

# Treating endometriosis with the integration of Traditional Chinese medicine and Western medicine

Liqin Zhao (赵丽琴)<sup>1</sup>, Beiyu Liu<sup>2</sup>, Tin Chiu Li<sup>2</sup>

<sup>1</sup>Fertility Care, Zhong Jing TCM, Sheffield

<sup>2</sup>Department of Reproductive Medicine and Surgery, Royal Hallamshire Hospital, Sheffield

**Abstract:** Endometriosis has become an increasingly common health condition of women worldwide. It is not only the main cause of severe pelvic pain, but also one of the most common causes of infertility, which has a significant impact on women's quality of life. Traditional Chinese medicine (TCM) is a most effective and natural therapeutic treatment of endometriosis, while conventional Western medicine (WM) may remove the ectopic endometrial tissues surgically to achieve immediate relieve of pelvic pain. However, TCM integrated with WM can be greatly beneficial in treating endometriosis. In this article, illustrated by case studies, the authors will discuss the aetiology and pathology from both a TCM perspective and WM understanding, and introduce the unique comprehensive TCM treatment strategies and the most advanced WM treatment options.

**Key Words:** Endometriosis; Infertility; Traditional Chinese Medicine (TCM); Western Medicine (WM); TCM differentiation; Laparoscopy.

## Introduction

Endometriosis is an oestrogen-dependend inflammatory disease characterized by development of endometrial-like tissue outside the uterine cavity, most commonly in the pelvic peritoneum, ovaries, the uterosacral ligaments, and pouch of Douglas, and in rare cases on the abdominal wall, bladder, diaphragm, and pleura.

It is estimated that 15 percent of menstruating women between the ages thirty and forty have endometriosis, although it can begin as early as the teenage years [1, 4]. Up to 50 percent of infertile women may have endometriosis [2], and some studies suggest that this oestrogen-sensitive disease may also cause infertility [3]. It is the main cause of pelvic pain, although there are around 40% of women diagnosed with endometriosis report no symptoms other than infertility [4]. Approximately 27% of women with mild endometriosis also have ovulatory dysfunction or luteal phase defect [4]. The condition is classified according to its severity-mild, moderate or severe.

## Clinical manifestation

The clinical presentation is variable. Some women have no symptom at all. The main clinical manifestation of endometriosis is a recurrent, generally cyclical, severe lower abdominal cramping pain that gets progressively worse. Other presentations include dysmenorrhea, dyspareunia, pathological vaginal bleeding, intestinal upset, back pain, tenesmus and infertility. In some cases, the high level of pain caused by endometriosis can deplete a woman's energy and cause depression and anxiety.

## Causes of endometriosis

The exact cause of endometriosis remains unknown, the pathophysiology of endometrium is likely to be multi factorial and several factors are thought to be involved in the development of endometriosis. Retrograde menstruation remains the dominant theory for the development of pelvic endometriosis [5]. It suggests that some endometrial debris exits the uterus through the fallopian tubes and implant on peritoneal surfaces and elicit an inflammatory response. However, retrograde menstruation is unlikely to be the sole explanation, and it needs additional factors to account the observation that many women with retrograde menstruation do not develop endometriosis. Affected women may have an immune dysfunction that interferes with clearing the lesions. The quantity and quality of endometrial cells, as well as angiogenesis may also have a role in the development of endometriosis. Disease at distant sites is probably caused by lymphatic or haematogenous spread or metaplastic transformation. Genetic linkage studies suggest a degree of inherited predisposition, its incidence in relatives of affected women is up to seven times the incidence in women without such a family history [6]. In addition, there are many findings of altered gene expression and epigenetics which might be result of environmental factors and altered metabolism.

Risk factors include obstruction of menstrual outflow (e.g., mullerian anomalies), prolonged exposure to endogenous oestrogen (e.g., early menarche, late menopause, or obesity), short menstrual cycles, low birth weight and exposure to endocrine-disrupting chemicals [7]. Prolonged lactation and multiple pregnancies are protective.

