

# Endometriosis and infertility



Fertility New Zealand is a registered charity supporting people with fertility issues

[www.fertilitynz.org.nz](http://www.fertilitynz.org.nz)  
[support@fertilitynz.org.nz](mailto:support@fertilitynz.org.nz) • ph 0800 333 306  
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Endometriosis is a significant cause of infertility, because the woman partner is diagnosed with mild endometriosis in 10% of couples that have difficulty conceiving.

## What is endometriosis?

Endometriosis is a disease characterised by:

- Growth of the lining of the uterus (endometrium) in tissues outside of the uterus, so-called 'ectopic sites'; and
- Inflammation of tissues as a reaction to the growth of the endometrium at these ectopic sites.

## Why does endometriosis occur?

The cause of endometriosis is unknown, although we can begin to understand the growth of the endometrium on pelvic organs and the consequent inflammatory reaction, by understanding the function of normally sited endometrium.

## What happens to the endometrium in normal women?

The lining of the uterus (endometrium) has the most remarkable growth potential of any tissue in the body. Various substances, some which are made within the endometrium itself, and some of which are derived from the circulating blood, promote this growth.

The most potent stimulant of endometrial growth is the female hormone called oestrogen. In women, oestrogen is normally produced in the ovary by the egg follicles, and it then circulates in the blood. The endometrial cells lining the uterus actively and preferentially absorb the oestrogen, which then stimulates the cells to grow and proliferate. As part of the normal function of the endometrium, there is no inflammatory reaction.

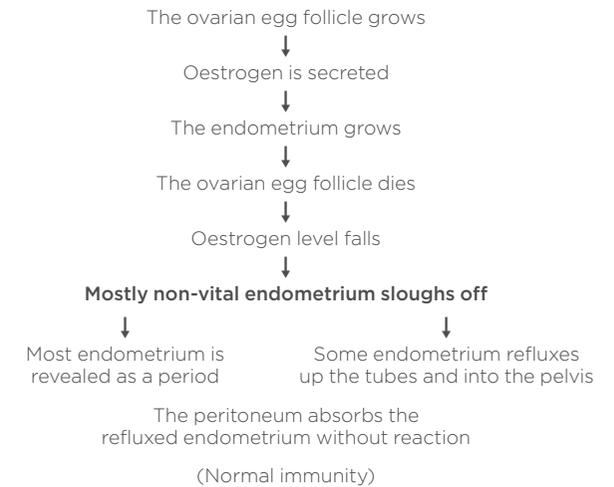
The endometrium is normally shed during a woman's period, after the ovarian follicle has died and the oestrogen level has fallen. In nearly all women, some of the endometrium refluxes up the fallopian tubes. It spills out of the tubes, over the ovaries, and into the pelvis, which is lined with a thin layer of tissue called the peritoneum. The peritoneum normally absorbs this refluxed tissue with no inflammatory response, as with any other part of the body's natural response mechanism. Consequently, the peritoneal lining stays smooth so that the tubes and intestines can function normally.

## What happens to the endometrium in women who have endometriosis?

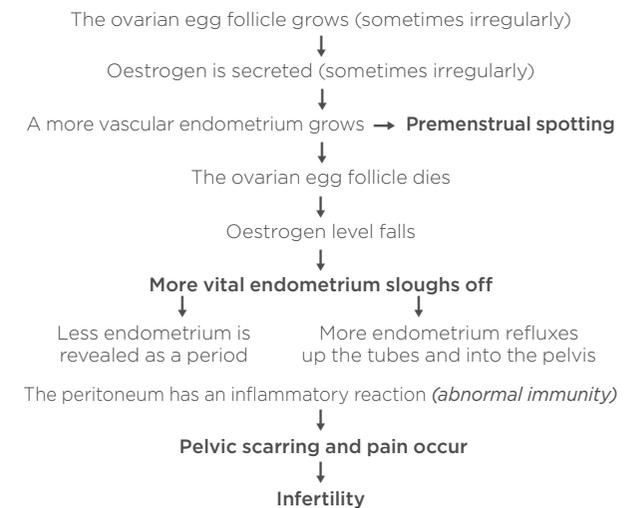
In women who have endometriosis:

- The endometrium is more vascular;
- More of the endometrial tissue that is shed stays alive, or vital;

## Endometrial development in normal women



## Endometrial development in women with endometriosis



- More of the sloughed tissue refluxes up the fallopian tubes, bathing the peritoneum and pelvic organs in more endometrial reflux that is also more vital. Whether the refluxed endometrium itself grows, or whether it stimulates the tissues in the pelvis to grow endometrium, ►

is uncertain. In any event, there is growth of endometrium in these tissues outside the uterus.

