

Helium Plasma Technology in Gynaecology

Surgical Management of Endometriosis

What is the Helica?

The Helium Thermal Coagulator (Helica) is a unique electro-surgical device used in surgery to produce a cauterising effect similar to diathermy and laser.

The Helica operates on very low electrical power combined with Helium to produce a plasma beam that emanates from the tip of a plastic sterile probe. It is the plasma beam that produces the coagulating effect at this tip.

The opinion of many surgeons is that the lower the power of the instrument the more control they have, and the more control they have, the safer the instrument.

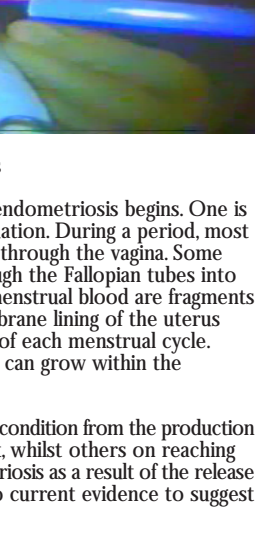
The Helica operates on a very much lower energy levels than any other electro-surgical instrument currently available, and therefore may be inherently safer.

The Gynaecological community was the first surgical discipline to identify the Helica as an ideal laparoscopic tool for the surgical treatment of endometriosis.

To date over 10,000 patients have been successfully treated with the Helica, without a single complication being reported.

There are now nearly a hundred centres throughout the UK who have the Helica installed.

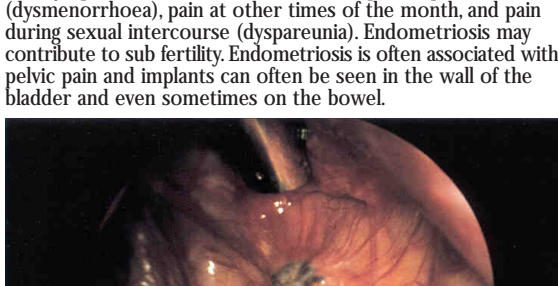
The Helium Thermal coagulator was developed in 1995 by Maurice Howieson an electronics engineer in Edinburgh, Scotland.



Prior to 1995 the electro-surgical device market consisted mainly of Diathermy and Lasers. As a consequence there was a desperate need from the surgical community for a much safer device, but with the cauterising and cutting potential of electro-surgical devices available at the time.

The Helium Thermal Coagulator is the only electro surgical device in the world that has been developed, manufactured and supplied from the United Kingdom.

The Plasma Beam emanating from the distal end of the probe



Endometriosis and its Causes

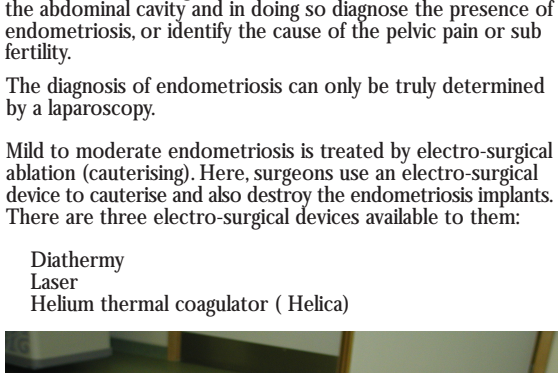
Several theories exist as to how endometriosis begins. One is the theory of retrograde menstruation. During a period, most of the menstrual blood flows out through the vagina. Some blood also passes backward through the Fallopian tubes into the peritoneal cavity. Within the menstrual blood are fragments of endometrium, the mucus membrane lining of the uterus (womb) which is shed at the end of each menstrual cycle. These fragments of endometrium can grow within the peritoneal cavity.

Some women seem to develop the condition from the production of cells during foetal development, whilst others on reaching puberty appear to trigger endometriosis as a result of the release of certain hormones. There is also current evidence to suggest that there is a familial link.

Implants of endometriosis can be found on all of the nearby organs, for example the ovaries, the bladder and the bowel. Endometriosis has even been known to spread to more distant organs, such as the lungs, navel (umbilicus) and even the eyes.

Symptoms.

The symptoms of endometriosis include painful periods (dysmenorrhoea), pain at other times of the month, and pain during sexual intercourse (dyspareunia). Endometriosis may contribute to sub fertility. Endometriosis is often associated with pelvic pain and implants can often be seen in the wall of the bladder and even sometimes on the bowel.



Black Spots of Endometriosis

Treatment of Endometriosis

Endometriosis is treated basically by one of two approaches:-

Surgical or Medical

Approximately 7 out of 10 specialists favour surgery. However the average time it takes for a typical patient with endometriosis to be seen by a gynaecologist and be surgically treated can be seven years or even more, during which time the disease is progressively getting worse.

Surgical management of Endometriosis

Until now most surgeons have performed a laparoscopy purely as a means to making an accurate diagnosis. Patients were advised, on a follow up visit to an Out Patients Clinic, of the presence and extent of the endometriosis. Patients were then advised that a second laparoscopy was required so that the disease could be surgically treated.

Currently, in centres of excellence patients are able prior to their first laparoscopy to consent to having the endometriosis, if found, treated at the same time, thus avoiding a second laparoscopy.

A Laparoscope is a thin surgical telescope which is inserted through a small incision near the navel (umbilicus).

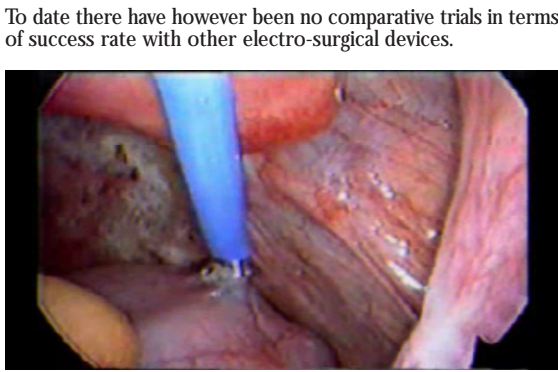
This procedure, using a laparoscope as a diagnostic instrument is called a laparoscopy.