## Investigation and Diagnosis

Currently, the gold standard for the diagnosis of endometriosis is laparoscopy, which permits direct

visualization of the lesion. It also enables the severity of the disease i.e. staging to be determined according to the scoring system of the American society for Reproductive Medicine. The staging can be used to determine the disease burden and the choice of management.

Nonsurgical diagnostic approaches such as transvaginal ultrasonography and magnetic resonance imaging (MRI) can reliably detect ovarian endometriosis, but has a limited role in the detection of superficial peritoneal and ovarian implants and adhesions. Transvaginal ultrasonography is preferred over MRI in the diagnosis of endometriomas because of its lower cost, although Magnetic resonance is increasingly used to identify subperitoneal deposits or if adenomyosis is suspected.

Although levels of the cancer antigen CA125 may be elevated in endometriosis, this test is not recommended for diagnostic purpose because of poor sensitivity and specificity. The threshold for surgery is unlikely to be influenced by the CA125 result.

## Western medicine treatment options

While in many people pregnancy or menopause will abate the process, there is no cure for endometriosis. Therefore, the treatment goal is to restrict progression of the process, to provide pain relief, and to restore or preserve fertility when it is needed.

### 1. Medical therapy

Medical therapy is commonly used for pain control before or after surgical treatment. Treatment options include oral contraceptives, progestogens, androgenic agents and gonadotropin release hormone (GnRH) analogues. Such therapy is intended to achieve pain relief through a variety of mechanisms, including the suppression of ovarian activities and hence production of oestrogen, inhibition of estrogen action, and reduction of inflammation.

#### *NASIDs*

Non-steroidal anti-inflammatory drugs (NASIDs) are commonly used to relieve pain especially for women who prefer to avoid hormonal therapy, e.g. those wishing to conceive or those who experience side effects from hormonal therapy. In adolescents in whom the diagnosis of endometriosis has not been confirmed beyond doubt, NSAIDs is a first line approach.

#### *Hormonal treatment*

**Combined oral contraceptive** is a widely used first-line therapy for patients with endometriosis. It may be used cyclically on a monthly or 3-monthly basis. In the latter case, the women is advised to take 3 packs of pill continuously before the usual one week break to induce a withdraw bleed. In this way, it will reduce the frequency of painful withdrawal bleeds. In some severe cases, it may even be possible to use the oral contraceptive pill continuously to suppress painful menstrual symptom.

**Progestogen** can also be used on a cyclical or continuous basis. Medroxy progeterone acetate is as effective as combined oral contraceptives in controlling pain. Although Progestogens are generally well tolerated,

the side effects include irregular menstrual bleeding, weight gain, mood swings, and premenstrual syndrome-like symptoms.

**GnRH agonist** act by the suppression of the release of gonadotropins (FSH+LH) and consequently the suppression of ovarian activity and oestrogen production, leading to amenorrhoea or regression of endometrial lesions. Side effects include unpleasant menopausal symptoms and the loss of bone mineral density with long term use. Reversible bone demineralization limits therapy up to 6 months. However, oestrogen therapy in an add back regimen may be useful to prevent side effects with GnRH analogues and can extend therapy for up to 2 years or more. The "estrogen threshold hypothesis" suggests that maintain estradiol levels between 30 and 45 pg per milliliter will maintain bone mineral density without stimulating endometriosis lesions [8]. The effects of progestin-only add-back therapy on bone density have been inconsistent in studies involving adults and adolescents.

**Danazol** was used some years ago for the treatment of endometriosis. It is a synthetic compound with androgenic effects. It is infrequently prescribed nowadays because of its androgenic side effects which include skin changes, weight gain, and occasionally deepening of the voice.

**Antiprogestagens** such as mifepristone have been shown to reduce pain in small studies, but data from large randomized trials are lacking.

