



Pregnancy after complex myomectomy: neither age of patient nor size, number or location of fibroids should be a barrier

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DECLARATIONS

Within reason the patient's age and the number, site or size of fibroids should not be an impediment to uterus-preserving surgery with a view to future conception.

Competing interests

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Ethical approval

Written informed consent was obtained from the patient or next of kin

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Reviewer

Stanley Okolo

Case report 1

This 45-year-old woman was a tertiary referral to our Myoma Service with a diagnosis of symptomatic fibroids confirmed by ultrasound and MRI. Clinically, the uterine mass was equivalent to 28–30 weeks gestation. In view of her age and massive fibroids with menorrhagia, she had previously been offered a hysterectomy but wished to preserve fertility potential and requested a myomectomy. Her preoperative haemoglobin was 11.7 g/dl. After appropriate counseling and consent, we performed an open myomectomy (as described below) in June 2009. We removed 55 fibroids weighing 1700 g via two uterine incisions, one anterior and the other posterior and both vertical. Some of the fibroids were huge and highly vascular with blood supply from large sinuses running over their surfaces. There were no palpable or visible residual fibroids at the end of the procedure. The uterine cavity was not breached and estimated blood loss was 2300 ml. She received two units of blood transfusion.

Six months after myomectomy she sought egg-donation IVF in Spain. The uterine cavity assessment was performed by hysteroscopy prior to beginning of the IVF treatment. It showed presence of few flimsy synchiae within an otherwise regular uterine cavity. She conceived following the first treatment cycle. She had an entirely

uncomplicated pregnancy and in June 2011, at 38 weeks gestation and at the age of 47 years, she underwent a caesarean section delivery of a healthy female infant weighing 3.47 Kg with Apgar scores of 9 and 10, and had an uneventful postoperative recovery.

Case report 2

This 50-year-old public relations manager presented to our Myoma Service with a recurrence of fibroids, having had an open myomectomy in 1999 and a transcervical resection of submucous fibroids (TCRF) in 2001. She had a spontaneous miscarriage in 2000 and failed IVF following the TCRF. She was initially diagnosed with a recurrence of fibroids in 2003 but took no action as she was offered hysterectomy while she wished to preserve fertility potential. Her uterine mass was equivalent to just over 20 weeks gestation and was mobile, and ultrasound and MRI confirmed fibroids. Her symptoms were predominantly menorrhagia and sub-fertility. Six months prior to coming to our service her menses stopped, and subsequent hormonal profile confirmed high levels of FSH suggesting the onset of menopause. Nevertheless she wished a myomectomy so that she could go ahead with egg-donation IVF. She had a preoperative haemoglobin of 12.6 g/dl. Open myomectomy was performed in August 2009 (details of the procedure are described below), when 13 fibroids weighing 985 g were removed. The uterine cavity was not breached, and blood loss was 600 ml. Six months following surgery she underwent successful egg-donation IVF in Brazil. The

uterine cavity assessment by hysteroscopy prior to embryo transfer showed a fairly normal size and regular cavity. She had an entirely uncomplicated pregnancy and in June 2011 she had a caesarean section delivery of a healthy female infant with good Apgar scores.

Myomectomy procedure

Both operations were performed via a transverse suprapubic incision. No preoperative gonadotropin-releasing hormone (GnRH) analogues were administered. To minimize perioperative blood loss, the myometrium was infiltrated with vasopressin (Schofield) 20 units diluted in 100 mL normal saline and Tranexamic acid 1 gm administered by slow intravenous infusion at the induction of anaesthesia. All visible and/or palpable fibroids were enucleated via two uterine incisions in case 1 and 3; and through incisions in case 2. Vicryl sutures were used for repair. All women received thromboprophylaxis and antibiotic prophylaxis.

Discussion

In contemporary practice, women approaching the end of their reproductive life, presenting with massive (level of the umbilicus and beyond) symptomatic fibroids are usually offered hysterectomy as a definitive cure. If they express a wish to conserve fertility potential they are often advised that their prospects are poor. Uterine artery embolization in such situations could improve symptoms but may not achieve significant uterine involution and is associated with a risk of precipitating an earlier menopause.¹ Its impact on fertility and pregnancy outcome has yet to be clearly defined,² and while it is less invasive and as symptomatically effective and safe as myomectomy, the latter appears to have superior reproductive outcomes in the 2 years after treatment.³ For many of these women the finality of a hysterectomy remains anathema, and women are becoming increasingly vociferous in what they wish regarding treatment options. In the modern era, patient choice and participation in decision-making is considered good clinical practice. Moreover, women are increasingly putting off child-bearing to their late thirties and early forties⁴, when fibroids are more common and

symptomatic.⁵ Gynaecologists will therefore increasingly face demands for uterus-sparing treatments from such women, and developments in assisted reproductive technology (ART) render the women's arguments powerful. The availability of donor eggs means that it no longer matters that the quality of their own oocytes may be sub-optimal, and the *in-vitro* fertilization (IVF) approach means that any pelvic adhesions that may form following extensive myomectomy are an irrelevance.

