

Past and future developments in gynaecology

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There have been many advances in gynaecology over the past ten years. Some have resulted in a change in which the way services are delivered to the patient and others have resulted in new medical and surgical interventions. In this article, I shall highlight some of the most striking of these changes in order to give the reader a flavour of how the situation has changed. I will also try to predict the direction of development in the field over the forthcoming ten years. The developments will be considered in categories that, broadly speaking, fit into the various subspecialties within the field of gynaecology.

General gynaecology: key advances in delivery of service

One-stop menstrual disorder clinics

In an attempt to streamline the management of menstrual disorders, one-stop clinics have been established over the past decade in which women can be seen, have an ultrasound scan performed and a hysteroscopy, if indicated, all in the same session. Most outpatient hysteroscopy clinics in the UK are recently established and therefore discrepancies are likely to exist between hospitals. Some are purely diagnostic, whereas certain clinics provide therapy as well, such as polyp removal (Figure 1). A recent survey of UK consultant gynaecologists revealed that 28 per cent of them perform, or were setting up outpatient hys-

teroscopy clinics.

There are obvious benefits of the outpatient setting for the assessment of abnormal uterine bleeding. It avoids the need for a general anaesthetic and overnight stay. This would therefore reduce both inpatient waiting lists and financial burdens. A recent randomised controlled trial revealed cost savings to both the NHS and patient.¹ Furthermore, outpatient clinics have been shown to result in a faster post-procedure recovery.² A guideline is disseminated to GPs and referring gynaecologists to ensure swift referral of appropriate patients. The advent of electronic referral systems such as 'Choose and book' has further facilitated referrals.

Intermediate gynaecology clinics/GPs with a special interest in women's health

Several pilot schemes have been set up to provide women with services in the community, which is in line with the stated policy of the current Secretary of State for Health. The benefits of these intermediate gynaecology clinics are as follows:

- to provide additional gynaecology intermediate services in the community;
- to offer extended career pathways for GPs;
- to assist with early detection of pathology and manage it expertly in primary care and so enable a shift from secondary to primary care by avoiding inappropriate referrals to secondary care;
- to improve relations with secondary care gynaecology providers.

The main restriction to extending this sort of service appears to be a lack of funding; under the new GP con-



Figure 1. Outpatient hysteroscopic excision of a polyp.

tract, women's health needs to be funded under 'enhanced services' and the pot is not limitless!

General gynaecology: technological/medical advances

The 'three-minute hysterectomy'

Various new techniques for ablating the endometrium, using balloons, microwaves and heated saline, have mushroomed over the past decade. All these methods have similar efficacy (80–90 per cent satisfaction rates). Some of these are being offered in outpatient clinics and have led to the headline of the 'three-minute hysterectomy' in the press. Of course, the whole process usually takes longer than this, but women now have many more options for avoiding hysterectomy than they did even ten years ago. The only guarantee of amenorrhoea remains hysterectomy, which should be discussed during the counselling process.

The levonorgestrel intrauterine system

Until recently, approximately 100 000 hysterectomies were performed per annum for benign causes. Preliminary data are already showing that this figure has halved over the past few years,



Figure 2. Embryo biopsy for pre-implantation genetic diagnosis.

principally as a result of the use of the levonorgestrel intrauterine system (Mirena) and endometrial ablation methods. Additional to this, Mirena also has beneficial effects on dysmenorrhoea, fibroids, pelvic inflammatory disease, ectopic pregnancy and avoidance of progestogenic side-effects in users of hormone replacement therapy (HRT).³ This makes it one of the most significant developments in gynaecological management of the 20th century. Of course, there is no such thing as the universal panacea, and the system is not without its problems, such as erratic bleeding in the first three to six months. However, these problems pale into virtual insignificance for many users when the benefit/risk ratio is taken into account.

Fibroids

Women wishing to avoid surgery for fibroids typically had the choice of symptomatic management of their menorrhagia with mefenamic/tranexamic acid or use of the gonadotrophin-releasing hormone (GnRH) analogues to reduce fibroid size by about one third. The analogues are not without their problems, which in the short term are menopause-type side-effects and in the long term osteoporosis. One option has been to give add-back HRT to avoid the menopause side-effects and osteoporosis, but this may limit the efficacy of treatment. More recently, women have had the option of radiologically directed uter-

ine artery embolisation, but this is invasive and carries a small risk of premature ovarian failure in those wishing to preserve their fertility.

Two options on the horizon currently in trial phase include high-frequency ultrasound ablation of fibroids and the selective progesterone receptor modulators (SPRMs).