An alternative to systemic hormone treatment is the levonorgestrel intrauterine system (LNG-IUS, Mirena coil) which can induce endometrial atrophy, reduce pain associated with endometriosis, with symptom control maintained over 5 years. It can be used after surgery and had a similar effectiveness to GnRH analogues. Long-term use is especially advantageous for women who do not want to conceive. It has also been used in women with rectovaginal disease.

**Aromatase inhibitors** may also have a therapeutic role in the endometriosis. They can reduce pelvic pain by inhibit estrogen production selectively in endometriotic lesions, without affecting ovarian function. However, more evidences are required.

By and large, most of the hormone treatments have similar efficacy, but they differ in their side effect profile and cost, which often influence the final decision for a particular choice.

### 2. Surgical strategies

Surgery is often required in women, who have failed to respond satisfactorily to medical treatments, outlined above. In addition, surgery is preferred in women who would like to conceive, as hormone treatments usually suppress ovulation and impair fertility. Nowadays, surgery for endometriosis can very often be carried out laparoscopically without the need for laparotomy surgery which entails excision or ablation, or both, of the endometriotic tissue with or without adhesiolysis. Hysterectomy may be considered for those women who have no plan to conceive and suffer from severe symptoms.

### 3. Management of infertility

For infertile patients, medical treatment has a limited

role and has not been showed to improve fertility. On the other hand, surgical treatment has been confirmed to have a beneficial effect and improve the chances of conception. Surgery is beneficial in mild or severe disease. Endometrioma  $\geq 4$ cm should be removed, according to the recommendation of European Society for Human Reproduction and Embryology. If surgery alone is not successful, assisted conception treatment such as IVF will be required. GnRH agonist therapy to suppress ovarian activity for 3 months prior to IVF treatment may improve the pregnancy rate [9].

#### 4. Recurrence of endometriosis

Recurrence of painful symptoms, which is common in endometriosis, may be as high as 50% in the 12-24 months after medical treatment has stopped. The five years cumulative rate of recurrence after laparoscopy is also nearly 20% and even higher in women with no post-operation medical treatment. Recurrence of endometriosis may be reduced by the use of combined surgical and medical treatment or TCM.

### TCM View of endometriosis

TCM is an effective treatment for endometriosis and related infertility. Endometriosis can be discerned into a few different TCM disease categories depending on the characteristic pattern of signs and symptoms presented by the patient. The most common ones are referred to Dysmenorrhea, Abdominal masses and Infertility [1] In TCM, the primary pathology of endometriosis is Blood Stasis [1, 2, 4, 10]. Blood stasis can be caused by emotional disturbance, chronic illness, exposure to cold temperatures, surgery, and genital infections. There seems to be a strong correlation between endometriosis and the increased stress levels experienced by many professional women today.

### TCM Differentiation and treatment

The primary pattern of endometriosis is blood stasis, the objective of TCM treatment is to invigorate blood and remove stasis. In addition to blood stasis, there are often other factors which are part of the patterns of endometriosis. Kidney deficiency, Liver qi stagnation, cold, phlegm and heat patterns are frequently part of the mix, and are differentiated based on the clinical manifestations associated with each case of endometriosis. The timing, location, nature, and severity of pain are also taken into account. Following are five common patterns of endometriosis, with the differentiating symptoms and the recommended treatment.

#### 1. Kidney deficiency and blood stasis

Aetiology and pathology: the origin of this pattern is either a weak constitution of kidney yang, catching cold or having intercourse during menstruation, or a history of surgical procedures. This can cause blood stagnation, obstructed in the uterus, consequently flow to outside of uterus such as fallopian tubes, ovaries and recto-vaginal pouches etc.

Clinical symptoms: period can be either scanty or spotting with small blood clots, or heavy bleeding with big blood clots, abdominal bloating and pain during or

after periods, irregular periods, infertility or habitual miscarriage, soreness of back, legs and hips, aversion of cold, cold limbs, dizziness, pale tongue colour with dark spots around edge and thin-white coating, and deep-fine-uneven pulses.

