HYDROSALPINX
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What is a Hydrosalpinx?

Hydrosalpinx, derived from Greek, is a word literally meaning "water tube".

A Hydrosalpinx is a blocked, dilated, fluid filled-fallopian tube usually caused by a previous tubal infection.

What causes a Hydrosalpinx to develop?

Injury to the far end of the fallopian tube, the ampulla, and its delicate fingers, the fimbria, causes the end of the tube to close. Glands within the tube produce a watery fluid that collects within the tube, producing a sausage shaped swelling that is characteristic of hydrosalpinx. The classic causes of hydrosalpinx are **chlamydia and gonorrhea**, which can run undetected for years, slowly injuring and destroying the delicate fimbria. Other causes include endometriosis, appendicitis and abdomino-pelvic surgery. As a reaction to injury, the body rushes inflammatory cells into the area, and inflammation and later healing result in loss of the fimbria and closure of the tube. These infections usually affect both fallopian tubes, and although a hydrosalpinx can be one-sided, the other tube on the opposite side is often abnormal.

What Effect Does a Hydrosalpinx Have on Fertility?

Not only does a **hydrosalpinx cause infertility**, it can also reduce the success rate of fertility treatment, even those treatments that bypass the fallopian tubes. The blocked tube can communicate with the uterus, and the fluid from the tube can sometimes leak back into the uterine cavity**.** This fluid is believed to be toxic to the early embryo development, and certainly provides an unfavorable environment. The large amount of the fluid flow back into the uterus can produce enough flow that embryos find it difficult to attach, since they have no ability to move against the tide.

Does a Hydrosalpinx Cause Symptoms?

Many patients with a hydrosalpinx suffer from chronic or recurrent pelvic pain, while others have no symptoms. Patients with a hydrosalpinx are more susceptible to repeated acute tubal infections, which can cause fever and pain.

How Can a Hydrosalpinx Be Diagnosed?

A hydrosalpinx can be diagnosed by a Hysterosalpingogram (HSG), Ultrasound or at Laparoscopy.

The **hysterosalpingogram (HSG)** is a procedure in which dye is injected through the cervix and into the uterus and fallopian tubes. An X-ray picture then reveals the outline of

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the uterus and tubes. A hydrosalpinx appears as a large-sausage-shaped dilation of the tubes. Dye does not spill out of the tube.



Figure A.
Normal HSG



Figure B.
Abnormal HSG (bilateral hydrosalpinx)

Ultrasound - The best view, most of the time, is obtained with a vaginal ultrasound. A normal fallopian tube is usually not visible; a hydrosalpinx appears as a characteristic sausage-shaped fluid collection between the ovary and fallopian tube.



Ultrasound picture of a Hydrosalpinx
The black tubular sausage shaped structure is the hydrosalpinx fluid within the tube

Laparoscopy is another means of assessing the tubes, but is generally used for treatment and not for assessment. In laparoscopy, a small television camera is introduced through the belly button. The pelvic organs can be visualized on a television screen. Laparoscopy is the gold standard test for evaluation, since looking at the fallopian tubes will usually provide the best view of their anatomy.

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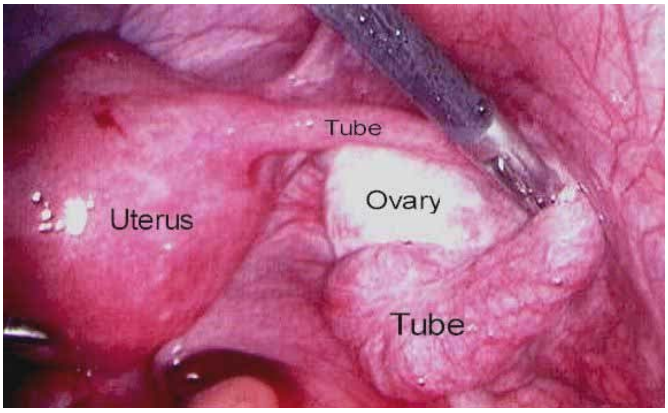

Hydrosalpinx, a blocked right fallopian tube
The end of the tube is stuck in pelvic scar tissue to the ovary

Diagnostic tests such as ultrasound and HSG are not 100% accurate. Laparoscopy usually will confirm the diagnostic tests, but can show that tubes that were thought to be normal actually have significant disease, and vice versa. The risks of anesthesia and surgery dictate that laparoscopy is used for definitive therapy, rather than as a diagnostic test.

