

Endometriosis and Fertility

**A guide for women
and their families**

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Endometriosis

A common problem

Endometriosis is a very common condition, with Australian research suggesting that as many as one woman in nine will be diagnosed with it by the age of 44 years. Yet despite endometriosis being so common, it remains a mysterious and poorly-understood disease that causes a great deal of suffering in our community.

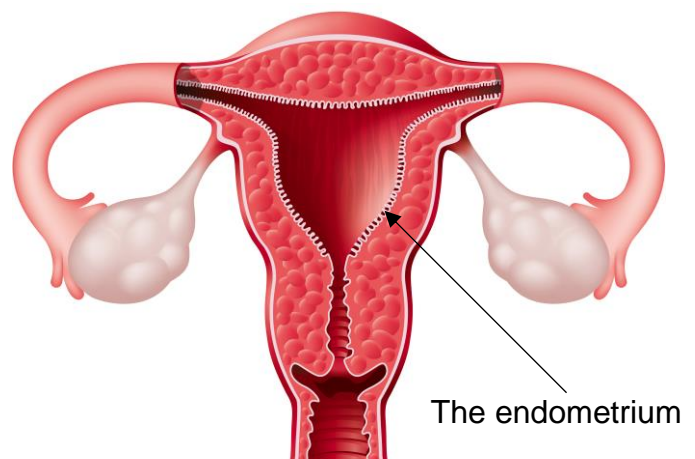
This eGuide aims to provide you with information to help understand what is known about endometriosis, and what remains unknown. With this information, making decisions about your treatment and care that are right for you.

What is endometriosis?

The **endometrium** is the name of the glandular lining of the uterus. The endometrium is the layer that is receptive to the embryo, and in which a pregnancy establishes, grows, and is nourished. **Endometriosis** is an inflammatory condition in which deposits of tissue exactly that same as the lining of the uterus are present outside of the uterus. Endometriotic tissue grows under the influence of the hormone oestrogen.

While endometriosis can be found anywhere in the pelvis – and, indeed, elsewhere – it is most commonly found on the ovaries, behind the uterus and on the supporting ligaments of the uterus.

There are three distinct types of endometriosis: deep infiltrating endometriosis; endometriomas of the ovary; and, superficial endometriosis.



