre-operative GnRH agonists. For women with a single leiomyoma, the risk of recurrent tumour is 27% and 11% required hysterectomy. For women with multiple fibroids, 59% experienced recurrent tumours and 26% required myomectomy, hysterectomy or both procedures. [39]

Adhesions formation after myomectomy is common; however subsequent pregnancy rate does not seem to be affected. In patients with subfertility and leiomyomas, about 50% conceive after myomectomy and there is a significant reduction in early and mid trimester miscarriage rates. [40]

Although elective Caesarean delivery is generally recommended for women who become pregnant after myomectomy (especially when the uterine cavity has been entered), data to support this recommendation are limited. [18]

The surgical approach is dependent on the location of the leiomyomas and, more importantly, the surgical expertise. There has been no evidence supporting the superiority of one treatment over the other with regards to the risk of uterine rupture in subsequent pregnancy. [41].

When compared with laparotomy, laparoscopic approach appears to take longer but is associated with less operative morbidity and a quicker recovery. [42] There were no difference in the rates of conception, miscarriage, preterm birth and Caesarean section. The incidence of

uterine rupture in subsequent pregnancy was also comparable. Initially studies suggested that the risk of leiomyoma recurrence may be higher after laparoscopic myomectomy (33% at 27 months) than abdominal myomectomy (15% at 5 years). However, a more recent randomized study revealed no difference in recurrence rate as detected by transvaginal sonography 40 months after myomectomy, be it by laparoscopy (27%) or laparotomy (23%). [43]

Modified techniques have been described for laparoscopic myomectomy, combining laparoscopic approach with mini-laparotomy (laparoscopic assisted myomectomy) and vaginal culdotomy (laparoscopic assisted vaginal myomectomy) in order to allow enucleation and multi-layer closure of uterine defect using conventional open technique. However, these techniques have their own limitation and restriction and have not been shown to be superior to standard laparoscopic myomectomy.

Vaginal myomectomy is technically feasible in well-selected patients and in good surgical hands. The technique is more preferable for posterior wall leiomyomas. It is performed through a posterior or anterior colpotomy to remove the leiomyomas without morcellation and repair the uterine incisions using conventional sutures in multiple layers. Conversion rate is high and reported to be 9.3 to 15.7%. [44, 45] Adequate vaginal access, good uterine motility and moderate uterine size are essential prerequisites. [46] Randomized trials are required to establish the place of vaginal myomectomy in comparison with the open and laparoscopic approach, especially with regard to postoperative adhesion formation, risk of recurrence and blood loss in comparable cases.

Hysteroscopic myomectomy is currently the standard minimally invasive procedure for treating submucosal leiomyomas, with

abnormal uterine bleeding and reproductive issues being the most common indications. [47] (C)

Menorrhagia is controlled successfully in 70 to 99% after hysteroscopic myomectomy. Success rate declines as the follow-up period increases. Complete resection of the intramural part of the leiomyoma improves the success rate and reduces the chance of subsequent recurrence. [48, 49] In women who have completed their family, concomitant endometrial ablation is associated with better long-term results and an amenorrhoeic rate up to 95.5%. [50, 51]

The effects of hysteroscopic myomectomy on subfertility remain unclear. Reported post-surgical pregnancy rate varies from 16.7 to 76.6% with a mean of 45%. However, most of the studies were retrospective and the quality of the evidence was poor. Reported data show complication ranging from 0.3% to 28% with fluid overload and uterine perforation being the most common. Post-operative intrauterine adhesions occurred in 1 to 13%. [48] Uterine rupture during pregnancy after hysteroscopic myomectomy is rare and only 2 cases have been reported in the literature. [52, 53]

The conventional resectoscope uses unipolar electrode and requires non-electrolytic solution to distend the uterine cavity. There is risk of excessive fluid absorption, resulting in hyponatraemia, pulmonary oedema, encephalopathy and brain oedema. The new resectoscope using bipolar energy and saline solution as distension medium reduces the risk of fluid overload and energy spread during the operation.

8 UTERINE ARTERY EMBOLIZATION

Uterine artery embolization (UAE) for symptomatic leiomyomas is an acceptable alternative treatment, especially for women who want to preserve their uterus, who do

not want surgery or are poor surgical candidates. (A)

UAE is performed mostly by interventional radiologists. Both uterine arteries are selectively catheterized and blocked by injecting small particles to induce uterine ischaemia, resulting in necrosis and shrinkage of the leiomyomas. Its aim is to relieve leiomyoma related symptoms and to prevent further growth of the leiomyomas.