Why Remove Hydrosalpinx Before IVF?

As mentioned earlier, hydrosalpinx can reduce the success rate of fertility treatment, namely IVF in this context. There is research evidence to suggest that removal of hydrosalpinx before IVF, significantly improve the success rates of IVF and therefore this is recommended to optimize the chances of success after IVF. The rationale for treatments to improve the results of in-vitro fertilization is based on interruption of the leakage of hydrosalpinx fluid into the uterine cavity. This in turn, reduces significantly, the chances of an ectopic pregnancy.

Surgical Options for Treating Hydrosalpinx Before IVF

There are two main ways of dealing with a hydrosalpinx surgically.

- ***Laparoscopic Salpingostomy (opening the tube) and clipping of the affected tube***

1. Key hole surgery- Minimally invasive
2. Opening up the fluid filled tube with an incision over the tube and draining the fluid
3. Applying a clip to occlude the tube near the uterine end, so as to stop any fluid leaking into the uterus

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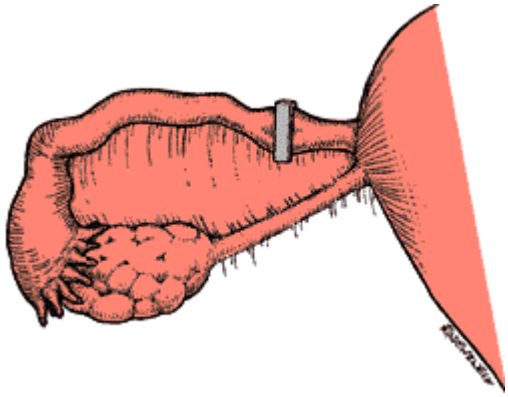
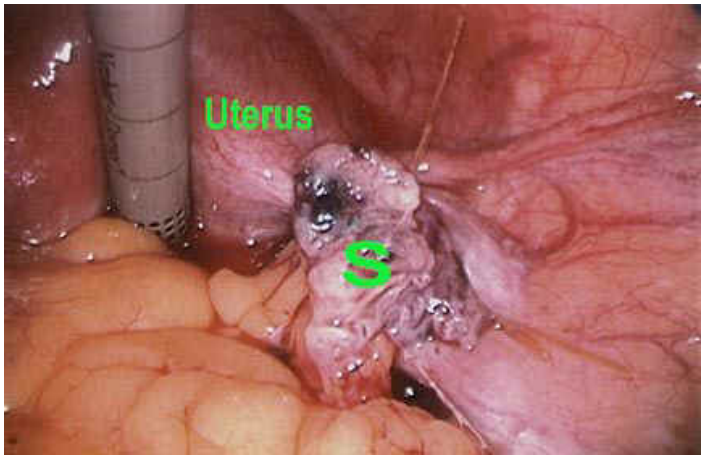


This conserves the tube, but however the fluid can reaccumulate. The clip prevents any reaccumulated fluid leaking into the uterine cavity. This is the preferred option in women with severe scarring where it is difficult to completely remove the tube.

- ***Laparoscopic Salpingectomy- Removal of the affected tube through a laparoscope***

1. Key hole surgery
2. Complete removal of the affected tube



Tube completely removed at Laparoscopy

This is a much more radical operation as compared to the first option; where in the entire length of the tube is removed. This may not be acceptable to many women. Moreover there is a slight anxiety among reproductive specialists, that this procedure may compromise blood supply to the ovary (which is very close to the tube). This may have adverse effect on the ovarian response to stimulation during IVF.

Both these procedures have more or less similar efficacy in improving the IVF success rates.

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Complications of Laparoscopic Surgery

- Anesthetic complications
- Injury to major blood vessels
- Injury to bowel/bladder – 1:1000 cases
- Bleeding
- Post-operative infection.