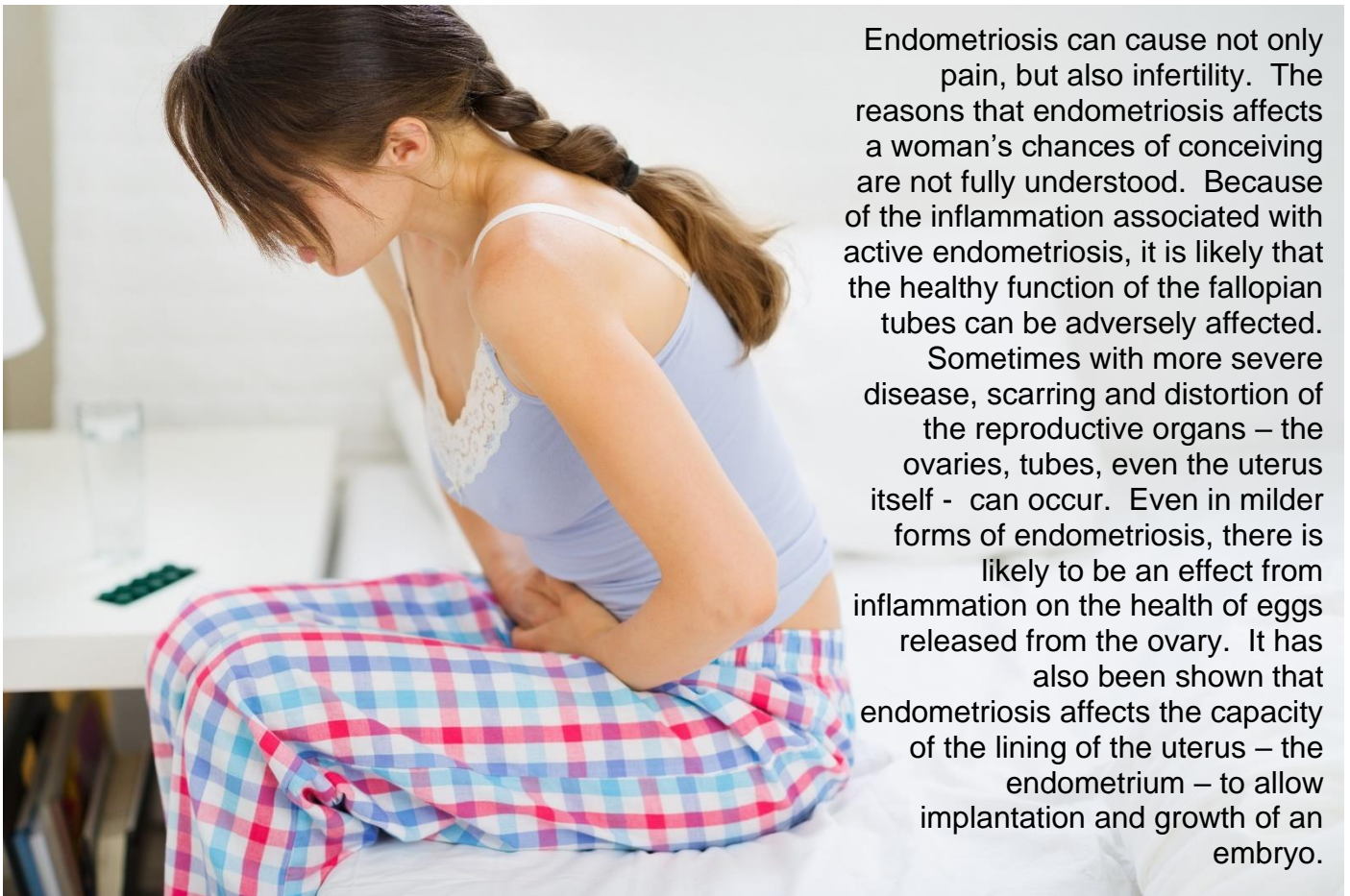
Deep infiltrating endometriosis refers to large deposits of endometriotic tissue that penetrate under the surface of the pelvic lining (the peritoneum).

Endometriomas are fluid-filled cysts of endometriosis that affect the ovaries.

Superficial endometriosis refers to small deposits of endometriosis that spread over the peritoneal lining of the uterus, but do not invade deeply.

What are the effects of endometriosis?

Endometriosis has a wide range of effects and symptoms, including delays in becoming pregnant. The severity of the symptoms of endometriosis does not necessarily reflect the number and size of endometriotic deposits. Pain is a common feature, and this may occur with the periods or at other times – for some women, pain is always present. There may be pain with intercourse. Women may also experience pain or disturbance of bladder and bowel function. Infertility is common too, and for some women may be the only feature of the disease. **Every woman with endometriosis has an individual and different experience of the condition.**



Endometriosis can cause not only pain, but also infertility. The reasons that endometriosis affects a woman's chances of conceiving are not fully understood. Because of the inflammation associated with active endometriosis, it is likely that the healthy function of the fallopian tubes can be adversely affected.

Sometimes with more severe disease, scarring and distortion of the reproductive organs – the ovaries, tubes, even the uterus itself - can occur. Even in milder forms of endometriosis, there is likely to be an effect from inflammation on the health of eggs released from the ovary. It has also been shown that endometriosis affects the capacity of the lining of the uterus – the endometrium – to allow implantation and growth of an embryo.

Why does endometriosis happen?