The technical success rate (successful embolization of both uterine arteries) is 98% to 100%. In a large prospective study involving 555 patients, menorrhagia improves in 83%, dysmenorrhoea improves in 77% and urinary frequency improves in 86% [54-57]. *(Ib)*

The mean fibroid volume reduction is 40-75% at 6 months; the mean uterine volume reduction is 26-59% in first 6 months [58]

Nearly all women experience some degree of acute pain, often requiring hospitalization and analgesics. About 40% of women experience post-embolization syndrome, including pain, malaise and low grade fever.

The FIBROID registry, with 3160 patients enrolled, reported a major in-hospital complication rate of 0.6 %; the post-discharge major complication rate was 4.1 %. The rate of minor complications was 2.1 % during the admission and 22 % within 30 days of discharge. The most common adverse event after discharge was inadequate pain relief requiring additional hospital treatment (2.4%). Only 0.1% of patients required hysterectomy within 30 days. [59] Procedure related mortality is extremely uncommon. [60]

Comparing UAE and hysterectomy, there is no significant difference in the major complication rate ($p=0.08$). [61] Studies do not give a conclusive direction in the incidence of minor complications and rate of readmission. [61-63] *(Ib)* Women undergoing UAE had shorter hospital stay and resumed routine activities earlier than those undergoing abdominal hysterectomy. [61-64] *(Ib)* There is no study comparing UAE with laparoscopic hysterectomy in

terms of procedure related morbidity and patient recovery.

Comparing UAE and myomectomy, there is no significant difference in symptom relief (87.5% in UAE vs 93.3% in myomectomy) and major complications. [65] *(Ib)* Hospital stay and recovery period were both significantly shorter after UAE. However, the subsequent myomectomy rate was significantly higher and earlier after UAE (32.8% and 12.4 months) than myomectomy (3.2% and 22.5 months). [66]

There are conflicting results about the relationship between the size and location of leiomyomas and the outcome of UAE [54-57, 59, 67-72]. In a study looking at the complications and outcomes of 101 patients treated with UAE, neither the success rate nor the probability of complications was affected by the primary leiomyoma size, location, or total number of leiomyomas. [73] UAE is generally avoided in patient with pedunculated subsersosal leiomyoma because of the risk of torsion, ischaemic necrosis and sloughing off of the tumour requiring surgical intervention. However, small series have suggested otherwise. [74, 75]

Most studies reported high level of patient satisfaction after UAE, from 87 to 97%. In the EMMY trial, there was no difference between UAE and hysterectomy regarding health related quality of life outcomes at 24-month follow-up. [76] *(Ib)*

The Fibroid Registry for Outcomes Data (FIBROID) for Uterine Embolization at 3-year estimated the risk of subsequent hysterectomy, myomectomy, or repeat uterine artery embolization being 9.79%, 2.82%, and 1.83% respectively. [77] In a 5-year follow up of 182 patients treated with UAE, a 20% re-operation rate (hysterectomy 13.7%, myomectomy 4.4% and repeat embolization 1.6%) and failure to control symptoms in 25% were reported. [78]

One major concern is the effect of UAE on ovarian function. The majority of patients did not have any short-term change in basal FSH level. However around 15% of women over age 45 had a significant elevation in FSH

levels compared with their pre-UAE testing. The etiology of the ovarian failure is unclear, but may be related to embolic material occluding ovarian arterial supply or simply coincident with natural menopause. [79, 80] (Ib)

UAE should not be offered to asymptomatic women or to women whose only fibroid-related complaint is subfertility. [81, 82] (C)

Although most pregnancies following UAE have good outcomes, myomectomy should be recommended as the treatment of choice over UAE in most patients desiring future fertility. [66, 79, 80, 83-88]. (A Ib)

Pregnancy complications have been reported after UAE for leiomyomas. Certain pregnancy complications, most importantly preterm delivery, spontaneous miscarriage, abnormal placentation and postpartum hemorrhage, appear to be uniformly increased following UAE compared to myomectomy.

9 LAPAROSCOPIC UTERINE ARTERY OCCLUSION

Because of the significant risk of surgical complications and lack of long-term results, laparoscopic occlusion of uterine arteries alone should not be considered as a treatment option for uterine leiomyoma. (C)

Rather than embolizing uterine arteries transcutaneously, laparoscopic uterine artery occlusion has been proposed as an alternative. Uterine artery is occluded laparoscopically at the level of the internal iliac artery and the collateral arteries between ovaries and uterus (in the utero-ovarian ligament) are coagulated.