The former involves the focused delivery of magnetic resonance image-guided high-energy ultrasound to ablate fibroids. Although the degree of fibroid size reduction is only 15–20 per cent at six months, this appears to correlate with a good clinical response.⁴ The problem is the prohibitive cost of the system (>£1 million), which means it is currently offered in only two centres in the UK.

The SPRMs appear to reduce fibroid size by 30 per cent at three months.⁵ The advantage over GnRH analogues is that this is achieved in the absence of a hypoestrogenic state, which causes many of the problems with GnRH analogues. These products should be licensed by 2007.

Endometriosis

The mainstay of treatment for women desirous of pregnancy is laparoscopic ablation with laser/diathermy or excision. An increasing number of centres in the UK are now able to offer this treatment as minimal-access surgery training and facilities improve. However, for women with endometriosis wishing to avoid surgery, for whom fertility is not an issue, until recently the only options were high-dose progestogens, danazol and GnRH analogues. These treatments were all associated with side-effects, limiting their duration of use. Recent work has demonstrated that the SPRMs are effective for treatment not only of fibroids, but also of endometriosis, with 70–80 per cent improvement after three months of therapy.⁶ The maintenance of oestradiol levels and

avoidance of progestogenic side-effects means that for the first time we have a product that potentially can be used long term without a problem. Also on the horizon are oestrogen alpha-receptor antagonists, which specifically ablate the endometriosis deposits without hypoestrogenic side-effects or long-term risks by avoiding the oestrogen beta-receptor.

Reproductive gynaecology

Pre-implantation genetic diagnosis

The refinement of embryological and genetic techniques over the past ten years has allowed the single-cell biopsy and genetic analysis of embryos prior to returning to the uterus during in-vitro fertilisation (Figure 2). Now there is hope for:

- couples with repeated pregnancy loss due to genetic disorders;
- couples who have a child with a genetic disease and are at high risk of having another, *eg* cystic fibrosis, Tay-Sach's disease;
- couples who wish to identify a tissue match for a sick sibling who can be cured with transplanted cells.

It is also possible that some units will offer pre-implantation genetic diagnosis for aneuploidy screening in older women with no known genetic disorders, but this is a much more controversial area.

Ovarian cryopreservation

Over the past decade, laparoscopic collection and cryopreservation of ovarian cortex has been taking place in women about to undergo procedures that threaten their fertility, such as chemo/radiotherapy. This has been done in the hope that once the disease process has been defeated, the individual can either have in-vitro maturation of her oocytes or transplantation of ovarian tissue. Attempts to return tissue and 'reverse the menopause' have thus far been disappointing, with the exception of one woman in Belgium

who is said to have conceived following transplantation of ovarian tissue. However, it cannot be excluded that this woman's remaining ovarian tissue had started ovulating spontaneously. In the future it is hoped that stem cell technology will allow for gametes to be created in women with premature ovarian failure to give them hope of bearing children who are genetically their own.

Post-reproductive gynaecology

The HRT controversy

Until five years ago, HRT was used by over a third of postmenopausal women for symptoms and prophylaxis against the long-term sequelae of the menopause. However, as a result of adverse publicity on the possible risks of HRT (breast and cardiovascular) arising from publication of the Women's Health Initiative and Million Women studies in 2002/03, there was a significant downturn in the HRT market, which dropped by up to a half in some countries. The last year has seen stabilisation of the usage as a result of more balanced advice being issued. In some populations, up to half of women restarted their HRT, having stopped following the adverse media reports.⁷ However, the recent labelling of the combined contraceptive pill and HRT as cancer-causing agents by the World Health Organization may have a further adverse effect on prescribing.

The regulatory authorities, *eg* the Medicines and Healthcare Products Regulatory Agency in the UK and the European Agency for the Evaluation of Medicinal Products, still advocate the use of HRT, although they do stipulate that it should be at the minimum effective dose for the shortest possible duration, with annual re-evaluation.

It is likely that in the future, prescribing of HRT will be carried out by menopause specialists and primary care practitioners with a special inter-

est in the menopause. Although some primary care practitioners have stopped prescribing altogether, women with moderate to severe menopause symptoms will still be able to obtain HRT from specialist physicians who will prescribe in order to restore and maintain their patient's quality of life.

There has been a move towards alternative therapies, *eg* complementary medicines such as phytoestrogens. This is a largely unregulated area with products that often have little or no efficacy and questionable safety; for example, there have been recent reports of liver failure in users of Black Cohosh. However, there are more promising data for some red clover and soy products.