Herbal prescription: modified Guizhi Fuling Tang and Jingui Shenqi Tang.

Acupoints: Du 20, Ren 4, Ren 6, Zigong, BL 20, BL 23, BL 32, Du 4, St 36, Sp 6, Ki 6, Ki 7.

#### 2. Qi Stagnation and blood stasis

Aetiology and pathology: there seems to be a high incidence of endometriosis among working women which is due to stressful lives. It can impair seven emotions and cause liver qi stagnation and blood stasis in the Chong and Ren channels, eventually obstructs the uterus and pelvis.

Clinical symptoms: severe abdominal pain and bloating before or during periods, aversion to pressure on the abdomen, scanty or impeded thick and sticky blood flow with blood clots, pain relieved after periods, irritability, breast distension and distending pain under the rib cage before periods, dark purple tongue with spots and thin-white coating, and wiry-choppy pulses.

Herbal prescription: modified Gexia Zhuyu Tang or Xuefu Zhuyu Tang.

Acupoints: Yintang, LI 4, Ht 7, PC 6, St 25, St 29, Sp 10, Sp 8, Sp 6, Sj 5, GB41, Liv3.

#### 3. Cold retention and blood stasis

Aetiology and pathology: the cause of this pattern may be a history of exposure to cold, either cold temperatures or the habitual consumption of cold foods, especially during menstruation or after pelvic surgery. This may congeal blood and cause blood stasis of uterus.

Clinical symptoms: severe abdominal angina pain, preference for warmth, an aversion to cold, dark red and thin blood flow with blood clots, pain relieved after menstruation, dark tongue colour with spots and white coating, and deep-wiry-tight pulse.

Herbal prescription: modified Shaofu Zhuyu Tang or Wen Jing Tang.

Acupoints: Ren3, Ren4, Ren6, Ren8 (Moxibustion only), GB25, Ki12, BL23, Du 4.

#### 4. Qi deficiency and blood stasis

Aetiology and pathology: The origin of this pattern is constitutional weakness or chronic illness, or qi deficiency after labour, abortion or long term suffering endometriosis, blood stagnated in the abdominal area.

Clinical symptoms: periods are either heavy or scanty, with light coloured and watery menses, abdominal tenderness and pain during or after periods, preference for warmth, feeling better with pressure on the abdomen, dropping sensation of the anus, soft bowel movements, pale complexion, lethargy, thick-pale tongue body with tooth-marks on the sides and white-thin coating, and thin-soft-weak pulses.

Herbal prescription: Modified Buyang Huanwu Tang and Shixiao San.

Acupoints: Du 20, Ren 4, Ren 6, Zi Gong, ST 36, BL 20, BL 32, GB 36.

#### 5. Damp heat obstruction and blood stasis

Aetiology and pathology: women have a history of

genital infections such as Chlamydia disease, pelvic inflammation disease (PID), vaginal thrush etc, which can cause accumulation of damp and heat toxins in the Chong and Ren channels, obstruct the qi and blood flow, leading to blood stasis.

Clinical symptoms: abdominal pain which is worse before or during periods, aversion to pressure on the abdomen, heavy menstrual bleeding, thick and sticky blood in dark red colour, yellow and thick vaginal discharge, fever and feeling hot, bitter taste in the mouth, dry throat, anxiety, anger, constipation, painful intercourse, red tongue tip or purple spots on the sides of the tongue, with a thin-yellow tongue coating, and a wiry-rapid pulse.

Herbal prescription: modified Xuefu Zhuyu Tang.

Acupoints: LI 11, LI 4, SJ 6, BL 17, Sp6, Sp10, St 25, Ren 3, St 29, Liv 5.