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Introduction

Fibroids are benign (non-cancerous) tumours of the womb. They are also known as myomas or fibromyomas. They are growths of smooth muscle and fibrous tissue.

The size of fibroids can vary from as small as a pea to that of a melon. At least one in five women develop a fibroid at some stage of their life, usually between the ages of 30-50 years old. Fibroids are more common in women who are overweight and women of Afro-Caribbean origin.

Fibroids are named according to where they are found in the womb. There are four types:

- **Intramural fibroids** are found in the wall of the womb and are the most common type of fibroids found in women.
- **Subserosal fibroids** are found growing outside the wall of the womb and can become very large. They can also grow on stalks (called pedunculated fibroids).
- **Submucosal fibroids** are found in the muscle beneath the inner lining of the womb wall.
- **Cervical fibroids** are found in the wall of the cervix (neck of the womb).

In very rare cases, malignant (cancerous) growths on the smooth muscles inside the womb can develop, called leiomyosarcoma of the womb.

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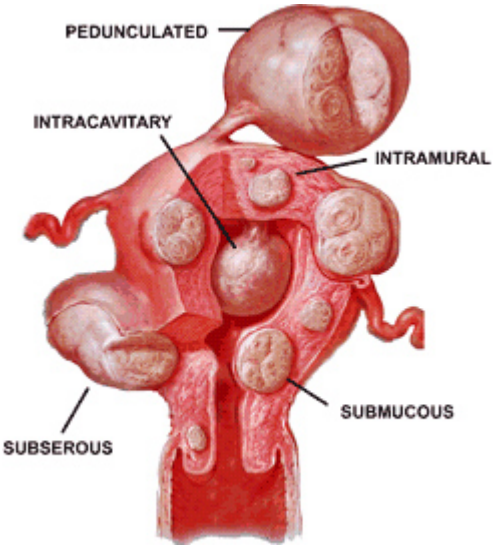

Symptoms

The majority of women with fibroids show no symptoms. Many women are unaware that they have fibroids. However, if symptoms develop, you may experience one or more of the following:

- heavy or painful periods in some cases this can lead to anaemia,
- discomfort, or swelling, in your lower abdomen, particularly if your fibroids are large,
- backache, or pains in your legs,
- urinating frequently, usually if your fibroids are pressing on your bladder,
- constipation which can be caused by the fibroids pressing on your rectum (large intestine leading to your anus), and
- pain or discomfort during sex this is usually if your fibroids are growing near your vagina (or lower part of your cervix).
- infertility

In some cases, you may have repeated miscarriages or infertility problems. Very rarely fibroids can cause problems during pregnancy and labour.

Causes

Fibroids are smooth muscle growths that occur during a woman's reproductive years (usually between the ages of 16 and 50). During this time the levels of estrogen and progesterone are at their highest. Fibroids tend to swell when estrogen levels are particularly high, for example, during pregnancy. They are also known to shrink when oestrogen levels are particularly low, such as after a woman has experienced the menopause. However, the exact cause of fibroids is still unknown.

Diagnosis

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As fibroids rarely have symptoms, they are often found during a routine gynaecological (vaginal) examination.

If fibroids are suspected, an **ultrasound scan** can be used to confirm a diagnosis. It can also rule out any other possible causes for your symptoms. For example, if you are experiencing heavy menstrual bleeding (period) and, following blood tests, the cause is still unknown, an ultrasound examination of your womb may be used.

A **trans-vaginal scan** is sometimes used to diagnose fibroids. It involves a small scanner being inserted into your vagina to take a close-up image of your womb.

Fibroids near your inner lining, and those within the cavity of your womb, can be seen directly using a **hysteroscope** (small telescope used to examine the inside of your womb). To look at the size and shape of the outside of your womb a **laparoscope** (small flexible tubing used to look inside the abdomen) is used. Both procedures can also be used to take a biopsy (sample of tissue) of the lining or outer layer of your womb.

If an ultrasound scan does not reveal any obvious problems, or if it has identified a problem, such as fibroids, your GP may refer you to a gynaecologist (a specialist in the female reproductive system). If further investigations are required, a biopsy may be carried out. The small sample of your womb lining can then be examined under a microscope.