In a randomized trial comparing laparoscopic occlusion of uterine arteries with uterine artery embolization involving 29 patients in each group, there was no significant difference in the percentage reduction in Pictorial Bleeding Assessment Chart 6-months after treatment (53% after laparoscopy and 52% after embolization). Significantly more pain and nausea was seen after embolization than after laparoscopy. Clinical failure was seen in 2 (7%) women

after embolization as compared to 6 (21%) women after laparoscopy, though it did not reach statistical significance. Fewer patients in the embolization group complained of heavy bleeding after 6 months (4% compared with 21%, $p = 0.44$). Post-procedure complications were seen only after laparoscopy, with pulmonary embolism occurred in one patient, temporary affection of the obturator nerve in 2 patients and symptoms of claudication of the right buttock in one patient. [89]

10 TEMPORARY TRANS-VAGINAL UTERINE ARTERY OCCLUSION

Temporary trans-vaginal uterine artery occlusion is a newly developed technique in treating uterine leiomyomas and is still under experiment. There is not enough data to support its clinical use yet. (C)

A doppler-guided clamp is designed for temporary bilateral transvaginal occlusion of uterine arteries. The theory is destruction of leiomyomas through a mechanism of transient uterine ischaemia. [90]

A total of 75 women were reported and there was no significant post-operative pain. Uterine and leiomyoma volume was reduced by 40-50% and symptoms improved by 80-90% at 6 months. There were 2 cases of hydronephrosis requiring temporary stenting. [91-95]

Potential advantages of this technique over UAE are no radiation exposure, no risk of non-targeted embolization, and the absence of significant post-procedure pain in most patients. However long-term outcome is still unknown and may not be as favourable as UAE since the degree of tissue ischaemia is significantly less.

11 MR GUIDED FOCUSED ULTRASOUND

MR guided Focused Ultrasound (MRgFUS) is a relatively new, non-invasive means to treat symptomatic uterine leiomyomas. (B)

MRgFUS for treatment of leiomyomas uses high frequency ultrasound beam to induce focal thermocoagulation at the leiomyomas.

MR imaging is used to define the target, to control and monitor the ablation. A transducer controls and delivers the focused ultrasound beam through the anterior abdominal wall under real time MR imaging guidance without the need for an incision. After the procedure, contrast MR is used to assess the ratio of non-perfused volume. [96] Ultrasound alone has also been used for monitoring during the treatment in one centre. [97, 98]

The results of the clinical trials have shown that the treatment is safe; is effective at 6, 12, and 24 months afterward; and is highly acceptable to patients. [99-104]. There is improvement in the symptom severity score even when a relatively small volume is treated. The clinical effectiveness is significantly greater if the post-treatment non-perfused volume of the leiomyoma is increased. [103-105]. (IIa)

During MRgFUS, the patient should remain still. Correct skin coupling and no extensive scarring in the lower abdomen are necessary. While MRgFUS can be used to treat intramural, subsersosal and submucosal leiomyomas, it may not be used to treat pedunculated leiomyoma and those that are adjacent to sensitive organs such as bowel or bladder. According to the treatment protocol used in USA, there is also a limitation in the allowed treatment volume of leiomyoma, maximum treatment time and distance of edge of sonication from the serosal surface. The treatment volume is less in the submucosal leiomyomas. [104]. The response is less favorable in leiomyoma with high pre-treatment T2 signal in MR, which may represent vascularization, fluid-rich tissues or degeneration. [106] (III)

12 RADIOFREQUENCY ABLATION

The routine use of radiofrequency ablation to treat uterine leiomyomas cannot be recommended at this stage. (C)

Radiofrequency ablation of leiomyomas is performed under ultrasound guidance, either percutaneously or with laparoscopy. [107-111] Early results in a limited number of

patients showed that it is feasible and safe. There is significant improvement in the symptoms severity score and quality of life assessment. (III) The mean volume shrinkage of the leiomyoma at 6 months is 56.5-77.9%. There is no major complication reported.

13 MYOLYSIS

Myolysis should be considered experimental and should not be offered as a routine clinical service. (C)

Placement of probes directly into leiomyomas to destroy the tissue using different energy sources have been reported. These include heat (unipolar and bipolar), cold coagulation (cryomyolysis), laser and radiofrequency. Despite reports of apparent success, these techniques have not enjoyed widespread popularity and use. The procedure is associated with marked degree of adhesion formation between the leiomyoma and small bowels. [112] The effect of myolysis on subsequent pregnancy and the risk of uterine rupture are largely unknown. [113] It is not recommended for women who desire future fertility.