This enables the surgeon to make an internal examination of the abdominal cavity and in doing so diagnose the presence of endometriosis, or identify the cause of the pelvic pain or sub fertility.

The diagnosis of endometriosis can only be truly determined by a laparoscopy.

Mild to moderate endometriosis is treated by electro-surgical ablation (cauterising). Here, surgeons use an electro-surgical device to cauterise and also destroy the endometriosis implants. There are three electro-surgical devices available to them:

- Diathermy
- Laser
- Helium thermal coagulator (Helica)



A Laparoscope

Depending on the severity of the condition often the endometriosis may have to be excised (cut out), especially if there is evidence of the presence of nodules of endometriosis on the bowel or the vagina.

Medical management of Endometriosis

The first line of medical management may come from the GP who may prescribe analgesic type drugs as a means of relieving the pain. Alternatively he may consider prescribing a course of hormone preparations such as the contraceptive pill.

Even after pregnancy, endometriosis symptoms often persist. A patient may then find herself being prescribed more potent hormone treatment such as Gonadotrophin releasing agonists (GnRH agonists). The problem with these powerful hormones is that many patients are unable to tolerate them.

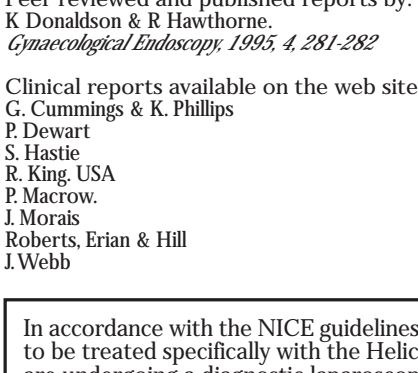
After medical treatment has been completed all too frequently the pain and the endometriosis return. The patient may finally get the opportunity to be examined by a gynaecologist who may choose to offer her surgery.

Treatment of Endometrioma

Another type of endometriosis is when implants on the ovary form a cyst, often referred to as a chocolate cyst (endometrioma). This type of cyst is often identified through ultrasound, computerised tomography (CT scan) or by magnetic resonance imaging (MRI). These techniques are usually carried out in a Radiology (X-ray) Department and certainly assist the gynaecologist in making an accurate diagnosis.

A patient who presents with pain, sub fertility and the evidence of a cyst during an ultrasound, is usually advised that she would certainly benefit from a laparoscopy.

During a laparoscopy the surgeon opens the cyst capsule drains away the contents, and then coagulates the lining of the cyst capsule in order to completely destroy any evidence of any endometriosis



A typical Ovarian cyst (An Endometrioma)

Successes

P. Macrow, a fertility specialist and his team at the Pinderfields Hospital Trust in Wakefield, Yorkshire initiated an independent Departmental audit on fifty patients who presented with endometriosis of whom 18% had sub fertility. All the patients within this group were laparoscoped and deposits of endometriosis destroyed by using the Helica. As a consequence 45% of this group conceived after Helica ablation.

To date there have however been no comparative trials in terms of success rate with other electro-surgical devices.



Endometriosis implants being ablated on the small bowel with the Helica

Treatment of Adhesions

Endometriosis often irritates surrounding tissue, prompting the production of web-like scar tissue which produces filmy and sometimes very dense adhesions which then bind pelvic organs together. In severe cases these organs are completely covered by adhesions. In order to free these organs, excision (division) is necessary and as a result there may be considerable relief from pain.

Other Procedures

Adhesions being divided using the Helica

Other conditions such as polycystic ovarian syndrome can also be treated laparoscopically, using the Helica. This is achieved by drilling a number of small holes in the outer wall of the ovary to aid ovulation.

An ovary being drilled with the Helica

Helium Thermal Coagulation (Helica)

The clinical benefits of the Helica are directly linked to the safety of its use. Unlike other electro-surgical devices, the Helica can be used successfully to destroy endometriosis implants located on very sensitive areas such as the uterus or the bowel.

Surgeons purposely avoid, because it is not safe, ablating over sensitive organs when only diathermy or lasers are available for them to use. As a consequence the treatment is incomplete and only some of the pain patients experience will have diminished.

The patient's Gynaecologist will advise on all aspects of the use of the Helica and also on the level of success he has achieved with this device.

Reports by medical practitioners, surgeons and researchers named below can be viewed on the Helica website www.helica.co.uk

- References:
Peer reviewed and published reports by:
K Donaldson & R Hawthorne.
Gynaecological Endoscopy, 1995, 4, 281-282

Clinical reports available on the web site:-

- G. Cummings & K. Phillips
- P. Dewart
- S. Hastie
- R. King, USA
- P. Macrow.
- J. Morais
- Roberts, Erian & Hill
- J. Webb

In accordance with the NICE guidelines, if you want to be treated specifically with the Helica whilst you are undergoing a diagnostic laparoscopy you must consent to the Helica being used. Please note, despite your consenting to the Helica being used, your surgeon will determine whether it is appropriate. That will mainly depend on the severity of your condition.

This procedure was assessed by the National Institute of Clinical Excellence (NICE) in March 2004.

A containing statement to its use was made despite the wide body of evidence of its safety and effectiveness in over 10,000 cases held by ourselves and many clinicians using the therapy.

A clinical paper has now been published demonstrating the Helica TC remains the only electro surgical device used to treat endometriosis which has published evidence to support its use.

Please refer to the Helica website for details regarding this clinical paper