The cause of endometriosis remains unknown but there are many theories. It is possible that menstrual blood passing back into the pelvis from the fallopian tubes carries endometriotic cells that implant and grow outside of the uterus. Another theory is that the lining of the pelvis and abdominal cavity – the peritoneum – undergoes a change in cell type that becomes endometriosis. It has also been suggested that women with endometriosis have an alteration in immune function that allows endometriosis to establish and grow.

Many women with endometriosis will have other female relatives – their mother, sister, or aunts – with endometriosis. Indeed, a woman who has a close female relative with endometriosis has a seven-times higher chance of developing endometriosis than women without endometriosis in the family. A number of scientific studies have identified possible genes that could be associated with endometriosis occurring.

Why does endometriosis cause infertility?

The association between infertility and endometriosis is well-recognised. Authors Bulletti and colleagues, in a recent review of the disease* reached the following conclusion:

“About 25 to 50% of infertile women have endometriosis, and 30 to 50% of women with endometriosis are infertile.”

In some cases the cause is obvious: severe endometriosis can cause scarring that blocks the fallopian tubes, or interferes with egg release from the ovaries. However, there are more subtle effects as well. The inflammation associated with endometriosis releases toxic cells and chemicals into the pelvic environment.

These factors can affect the ‘quality’ of eggs, and the capacity of the normal endometrial lining of the uterus to allow an embryo to implant and grow. The inflammation also has adverse effects on the function of the fallopian tube – where the egg and sperm fertilise – and even a possible effect on the function of hormones such as progesterone.

*Carlo Bulletti and colleagues. Endometriosis and infertility. *Journal of Assisted Reproduction and Genetics* 2010; **27**(8): pages 441-447.





How is endometriosis treated?

When endometriosis is found during the treatment of a fertility delay, the diagnosis is often a shock for women and couples. The natural question is, “how should my endometriosis be treated to restore my fertility and allow me to become pregnant?”

Whenever decisions are made regarding treatment, it is critical that the woman and her partner drive decision-making about their care. To allow this, women must be empowered with as much information about their condition as possible and be given information about the potential benefits and risks of each possible approach.

Treatment of endometriosis can be complex and is affected by many factors. For example, whether the woman has pain as well as a fertility delay. The severity of the condition and whether there is associated scarring or tubal damage. The age of the woman, and her general health also are important considerations. Whether there is a potential fertility problem with the woman’s partner is also a key question.

Watchful waiting

In some cases, an approach of ‘watchful waiting’ may be offered. The evidence tells us that women with mild to moderate endometriosis can still become pregnant without medical treatment, but that this may take more time. For this reason, ‘watchful waiting’ is most appropriate for young women who otherwise are healthy, and where there is no factor affecting a male partner as well. The fallopian tubes must be healthy and not blocked, and regular ovulation must occur.

Medications – non-surgical treatment

Because endometriosis is nourished by the hormone oestrogen, most of the medications used to treat endometriosis have an effect to reduce the effects of oestrogen. That said, non-surgical treatment of endometriosis is more commonly used for the treatment of pain than infertility. Part of the reason for this is that many non-surgical treatments have a contraceptive effect, which is not appropriate for treating infertility. Furthermore, scientific studies have shown that medical treatments such as Zoladex, and other hormonal treatments, not only do not increase the chance of pregnancy, but commonly delay becoming pregnant and having a baby.*

*Macer and colleagues. Endometriosis and infertility: a review of the pathogenesis and treatment of endometriosis-related infertility. *Obstetric and Gynecological Clinics of North America* 2012; 39(4): pages 535-549.

Surgery for endometriosis

The aims of surgery in the treatment of endometriosis are two-fold: to improve pain; and, to improve fertility. Surgical approaches thus aim to deal with scarring and adhesions - with a view to restoring the normal relationships of the fallopian tubes and ovaries - and to remove deposits of endometriosis.

The scientific literature about endometriosis can be confusing and contradictory, and evidence of the benefit of surgery for fertility in the treatment of endometriosis can be disappointingly frustrating to interpret and apply.