14 SPECIAL CONSIDERATIONS

14.1 Uterine leiomyomas and subfertility

Removal of leiomyomas that distort the uterine cavity may be indicated in subfertile women, where no other factors have been identified, and may be in women about to undergo in vitro fertilization (IVF) treatment. (C)

The impact of leiomyomas on fertility is controversial. As a sole factor, leiomyomas probably account for only 2% to 3% of subfertility cases. The impression that leiomyomas cause subfertility arises from a number of case series where removal of leiomyomas resulted in improved conception rates. A comprehensive review of the prospective studies on fertility outcomes after abdominal myomectomy showed a combined pregnancy rate of 57%. [114] The overall conception rate was 61% when

no other subfertility factors were identified. A recent meta-analysis found that only women whose leiomyomas had an intra-cavitary component had lower pregnancy rates and implantation rates than controls and were the most appropriate candidates for surgical intervention. [115] No randomized controlled trials of myomectomy for subfertility have been published so far.

Various theories have been put forward to explain the potential fertility lowering effect of leiomyomas like dysfunctional uterine contractility, focal endometrial vascular disturbance, endometrial inflammation, secretion of vasoactive substances, or enhanced endometrial androgen environment. The published evidence suggests that submucosal leiomyomas are more likely to cause subfertility. Leiomyomas larger than 5 cm, and those close to the cervix or tubal ostia, are also thought to be more problematic.

Studies of women undergoing IVF cycles have found that submucosal or intramural leiomyomas, which distort the uterine cavity, have a negative impact on implantation and pregnancy rates. Other studies have shown an impact of leiomyomas on IVF implantation rates, even when there was no distortion of the uterine cavity. One local study, however, showed that leiomyomas not distorting endometrial lining do not adversely affect the implantation and pregnancy rate from IVF embryo transfer. [116]

14.2 Uterine leiomyomas and pregnancy

Concern of possible complications related to leiomyomas in pregnancy is not an indication for myomectomy, except in women who have experienced a previous pregnancy with complications related to these leiomyomas. (C III)

Women who have leiomyomas detected in pregnancy may require additional

fetal surveillance when the placenta is implanted over or in close proximity to the leiomyoma. (C III)

It is estimated that uterine leiomyomas are detected in 4% to 5% of women undergoing antenatal ultrasound scans. An increasing number of women are delaying pregnancy until their late thirties, which is also the most likely time for leiomyomas to develop. About 50% of leiomyomas remain the same size or become smaller during pregnancy. [117] There is conflicting evidence in the literature regarding the impact of leiomyomas on pregnancy. The risk and type of complication appear to be related to the size, number, and location of the leiomyomas. If the placenta implants over or is in close proximity to a leiomyoma there may be an increased risk of miscarriage, preterm labour, placental abruption, pre-labour rupture of membranes, or intrauterine growth restriction. [118] Leiomyomas located in the lower uterine segment may increase the likelihood of fetal malpresentation, Caesarean section and postpartum hemorrhage.

However a large retrospective review of ultrasound scans and medical records of 12,708 pregnant women concluded that mode of delivery, fetal growth, and risk of pre-labour rupture of membranes were generally unaffected by the presence of leiomyomas. The review did find a statistically significant increase in threatened preterm labour and treatment with intravenous tocolytics. Large leiomyomas, defined as greater than 20 cm in diameter, were more likely to cause placental abruption and abdominal pain. [119]

Myomectomy should not be performed in pregnant women because of the increased risk of uncontrolled bleeding. The exception may be symptomatic subserosal leiomyomas with a pedicle less than 5 cm thick, in which case the risk of major haemorrhage is minimal.

15 CONCLUSION

The plethora of management options for uterine leiomyoma is ever-expanding. However many of them, though appear promising, are relatively new techniques which have not stood the test of time. There is remarkably lack of high quality evidence in support of the effectiveness of interventions. Even century-old procedures like hysterectomy and myomectomy, in various approaches, cannot be meaningfully compared. Further research into the management options of uterine leiomyoma is desperately needed. Before that is available management of women with symptomatic uterine leiomyoma should be individualized. Best available evidence should be presented to help them to make informed choices.

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This guideline was produced by the Hong Kong College of Obstetricians and Gynaecologists as an educational aid and reference for obstetricians and gynaecologists practicing in Hong Kong. The guideline does not define a standard of care, nor is it intended to dictate an exclusive course of management. It presents recognized clinical methods and techniques for consideration by practitioners for incorporation into their practice. It is acknowledged that clinical management may vary and must always be responsive to the need of individual patients, resources, and limitations unique to the institution or type of practice. Particular attention is drawn to areas of clinical uncertainty where further research may be indicated.