

GyneClinics – Patient’s Handbook of Gynaecology



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At GyneClinics we provide a comprehensive private women health service. Our services range from Well Woman Gynaecological Checks and Advice, treatment of Menstrual Disorders, Urinary and Prolapse problems, to sexual confidence improving (GyneCosmetics) treatments. We are committed to providing you with the highest standard of care and our approachable, professional and caring manner helps you properly understand your condition and reduce your anxiety about visiting our clinics. We aim to treat you as an individual, respecting your privacy, whilst providing you a high quality of care, making your experience as stress-free as possible. Do look through the pages to understand your concerns and what we can do to help.

Irritable Bowel Syndrome

Irritable Bowel Syndrome (IBS) is a group of symptoms or disorder that a patient may have, which consists of symptoms that include, though are not limited to: abdominal pain and cramping, changes in bowel movements, gas, bloating, indigestion, heartburn, reflux, Gastro-oesophageal reflux disease, diarrhea, constipation, alternating diarrhea/constipation, abnormal bowel frequency or urgency, pain, spasms, vomiting and/or hemorrhoids.

Causes

IBS can occur at any age, but it often begins in the teen years or early adulthood. It is twice as common in women as in men. About 1 in 6 -10 people have symptoms of IBS. It is a very common reason for referral to bowel specialist and sometimes incorrectly to a gynaecologist, as the symptoms often resemble and can be associated with that of gynaecological conditions causing pelvic pain.

It is not clear why patients develop IBS. Sometimes it occurs after an infection or inflammation of the intestines, or in some cases when reduced stomach acid, causes malfunctioning of the bowels; and there may also be abnormalities in the gut flora (good germs versus bad germs) or the immune system. Also the intestine is connected to the brain. Signals go back and forth between the bowel and brain. These signals affect bowel function and symptoms. The nerves can become more active during stress, causing the intestines to be more sensitive and contract, which causes the spasms that can be associated with IBS – hypersensitive stress response.

There are some research evidences that suggest that people with IBS may have some difficulties in metabolizing serotonin, a neurotransmitter most commonly associated with quality sleep and positive mood, but which is also critical for peristalsis (intestinal muscle contractions that move food through the GI tract). An estimated 95% of the body's serotonin receptors are located in the intestinal tract! IBS sufferers may have extra sensitive pain receptors in their gut, which may be directly related to low levels of serotonin. So while it's helpful to make lifestyle changes to reduce overall stress levels, to combat potentially low serotonin uptake, it can also be worthwhile supplementing to promote increased serotonin production!

Symptoms

Symptoms range from mild to severe, but most people have mild symptoms. Symptoms vary from person to person. The main symptoms of IBS are abdominal pain, fullness, gas, and bloating that have been present for at least 3 days a month for the last 3 months. The pain and other symptoms will often be reduced or go away after a bowel movement, or it may occur when there is a change in how often there are bowel movements. People with IBS may switch between constipation and diarrhea, or mostly have one or the other. There may be loss of appetite and the symptoms may get worse for a few weeks or a month, and then decrease for a while. For some, symptoms are present most of the time

- People with diarrhea will have frequent, loose, watery stools. They will often have an urgent need to have a bowel movement, which may be hard to control.
- Those with constipation will have a hard time passing stool, as well as fewer bowel movements. They will often need to strain and will feel cramps with a bowel movement. Often, they do not release any stool, or only a small amount.

Signs and tests

There is no specific test to diagnose IBS. Most of the time, your doctor can diagnose IBS based on your symptoms, with few or no test. . Tests may be done to rule out other problems, for example;

- Eating a lactose-free diet for 2 weeks may help the doctor check for a possible lactase deficiency, or blood tests to see if you have celiac disease or a low blood count (anemia)
- Stool cultures to check for an infection.
- Colonoscopy (camera view of the lower portion of the bowel) can be done if you have other symptoms such as weight loss or bloody stools, or anaemia.

Treatment

The goal of treatment is to relieve symptoms. Lifestyle changes can help in some cases of IBS. For example, regular exercise and improved sleep habits may reduce anxiety and help relieve bowel symptoms. Dietary changes can be helpful. However, no specific diet can be recommended for IBS, because the condition differs from one person to another. It may help to:

- Avoid foods and drinks that stimulate the intestines (such as caffeine, tea, or colas)
- Avoid large meals
- Increase fiber in the diet (this may improve constipation but make bloating worse)

It is important to realise that no one medication will work for everyone. Your doctor may try:

- Anticholinergic medications (dicyclomine, propantheline, belladonna, and hyoscyamine) taken about a half-hour before eating to control intestine muscle spasms
- Bisacodyl to treat constipation
- Loperamide to treat diarrhea
- Low doses of tricyclic antidepressants to help relieve intestinal pain
- Lubiprostone for constipation symptoms
- Rifaximin, an antibiotic

Outlook

Irritable bowel syndrome may be a lifelong condition. For some people, symptoms are disabling and reduce the ability to work, travel, and attend social events. Symptoms can often be improved or relieved through treatment.

Bladder Pains – Painful Bladder Syndrome

Painful bladder syndrome, which includes interstitial cystitis is a group of symptoms, including mild to severe bladder pain and a sense or feeling of urgent and/or frequent need to urinate. The disorder is more common in women and is a recognized cause of Pelvi Pain Problems. It can be difficult to diagnose and treat because of misleading symptoms which is often suggestive of a gynaecological pelvic cause.