Treatment

If you do not have any symptoms from your fibroids, treatment may not be necessary. Some women with minor symptoms, such as heavy periods, choose not to have treatment as their day-to-day life is not affected. After the menopause, fibroids often shrink, and your symptoms will either disappear or ease slightly.

To treat fibroids, your GP may recommend medication. However, in more severe cases, surgery can be considered.

Treatment with medication

The most effective medication to treat fibroids is an injected hormone medicine called gonadotropin releasing hormone agonist (GnRHa). This causes your body to release a very low amount of oestrogen, causing your fibroids to shrink. GnRHa works by preventing your menstrual cycle (period), but it is not a form of contraceptive. However, it does not affect your chances of becoming pregnant after you stop using it.

If you are prescribed GnRHa, it can help ease your heavy periods and any pressure felt on your abdomen. Common side effects include menopause-like symptoms, such as hot flushes, increased sweating, and vaginal dryness. Osteoporosis (thinning of the bones) is a less common side effect. GnRHa is not prescribed for long term use, and is often used to shrink fibroids prior to surgery.

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A combination of GnRHa and low doses of Hormone Replacement Therapy (HRT) can be used to shrink your fibroids, whilst preventing the side effects of the menopause. Other medicines can be used to treat heavy periods, but they are less effective the larger your fibroids are. These include:

- **Tranexamic acid** these tablets are taken from the start of your period for up to four days. However, treatment should be stopped if your symptoms have not improved within three months. The tablets work by helping the blood in your womb to clot, which reduces the amount of bleeding. Tranexamic acid tablets are not a form of contraception and will not affect your chances of becoming pregnant once you stop taking them.
- **Anti-inflammatory medicines** such as ibuprofen and mefanamic acid help to ease your periods and are taken for a few days during your period. They work by reducing your bodys production of a hormone-like substance, called prostaglandin, which is linked to heavy periods. They are also painkillers but are not a form of contraceptive. Common side effects include indigestion and diarrhoea.
- **The contraceptive pill** is often taken, during your period, to prevent your menstrual cycle (period) from occurring. Some contraceptive pills also help to reduce any period pain you may experience. See your GP to discuss which contraceptive pill you should use.
- **Levonorgestrel intrauterine system (LNG-IUS)** is a small plastic device that is placed in your womb and slowly releases the progestogen hormone called levonorgestrel. It prevents the lining of your womb from growing quickly so your bleeding becomes lighter. Possible side effects of LNG-IUS include; having irregular bleeding that may last for more than six months, acne (inflamed skin on the face), headaches, and breast tenderness. It may also stop you having periods at all, although this is rare.

Surgical procedures

Surgical procedures, for treating fibroids, are usually only considered if all other medications are ineffective. There are a number of different surgical procedures that can be carried out to treat fibroids. Common surgical procedures that are used to treat fibroids include:

- **Hysterectomy** involves surgery to remove the womb. A hysterectomy is not usually necessary unless the fibroids are very large or you have severe bleeding. A hysterectomy may be advised in order to prevent fibroids recurring. Having a hysterectomy can lead to early menopause and some women experience problems with a reduced libido.
- **Myomectomy** involves surgery to remove the fibroids from the wall of your womb. A myomectomy is an alternative to having a hysterectomy, particularly for women still wishing to have children. However, the procedure may not always be possible

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as it depends on your individual circumstances, such as the size, number and position of your fibroids.

- **Endometrial ablation** is removal of the womb lining. It is usually only carried out if your fibroids are near the inner surface of your womb. The affected womb lining is removed, which may be done in a number of ways, including using laser energy, a heated wire loop, microwave heating, or hot fluid in a balloon. Endometrial ablation can be used as an alternative to a hysterectomy.
- **Uterine artery embolisation (UAE)** is a new treatment used to block the blood supply to fibroids. This is done by injecting a chemical through a small tube (catheter) that has been guided by X-ray scans into a blood vessel in your leg. This is usually used in women with large fibroids, and has been known to shrink fibroids by up to 60%. There are reservations about using this procedure in women who want to get pregnant.