## 6. Phlegm and blood stasis

Aetiology and pathology: deficiency of spleen qi and kidney yang, failure of transport and transform body fluid, accumulation of damp turn to phlegm, obstruct the uterus, together with blood stasis, forms abdominal masses.

Clinical symptoms: obesity, irregular period, severe abdominal pain during menstruation, scanty bleeding with dark colour, profuse and sticky vaginal discharge, dizziness, palpitation, white and greasy tongue coating, and slippery-choppy pulses.

Herbal prescription: modified Cangfu Daotan Tang and Xuefu Zhuyu Tang.

Acupoints: LI 4, St 25, Ren 4, Ren 6, St 29, St 36, St 40, Sp 10, Sp 9, Sp 6, BL 20, BL 23.

## TCM Cycle Therapy

Regulating periods based on the four menstrual phases is also an effective treatment for endometriosis and its related infertility, whilst using TCM pattern differentiation to treat the underlying causes. It is advised to start treatment on the fourth or fifth day of the women's menstrual cycle. Following is the treatment program which is created according to Liqin Zhao's clinical experiences.

### 1. After menstruation – follicular phase

Nourish kidney yin and blood, disperse blood stasis. Danggui, Baishao, Shudihuang, Shanyao, Nuzhenzi, Gouqizi, Tusizi, Xuduan, Yiyanghuo, Wulingzhi, Puhuang are commonly used herbs.

Take the herbal decoction for seven days from fourth day of menstrual cycle.

### 2. Ovulation phase:

Strengthen kidney, harmonise liver qi and blood, activate blood to promote ovulation.

Taoren, Honghua, Danshen, Chishao, Chuanxiong, Chongweizi, Xiangfu, Tusizi, Zishiying, Chaihu, Yimucao.

Take the herbal decoction for three days from day 11 till day 14 of menstrual cycle.

### 3. Luteal phase:

Warm kidney yang, strengthen spleen qi to support progesterone, while dissolve blood stasis to relieve the pain.

Most commonly used herbs include Shudihuang,

Xianmao, Xianlingpi, Tusizi, Roucongrong, Shanyao, Danggui, Xiangfu.

Take the herbal decoction between day 15 and 25 of menstrual cycle.

### 4. Menstrual phase:

Harmonise the qi and blood to regulate period, activate blood to disperse the blood stasis.

Commonly used herbs: modified Taohong Siwu Tang.

Take the herbal decoction from day 26 till day 2 of next cycle.

## Diet and Lifestyle Changes

Chinese medicine believes that prevention is always better than cure. Making few changes in lifestyle and diet could make a huge difference. Here are some advices that can be considered:

1. Avoid fear, anger, stress and excessive emotions in general, since emotions could impair qi and blood flow, produce excessive oestrogen, create a hostile uterine environment. Maintain even and free flow of moderate emotions to maintain even flow of qi and blood is crucial.
2. Avoid strong, vigorous movement or exercise during menstruation, so as to prevent qi and blood from leaving their path. Such erratic qi flow may result in menorrhagia and dysfunctional uterine bleeding.
3. Extreme fatigue means excessive consumption of qi and blood. Deficiency of qi and blood during menstruation may impair the Chong and Ren vessels causing blood stasis, and thus leading to chronic menstrual disorders.
4. Diet is also an important factor in controlling endometriosis. A low fat, high fibre, dairy free diet is recommended. Avoiding yeast, sugar, artificial sweeteners, cold foods and drinks is also very helpful.
5. Avoid caffeine and salt, consume in antioxidants such as sweet potatoes, yams, apricots, carrots, spinach and broccoli, whole grains and beans for necessary B vitamins, and citrus fruits for bioflavonoids and natural vitamin C.
6. Increase consumption of kelp and wheat germ. Endometriosis has been linked to thyroid dysfunction and kelp is particularly good for thyroid problems. The vitamin E in wheat germ improves the healing of scar tissue caused by internal endometrial bleeding.