Women who have endometriosis also have an abnormal autoimmune response, because the body's immune response to the initial spill and growth of the refluxed endometrium is not simply by absorption, but by an inflammatory reaction. Women who have endometriosis may also have other hyperimmune problems – such as asthma, arthritis or colitis – more commonly than other women.

### Why do women who have endometriosis have more difficulty conceiving?

Women who have endometriosis have more difficulty conceiving for a number of reasons, including:

- The endometrium may be less responsive for implantation. Inflammation within the uterus, induced by the more vascular endometrium, may cause slight bleeding or “spotting” that becomes evident several days before the period is due. The blood within the endometrial cavity oxidises (rusts!), releasing chemicals that inhibit the development of the hatching embryo at the very time that the endometrium needs to have optimum function for implantation.
- Sexual intercourse may occur less frequently because of pain from inflamed growths on pelvic ligaments.
- Fallopian tubes or ovaries may be scarred as a result of inflammation. This can interfere with the ability of the follicle to release the ripe egg into the end of the tube.
- Inflamed pelvic tissues may digest sperm. This may result in insufficient numbers of sperm to digest the cloud of cells around the ripe egg and for one sperm to fertilise the egg.
- It may be physically impossible for the tube to pick up the egg because of a large cyst within the ovary. These cysts can develop from ectopic endometrium on the surface of the ovary, which can engulf deeper ovarian tissue, forming a small cyst lined with endometrium. This endometrium can then bleed regularly into itself, developing into a large endometriotic cyst.
- Ovarian follicles may not develop, rupture and release the eggs well because inflammation in and around the ovaries may interfere with this important function.

### When is endometriosis suspected, and how is it diagnosed?

In a woman presenting with infertility, endometriosis may be suspected if the woman experiences pain or severe discomfort around the time of her period, ovulation, or during sexual intercourse. She may also experience irritable bowel symptoms if the endometriosis involves the bowel.

Although endometriosis may also be suspected because of tenderness on examination, an ovarian cyst, or abnormal fluid collections seen during an ultrasound scan, endometriosis can only be diagnosed by the presence of characteristic flared, haemorrhagic or scarred lesions (like a burn) during a laparoscopy. This procedure needs to be done under general anaesthetic.

### How can endometriosis be treated rationally?

For rational treatment of endometriosis, the major triggers to the development of endometriosis need to be addressed. These are:

- A genetic effect of growing more vital hypervascular endometrium; and
- An inherent ability to develop an inflammatory over-reaction to the abnormal endometrial stimulus.

This means that the treatment of endometriosis needs to:

- Restrict the ability of the endometrium to grow; and
- Ensure the immune system is not stressed.

Unfortunately, our understanding of the immune system and the inflammatory over-reaction is more primitive even than our understanding of endometrial growth. This makes it very difficult to treat in a rational way the cause of endometriosis in women who have infertility or pain.

As endometriosis is usually diagnosed at laparoscopy, it is often convenient to destroy or remove the inflamed tissue growths or scars at the time, especially if it provides relief from pain; surgical treatment may also assist fertility. However, other ‘seeds’ of ectopic endometrium may grow subsequently, so any benefits of surgery may be short-lived.

Fortunately, some women's bodies heal themselves of endometriosis, although the reason why this occurs only in some women is as uncertain as the initial development of the disease.

Medical treatments such as progestogens, which block follicle development and thereby inhibit growth of the endometrium (including ectopic endometrium), are reasonably effective in controlling pain and reducing cyst formation. However, medical treatments also block the body's ability to conceive, so women who wish to conceive only use them to settle inflammation prior to specific fertility treatments.

### What fertility treatments can assist women who have endometriosis?

Unfortunately as yet, the only treatments proven to specifically benefit infertile women who have endometriosis are:

- Intra-uterine insemination with mild hyperstimulation using fertility drugs; or
- In-vitro fertilisation.

Alternative treatments – such as herbs – may have an effect, although this is not scientifically proven.

### Is medicine likely to find better treatments for endometriosis?

The immune system has the ability to heal itself, so the inflammation associated with endometriosis can be overcome. But there is no treatment yet that will heal over-active immune systems. Nor is there any genetic treatment that will make the endometrium behave more normally. Hopefully medicine will soon be able to identify the exact problems within the genetic and immune systems that occur in women who have endometriosis. Then there will be better treatments of endometriosis that remedy the major problems and inhibit the growth of ectopic endometrium and the consequent inflammation that can be so damaging. ■

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