Urogynaecology

Tension-free vaginal/transobturator tape

The management of stress incontinence has changed considerably over the past ten years. Whereas the mainstay of stress incontinence surgery used to be the colposuspension, most units are now inserting tension-free vaginal tapes. These appear to have a similar efficacy to colposuspension (the seven-year data have just been published⁸), but avoid the morbidity of major surgery and can be done as day cases. Concern has been expressed that, if performed in young women, these tapes may erode into the urethra with time and require removal, but for the present the procedures appear to be successful.

Family planning

Etonogestrel Silastic rod (Implanon)

Royal College of Obstetricians and Gynaecologists guidelines state that women should be counselled about long-term reversible contraceptive methods before sterilisation is agreed. In addition to depot injectables and Mirena, a new method has been licensed in the past few years. This

involves the insertion of a Silastic rod impregnated with 68mg of etonogestrel into the upper arm. The method is effective immediately and lasts for three years. Although ovulation is suppressed, oestradiol levels remain within the normal range, even in amenorrhoeic women. Thus, there are no concerns about osteoporosis with long-term usage. In the next five to ten years, it is expected that a male version of Implanon will be marketed; unlike other forms of male contraception, women will be able to check that their partner has contraception on board before consenting to intercourse.

Hysteroscopic sterilisation (Essure)

Traditionally, sterilisation has been achieved laparoscopically under general anaesthetic. Over the past ten years, a new technique has been developed, which allows sterilisation to be achieved hysteroscopically in the outpatient department. The procedure involves the insertion of stents into the tubal ostia under hysteroscopic guidance, which leads to an intense fibrotic reaction and irreversibly seals the tubal lumina (Figure 3). The position of the stents is confirmed three months later with an abdominal X-ray; if there is any doubt about the position, a hysterosalpingogram can be performed to confirm tubal blockage.

Gynaecological oncology

Cervical screening

Cervical screening has changed considerably over the past few years. Following recommendations by the National Institute of Health and Clinical Excellence, liquid-based cytology has been introduced in many units in order to minimise the percentage of unsatisfactory smears (from 9 to 2 per cent), saving the NHS an estimated more than 300 000 smears. The plan is to roll out the programme over the next five years throughout the country.



Figure 3. Hysteroscopic sterilisation: stents are inserted into the tubal ostia, leading to a fibrotic reaction that seals the tubal lumina.

Human papillomavirus (HPV) testing and typing in borderline and mildly abnormal smears is likely to lead to better prediction of which lesions are more likely to progress to a higher grade or invasive cancer and thus allow more selective screening. The results of two large trials are awaited to shed further light on the cost-effectiveness of screening over the next couple of years. Trials of HPV vaccines for prophylaxis against cervical cancer are currently reporting and results look promising.

Fertility-sparing surgery for cervical cancer

Amputation of the cervix and lower part of the body of the uterus with re-anastomosis of the uterine arteries (radical trachelectomy) has enabled women with locally invasive cervical carcinoma to retain the uterus and the possibility of carrying future pregnancies. Successful pregnancies with caesarean section at 32–34 weeks have already been reported. Over the next ten years, these techniques will no doubt be refined to offer more options to women who in the past would have had to resort to surrogacy.

Conclusion

It is difficult to give more than a flavour of the major developments in gynaecology over the past ten years and possible future developments in the next decade. In general terms,

service delivery has become more patient centred with the advent of one-stop clinics, outreach clinics and now intermediate gynaecology clinics bringing the service to the doorstep of the service user. This trend will undoubtedly continue over the next ten years, being driven by both politicians and, more importantly, patients.

Women are increasingly being treated in outpatient departments and as day cases as a result of new equipment and techniques. Advances in equipment have seen the development of more refined hysteroscopes, allowing outpatient treatment as well as diagnosis of menstrual disorders and insertion of sterilisation stents. Urological disorders are being dealt with increasingly as day cases because of the new tape techniques. There are ever more ways of controlling the endometrium with Mirena and second-generation ablative methods providing women with a realistic alternative to hysterectomy.

Refinement in medications will allow the effective control of endometriosis and fibroids while minimising the side-effects. New techniques are giving women hope of preserving their fertility where once only egg donation and adoption were possible. It is hoped that the HRT scare will have a positive outcome in encouraging further development of sophisticated regimens to maximise the benefits and minimise the risks for postmenopausal women.

Gynaecology has come a long way over the past ten years and will undoubtedly continue to change rapidly over the next ten years as ever more sophisticated interventions are devised to improve women's quality of life.

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