Deposits of deep infiltrating endometriosis should, where safely possible, be 'excised.' This means to carefully remove all of the endometriotic deposit. Because endometriosis can occur over important structures such as the bowel, bladder, or the ureter (the tube carrying urine from the kidney to the bladder), great care and skill are required for excision to be performed at times.

It is important to understand that there is continuing controversy about the benefits of removing deep infiltrating endometriosis purely to improve fertility. A recent comprehensive review of the subject by Marcia Carneiro and colleagues* concluded:

"The role of surgery in the treatment of infertile women with deep infiltrating endometriosis remains a matter of intense debate. Available evidence is poor... [so] a clear cut conclusion cannot be drawn. Women should be counselled individually taking into consideration factors such as pain, their age, and where the lesion is located..."

There is also controversy about the surgical treatment of endometriomas of the ovary. While there is scientific evidence that removing the endometriotic tissue from the ovary increases the rate of pregnancy, it may have a more negative long-term effect by damaging the ovary. This led a review by the Royal College of Obstetricians and Gynaecologists of the UK to conclude that:

"Many uncertainties remain on the optimal treatment of an endometrioma. Extensive ovarian surgery has a detrimental effect on ovarian reserve... the theoretical benefit of performing surgery has not been supported with substantive scientific evidence."

Surgery in a nutshell

Surgery for endometriosis has two potential benefits – treating pain and related symptoms, and improving the chances of having a baby.

The scientific evidence is stronger with moderate to severe endometriosis, but ultimately there is little high-level evidence to support one form of surgery over another. For all of these reasons, it is important for a woman to carefully discuss the potential benefits and possible risks in her individual case, taking into account all factors including pain, desired family size, her age, and other health factors.

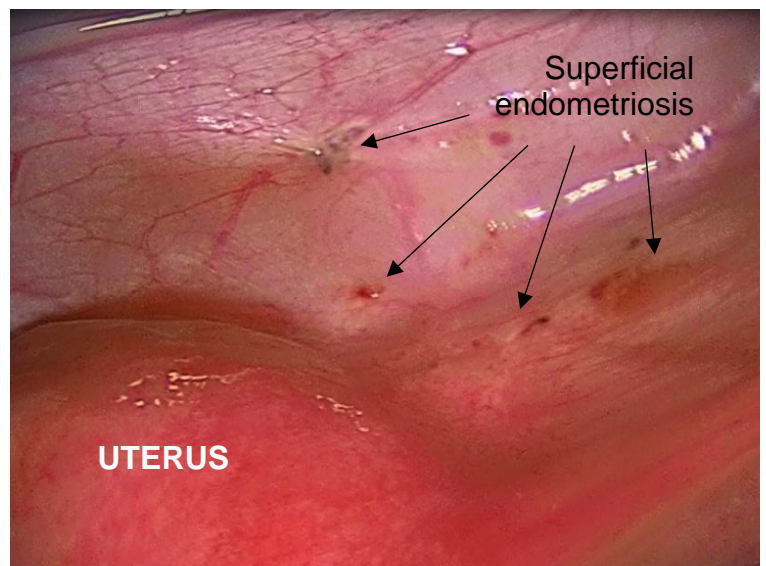
*Carneiro and colleagues. To operate or not to operate on women with deep infiltrating endometriosis before IVF. *JBRA Assisted Reproduction* 2017; 21(2): pages 120-125.