## Case Studies

### Case one: Endometriosis accompanied with ovarian cysts, uterine fibroids, blocked fallopian tube and infertility

**Medical History:** Lindsay, 32 year old. She had always had painful, clotty and heavy periods ever since first menstruation at the age of 17, accompanied by painful intercourse. She had been on the oral contraceptive pills for pain relieve for 10 years, and then

had tried to conceive unsuccessfully for 5 years. Her periods had become irregular since she came off the pill in 2000. She had laparoscopy in 2002 and was diagnosed with severe endometriosis, together with a blockage of left fallopian tube, ovarian cysts and uterine fibroids. She has had three laparoscopic surgery in two years to remove the ectopic endometrial tissues and ovarian cysts, but they had recurred within a few months after the operation. She then had two cycles of IUI, two IVF attempts and one cycle of FET, unfortunately none of them were successful. After last IVF in 2005, she had another laparoscopy and found that the endometrial tissues had adhered to the urine bladder and bowels, and had to be operated on again. She was referred to Dr LQ Zhao whilst waiting for next IVF treatment.

**Main Symptoms:** Irregular periods with a cycle between 35-49 days, heavy bleeding with clots and severe abdominal pain, aversion to cold, cold hands and feet, lower backache, frequent urination, sluggish, depression, anxiety, insomnia and acne. Dark red tongue with black spots around the edge and white greasy coating, deep and fine pulses.

#### **Herbal Prescription:**

- Bazhen Yimu Wan combine Guizhi Fuling Wan, between day 4 and day 14 of periods;
- Nuangong Yunzi Wan combine Guizhi Fuling Wan, between day 15 and day 25 of periods;
- Tiaojing Buxue Wan or Tongjing Wan combine Xiaoyao Wan, from day 26 until day 3 of next cycle.

**Acupoints:** Du20, Pc6, St25, Ren4, Zigong, Sp10, St36, Sp6, Liv3, UB23, UB20 and Du4.

Alteration of herbs and acupoints were made according to her menstrual cycle and general condition.

**Progress & Result:** After 11 weeks of treatment, she had found to her surprise that she was pregnant on the day which she was expected to start IVF drugs. She had given birth to a healthy baby boy in the summer of 2006.

**Analysis:** Lindsay had probably suffered from endometriosis since she was 17 years old, although it was not diagnosed at the time. She didn't receive any treatment for the cause of endometriosis, but instead had taken contraceptive pills for 10 years. This may minimised the symptoms of pain and heavy menstrual blood flow, however the endometriosis continuously progressing. Together with the strong hormonal drugs had been manipulated during several IUI and IVF attempts, constantly stimulating her ovaries and uterus, which may also further worsen the endometriosis condition. This seriously affected the functional status of reproductive organs and the environment of uterus. Laparoscopic surgery has cleared away the severe lesions or adhesions rapidly, which may reduce the time needed for treatment. TCM removed the blood stasis, softened the scar tissues, increased blood flow to uterus and ovaries, improved uterine self healing function, rebalanced hormone levels, and regulated period cycle. Therefore, it created a most possible receptive uterine environment for the eggs to be fertilised in and then implanted, eventually achieved a natural pregnancy, and carried to term.

#### **Case Two: Endometriosis with severe acne and**

#### **infertility**

**Medical history:** Fiona, 37 years old. She has had contraceptive pills for 15 years before trying to conceive. She had been suffering from acne since was a teenager, which had gradually got worse since came off the contraceptive pills 18 months ago, especially for the last three months, and had been taking strong antibiotics for it. Her periods has also been irregular in the same time and failure of conceive. Blood tests have revealed normal hormone levels, but scan has found one small fibroid. She has also had pre-cancerous cervical cells removed four years ago. She has been a smoker for 16 years, but stopped smoking six months ago.