We report good outcomes in two women who presented with massive fibroids requesting uterus-preserving interventions as they wished to conceive. Indeed they underwent complex surgery, one involving the removal of 55 fibroids, and the other involving a repeat myomectomy. They were then fortunate to have successful egg-donation IVF, experiencing entirely uncomplicated pregnancies and being delivered of healthy neonates by elective caesarean section. However, these cases raise a number of issues open to debate, including (i) the wisdom or otherwise of performing surgery that carries considerable morbidity, and indeed mortality where alternative treatments (hysterectomy) with more definitive outcomes are available; (ii) the approach to the surgery itself such as the aim to remove all fibroids and (iii) the conduct of elective caesarean section delivery. Since fibroids are common, are asymptomatic in 50% of women who have them, and many women with fibroids have successful reproduction, it is often debated whether fibroids compromise fertility. However, it is reasonable to suppose that there must be instances when they do, such as when they are intra-cavitary, submucous or distort the uterine cavity, impinge upon both fallopian tubes and when they are simply numerous or very large.⁶ As yet there are no definitive prospective studies to resolve the issue, but when a woman presents with sub-fertility and the only pathology found are fibroids, then it is logical to remove them. While hysterectomy is usually considered the 'safer' operation, in skilled hands the morbidity and mortality associated with myomectomy is similar to that associated with hysterectomy.⁷ Both myomectomies were performed utilizing transverse suprapubic incisions. In our experience it is exceptionally rare to encounter significant adhesions at primary myomectomy: we therefore

rarely use a vertical incision, finding that most fibroids can be removed via a transverse incision.⁸ In cases with restricted access, an initial debulking of the lower lying fibroids via the transverse incision will render the mass deliverable. In both patients we removed all the fibroids that could be seen and/or palpated. Should we aim to remove all the fibroids at myomectomy or does this cause unnecessary disruption to the uterine anatomy, increase operating time and increase blood loss? No one knows the correct answer, but we take the view that we should remove all fibroids as long as we do not increase the risk of needing to proceed to a hysterectomy. We use the minimal number of incisions on the uterus through which we enucleate the fibroids – even for a 28 week size uterus it is not uncommon for us to need just one anterior and one posterior incision to enucleate all the fibroids. We believe this minimizes the risk of pelvic adhesion formation (less raw area for omental or bowel adhesions to form), and minimally disrupts the uterus. There is evidence to suggest that vertical anterior incisions are associated with reduced adhesion formation.⁹ Although one could argue whether we should remove ‘only those fibroids likely to be contributory to the symptomatology’, we do not know how one would recognize which fibroids are the culprits and how the remaining are likely to behave in the future with regard to their growth and their impact on symptomatology. We not infrequently see women presenting 2–3 years after a previous myomectomy performed elsewhere, usually having been performed with preoperative use of GnRH analogues, with so-called ‘recurrence’ of fibroids, now much larger than at the original presentation, and of course repeat myomectomy being more challenging than the primary surgery. Although we have no rigorous data to back up our view, it is teleologically sound to suppose that the interval between primary surgery and true recurrence of fibroids would be longer if all fibroids were removed at the primary myomectomy. The use of GnRH analogues is therefore not only associated with shrinkage of the smaller fibroids so that they are missed during surgery only to recur subsequently,^{10–12} but it also renders the operation more difficult due to destruction of tissue planes.¹³ In addition, it is not possible to predict how the residual fibroids will behave during subsequent pregnancy. Apparently small fibroids can

enlarge rapidly during pregnancy, and/or undergo red degeneration causing considerable pain.¹⁴ We therefore advocate avoiding preoperative GnRH analogues and the removal of all fibroids at the primary surgery. We delivered both our patients by elective caesarean section. Having removed so many fibroids and therefore having caused significant scarring to the uterus, we considered that the scars might not have withstood the test of labour, and took the soft option. We also considered the women’s ages, their history of sub-fertility, and the control and confidence afforded by a planned caesarean section in broad daylight compared to the scenario of an emergency caesarean section in the early hours of the night.

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