Surgical procedure for treatment

Treatment options for fibroids	
Questions	**Abdominal Myomectomy**
What is it?	Open surgery to remove fibroids (also called laparotomy)
What types of fibroids does it treat?	Can remove fibroids in the wall of the womb (intramural) and in the outer layer of the womb (subserous)
How is it done?	A 15cm cut is made in the abdomen for the doctor to shell out the fibroids. This is done with a looped wire, knife or laser. Once the fibroids have been removed, the uterus and abdomen are stitched up. The operation requires general anaesthetic and you will be in hospital for a few days.
What is the recovery period afterwards?	It will take about a month or more to recover at home. You will probably feel tired and weak and will need to regain your strength by walking and doing specific exercises. Do not lift heavy objects while recovering.
Will the fibroids come back?	Some studies show a 10 to 15% chance of fibroid regrowth, while others estimate 30%. In black women, regrowth may be as high as 50%.
Will I still be able to get pregnant?	Most women can still become pregnant after a myomectomy, but in some cases scarring in the womb can cause fertility problems.
What are the advantages of this procedure?	Advantages: your womb is left intact and you may still be able to have children.
What are the	Complications: bleeding that can lead to an emergency

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possible complications and other disadvantages?	hysterectomy. Infection; damage to surrounding organs. Disadvantages: 20 to 25% of women undergo additional surgery, usually hysterectomy, to stop symptoms. Possible weakening of the womb wall and scarring may cause complications during pregnancy such as rupturing of the womb wall.
Questions	**Laparoscopic Myomectomy**
What is it?	Keyhole surgery (through the abdomen) to remove fibroids.
What types of fibroids does it treat?	Recommended for fewer than three fibroids and fibroids that are less than 5cm wide.
How is it done?	A laparoscope (telescope) is inserted into the womb through a tiny cut in the abdomen. Other small cuts are made in the same area to insert instruments that slice up and remove the fibroids. This is done under general anaesthetic and you will be in hospital for a day or two. It is a difficult, often long, procedure and requires a highly skilled surgeon.
What is the recovery period afterwards?	The surgery may take longer but recovery is much quicker than abdominal myomectomy. Recovery at home takes 7 to 14 days.
Will the fibroids come back?	This procedure may not remove all fibroids. Any missed fibroids are likely to continue to grow. New fibroids may also develop.
Will I still be able to get pregnant?	Laparoscopic myomectomy does not usually interfere with fertility. It may improve your fertility if no other cause is found
What are the advantages of this procedure?	Advantages: less invasive than other surgical options; small abdominal scars and little scarring inside the womb.
What are the possible complications and other disadvantages?	Complications: unexpected complications may require an abdominal myomectomy or emergency hysterectomy. Disadvantages: there may be an increased risk of your womb rupturing during pregnancy.
Questions	**Hysteroscopic Myomectomy**
What is it?	Removal of small fibroids through the vagina.
What types of fibroids does it treat?	Can remove only small submucous fibroids.

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How is it done?	A small hysteroscope (telescope) is inserted into the womb through the vagina and cervix. A laser or wire loop is then inserted through the hysteroscope to remove the fibroids. You will be given a general anaesthetic and will probably be able to go home the same day.
What is the recovery period afterwards?	It should take 2 to 7 days to recover at home.
Will the fibroids come back?	There is a 20 to 30% chance of fibroids growing back.The fibroids which are partially in the muscle of the womb are likely to slip into the uterine cavity and a 2nd procedure may be needed .Very large fibroids may need 2 procedures .
Will I still be able to get pregnant?	Hysteroscopic myomectomy may improve you chances of getting pregnant .
What are the advantages of this procedure?	Advantages: no incisions; recovery is less than a week; little scarring. You will still have your womb and may be able to have children.
What are the possible complications and other disadvantages?	Complications: possible damage to the womb wall. Disadvantages: symptoms may continue: .Perforation of the uterus leading to the procedure being abandoned and a laparoscope(a small scope through the abdomen) may need to be inserted to look at any possible damage that may have occurred. You may be in hospital overnight to check for any complications. It is likely that the procedure may have to be repeated on another day.
Questions	**Uterine Artery Embolisation**
What is it?	A new procedure that blocks the blood supply to the fibroids. This reduces rather than removes fibroids.
What types of fibroids does it treat?	There has not been enough research to determine which types of fibroids respond best to embolisation.
How is it done?	The radiologist (doctor) threads a fine tube into the right and left uterine arteries and injects a dye to locate the arteries that are feeding the fibroids. A special substance is then injected to block (embolise) the blood supply. This is done under a local anaesthetic and you will be in hospital for a couple of days.
What is the recovery period afterwards?	Recovery at home should take 1 to 2 weeks.