**Main symptoms:** infertility, severe acne, scanty menstrual blood flow with mild abdominal pain and clots, low libido, vaginal bleeding after bowels movement, stress, depression, night sweat, dry lips and thirsty mouth. Red colour of tongue with greasy coating, deep and fine pulses.

**Treatment plan:** Acupuncture once weekly, taking herbal powders twice daily. After initial TCM treatment with LQ Zhao, she was referred to professor Tin Chiu Li for laparoscopy.

**Progress & result:** After TCM treatment, her cycle length periods became 27 to 31 days, with no more vaginal bleeding after bowels movement. Four months later, laparoscopy has found endometriosis and one fibroid, which had been removed straightaway. She had continued acupuncture after surgery, had achieved a regular 29 days cycle with proper bleeding for four days, and less blood clots; the acne has also improved. She then fell pregnant naturally the following month and is now 13 weeks pregnant.

**Analysis:** Fiona has originally consulted Li Qin Zhao for infertility and severe acne. She has never been referred for laparoscopy by her GP, although has consulted dermatologists for skin condition. After assessment by the doctor of TCM, the possibility of endometriosis was considered, therefore TCM was utilised to eliminate the static blood of uterus, harmonise the qi and blood and regulate period while waiting for laparoscopy, then acupuncture was applied after surgery to speed up the uterine self healing process, and prepare for conception. As a consequence, she has recovered very well and successfully conceived.

#### **Summery**

- (1) Endometriosis is a common disease recognized to be oestrogen dependent. It may have a neuro-immunological basis. Other than conventional western medicine treatment options, acupuncture can improve the function of the immune system and increase the flow of qi and blood through the meridians in the body. Acupuncture can also stimulate the nervous system to promote the release of endorphins and other hormones, and is very effective at relieving pain. Therefore, acupuncture is a viable and effective treatment modality for dealing with endometriosis.
- (2) WM treatments can often complement TCM. Laparoscopy is required to confirm the diagnosis and assess the severity of the disease. The best approach is

for practitioners of TCM and conventional WM to work together. Practitioner of TCM should understand the need for laparoscopic conformation and staging of the disease. Women who find WM treatments onerous often opt for herbs as a substitute, or alternatively use the herbs with the drugs. The herbs can be designed to reduce the side effects of the drugs, while enhancing the endometriosis clearing effect.

- (3) 70-80% of women being treated with TCM will experience significant reductions in their symptoms. However, the benefit from TCM treatment is really dependant on the degree of compliance and commitment the patient displays toward the requirements necessary for success. The patient ought to be willing to invest in themselves, make room for some lifestyle changes, modify their diet, undergo regular acupuncture treatment, religiously take the prescribed herbal formulas, and practice the intention required by the body mind and spirit to overcome a severe health condition.
- (4) While hormone treatment and TCM has a role to play in the reduction of pelvic pain, as well as the prevention of recurrence of the disease, surgery is often necessary for severe cases and the improvement of fertility.

### Biography

Prof. Tin Chiu Li is a professor in Reproductive Medicine & Surgery of Sheffield Hallam University. He has a special interest in infertility and recurrent miscarriage, as well as gynaecological endocrinology such as hormone replacement therapy and polycystic ovarian disease. He is active in clinical research and has published more than 200 refereed papers in international journals.

Dr. Beiyu Liu is a graduate from Sun Yat-sen University and is currently a research fellow working at the Jessop Wing, Royal

Hallamshire Hospital, Sheffield.

Liqin Zhao graduated from the Henan University of TCM in 1985, and is a council member of the Gynaecological Committee of the renowned World Federation of Chinese Medicine Societies (WFCMS). She has been practise TCM for over 27 years with special interests on reproductive and gynaecological health. She has been working in collaboration with Prof. TC Li and CARE Hospital (the largest independent fertility treatment provider in the UK), has successfully treated hundreds of infertile couples. She can be contacted at: [fertilitycare@zhongjinguk.com](mailto:fertilitycare@zhongjinguk.com)

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