Surgery for endometriosis – a visual guide

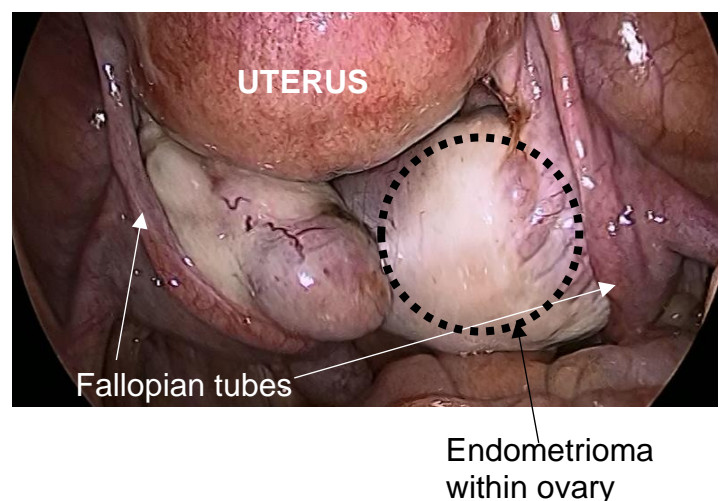


Surgery for endometriosis is almost always performed using a laparoscopic (**keyhole**) approach. Most surgery can be performed in a day procedure setting.

In most circumstances, endometriosis is **excised** (surgically cut out) and sent to the pathologist for examination.



The management of **endometriomas** – cystic deposits of endometriosis filled with dark fluid deep within the ovary – is controversial. The type of surgery must be individualised.



IVF in the treatment of endometriosis-associated infertility

Many women and couples will face the issue of how best to become pregnant when endometriosis is present. The way forward can seem bewildering, and is influenced by many factors. Whether the treatment is 'watch and wait,' with medications, surgery, or a combination of all of these, ultimately IVF treatment need to be considered.

Macer and Taylor, in their recent review of the scientific evidence*, summarize the situation as follows:

“IVF is currently the most effective treatment for endometriosis-associated infertility.”

After reviewing the evidence for medical treatments, surgery, and IVF, their final conclusion was:

“While it is still uncertain how much endometriosis affects IVF success rates, IVF appears to be the most successful treatment option for patients with all stages of endometriosis. In addition, it is not unreasonable to consider pre-IVF ovulation suppression to help suppress [inflammation and disease presence] before any form of assisted reproductive treatment. In patients with [ovarian] endometriomas, more research is needed to assess their effect on IVF and whether surgical intervention prior to IVF increase the success rate.”

*Macer and colleagues. Endometriosis and infertility: a review of the pathogenesis and treatment of endometriosis-related infertility. *Obstetric and Gynecological Clinics of North America* 2012; 39(4): pages 535-549.



Many couples will need to consider the option of IVF as part of their fertility treatment when endometriosis is present.

About Professor Steve Robson MD PhD



Steve Robson is internationally recognised as one of the world's foremost specialists. In 2019, Steve was the recipient of the American College of Obstetricians and Gynaecologists highest honour - the **Distinguished Service Award**.

Steve undertook his specialist training in Australia, England, and Canada. In his first year of formal training in IVF and reproductive medicine in 1998 he won the **Young Clinician's Prize** of the Fertility Society of Australasia (FSA).

Steve Robson is the immediate past-President of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG), and is Professor in Obstetrics and Gynaecology at the Australian National University. He holds two doctorates, both a Doctor of Medicine (MD) and PhD, as well as Fellowships of the Australian, British, and American Colleges of Obstetricians and Gynaecologists.

Steve was appointed by the Health Minister to the National Health and Medical Research Council (NHMRC), as well as to the National Endometriosis Advisory Group – part of the National Action Plan for Endometriosis.

Professor Robson is one of the authors of the *Oxford Textbook of Obstetrics and Gynaecology*, and as a researcher is the author of hundreds of research articles, editorials, reviews, and book chapters. His research has been published in the most prestigious international IVF journals – *Fertility and Sterility*, and *Human Reproduction*.

He has published research papers not only on IVF and assisted reproduction, but also on reproductive surgery and endometriosis surgery.

In addition, Professor Robson is Chair of the organising committee for the International FIGO meeting in 2021, and is a member of the internationally ground-breaking *Mackenzie's Mission* project.