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Will the fibroids come back?	There is little information about fibroid regrowth after embolisation.
Will I still be able to get pregnant?	Some women have become pregnant after embolisation, but it can also lead to ovarian failure. More research is needed.
What are the advantages of this procedure?	Advantages: minimally invasive; no incisions or scars; quick recovery period. You will still have your womb and may be able to have children.
What are the possible complications and other disadvantages?	Complications: risk of infection that requires a hysterectomy; risk of ovarian failure; radiation exposure. Disadvantages: may cause ovarian failure. This is a very new procedure and long-term effects are still unknown. It is not routinely offered to women trying to get pregnant .
Questions	**Hysterectomy**
What is it?	Removal of the uterus (womb). In some cases, the fallopian tubes, cervix and/or ovaries are also removed.
What types of fibroids does it treat?	Removes all fibroids. Should only be done if fibroids are very large or cause problems that cannot be treated in other ways.
How is it done?	The uterus is removed either through a cut in the abdomen (if fibroids are large) or through the vagina (if fibroids are small). Both are major operations. Abdominal hysterectomy can take one hour or several depending on the size of fibroids. You will be in hospital for 5 to 7 days. Vaginal hysterectomy takes about an hour and you will be in hospital for 2 to 3 days.
What is the recovery period afterwards?	Abdominal hysterectomy — Recovery will take 6 to 8 weeks at home. Vaginal hysterectomy — Recovery should take about five weeks at home. You will feel tired, but try to walk as much as possible.
Will the fibroids come back?	Fibroids will not grow back.
Will I still be able to get pregnant?	If you have a hysterectomy you will not be able to have children.
What are the advantages of this procedure?	Advantages: all of your fibroids will be gone and will never grow back.
What are the possible	Complications: possible damage to your bladder or bowel; infection; risk of bleeding heavily during or after the operation,

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complications and other disadvantages?	which may require a blood transfusion. Disadvantages: you will no longer have your womb or be able to have children. Can lead to an early menopause.

(Women's Health) Fibroids -- living with fibroids

Complications

The majority of women do not experience any problems as a result of their fibroids but, in some cases, they can pose significant complications. This is usually due to the large size and position of the fibroids. Possible complications include:

- **Heavy periods (menorrhagia)** this does not necessarily mean that there is anything seriously wrong, but it can disrupt your everyday life and make you feel miserable. In some cases, menorrhagia can lead to anaemia, causing fatigue and breathlessness. See the separate health encyclopaedia topic for further information about heavy periods.
- **Abdominal pains** you may experience discomfort or bloating (swelling) to your lower abdomen, particularly if your fibroids are large. You may also find you need to urinate frequently if your fibroids are pressing on your bladder. This pressure may also mean you have painful bowel movements or feel constipated.
- **Miscarriage and premature birth** during pregnancy the levels of oestrogen in a womans body can increase by as much as five times. Because fibroids are thought to be produced by high levels of oestrogen this may lead to complications with the development of the baby, or cause pain and discomfort. In rare cases, fibroids could block the passage of the birth canal causing possible complications during labour.
- **Infertility** is more common in women with large fibroids as they can interfere with the fertilised egg attaching to the lining of your womb. If you have a submucosal type of fibroid (growing outside the wall of your womb) this could also affect the shape of your womb, making it harder for you to conceive (get pregnant).

Very rarely, in around one in 1,000 cases, a cancer called leiomyosarcoma may begin to develop in the fibroids. Research is still on-going to determine whether these cancerous cells are actually a different form of tumour (an abnormal mass of tissue growth) growing in isolation from the fibroids.

CKS: Patient information leaflet - Fibroids: whole view

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