Painful bladder syndrome – PBS is defined as a group of symptoms that include bladder pain and a frequent and/or urgent need to urinate during the day and/or night.

Interstitial cystitis – IC is the diagnosis used to describe people who have symptoms of PBS, as well as changes in the bladder lining (seen during cystoscopy – camera view)

Causes

Not much is known about the cause of these conditions. For example, patients with interstitial cystitis have abnormalities in the lining of the bladder. However, it is not known if these bladder abnormalities are the cause of symptoms or if the abnormalities develop as a result of some unknown underlying disorder that also causes painful bladder symptoms.

It is likely that the nerves in the bladder become highly sensitive to pain and pressure as these painful bladder conditions develop. Nerves outside the bladder, including nerves of the abdomen, pelvis, and hips, and legs, may also become more sensitive.

Events that may precede painful bladder syndrome include urinary tract infection, an episode of vaginitis (infection of the vagina), bladder, pelvic, back, or other type of surgery and trauma (eg, fall onto the tailbone [coccyx] or car accident). However, in many people, there is no clear explanation.

Symptoms

The symptoms of PBS can vary from one person to another and from one episode to another. All patients with PBS have bladder pain that is relieved at least partially by urinating. Symptoms usually include a frequent and urgent need to urinate during the day and/or night. Most, although not all, people with PBS do not have urinary leakage (incontinence). There is often pain in the suprapubic area (in the lower abdomen, above the pubic bone) or urethral area. The pain may be one-sided lower abdominal pain or low back pain, and the severity of pain ranges from mild burning to severe and debilitating pelvic pain. Most people describe symptoms that begin gradually, with worsening discomfort, urgency, and frequency over a period of months. In some patients, symptoms are severe from the onset. There may be other conditions associated with chronic pelvic pain, such as such as irritable bowel syndrome, painful menstrual periods, endometriosis, vulvar pain (vulvodynia), or fibromyalgia.

Symptoms vary from one day to the next and may be debilitating, being associated with sleep disturbances and waking up urgently at night several times to pass urine. Worsening of symptoms may occur after consuming certain foods or drinks (eg, strawberries, oranges, beer, coffee), during the second half (luteal phase) of the menstrual cycle, during stressful times, or after activities such as exercise, sexual intercourse, or being seated for long periods of time (eg, during a plane trip).

For further information on diagnosis and treatment, see under Bladder Problems -

Chronic Pelvic Inflammatory Disease

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3. INFERTILITY PROBLEMS

Infertility means not being able to get pregnant after one year of trying (or six months if a woman is 35 or older). It affects about 12-15% of all couples and this percentage rises as the age of the female increases. Male factor sub-fertility is present in approximately 40-45% of all infertile couples. Female infertility has many causes, and can be grouped into two main categories:

- Primary infertility refers to couples who have not become pregnant after at least 1 year of unprotected sex (intercourse).
- Secondary infertility refers to couples who have been pregnant at least once, but never again.

A wide range of physical and emotional factors can cause infertility. It may be due to problems in the woman, man, or both. In healthy couples under the age of 30 years who have sex regularly, the chance of getting pregnant is about 25 - 30% per month. A woman's peak fertility occurs in her early 20s. After age 35 (and especially 40), the chances are considerably reduced.

Causes

To become pregnant: 1) a woman's body must release an egg from one of her ovaries (ovulation), 2) The egg must go through a fallopian tube toward the uterus (womb), 3) A man's sperm must join with (fertilize) the egg along the way. 4) The fertilized egg must attach to the inside of the uterus (implantation). Infertility occurs if there are problems with any of these steps.

FEMALE INFERTILITY:

Female infertility may occur when: a) a fertilized egg or embryo does not survive once it sticks to the lining of the womb (uterus), b) the fertilized egg does not attach to the lining of the uterus - implantation problems, c) the eggs cannot move from the ovaries to the womb – tubal factors or d) the ovaries have problems producing eggs - anovulation

Female infertility may be caused by:

- Older Age - Aging decreases a woman's chances of having a baby by her ovaries becoming less able to release eggs, having smaller number of eggs left, which may not be as healthy, or having health conditions that can cause fertility problems.
- Excessive exercising, eating disorders or poor nutrition
- Pelvic infection or pelvic inflammatory disease (PID)
- Scarring or blockage of fallopian tubes, from sexually transmitted infection or endometriosis
- Medical problems, such as Diabetes, Thyroid disease, Clotting disorders
- Growths (such as fibroids or polyps) in the uterus and cervix
- Birth defects that affect the reproductive tract
- Use of certain medications, including chemotherapy drugs
- Excessive alcohol intake
- Obesity
- Ovarian cysts and polycystic ovary syndrome (PCOS), causing ovulation problems
- Cancer or tumor
- Autoimmune disorders, such as antiphospholipid syndrome (APS)

MALE INFERTILITY:

Male infertility may be due to: a) decrease in sperm count which may result from low production, - oligospermia b) sperm being blocked from being released, and c) sperm that do not work properly, either causing reduced sperm movement, abnormal shapes. Varicocele happens when the veins on a man's testicle(s) are too large. This heats the testicles, and this heat can affect the number or shape of the sperm. Sometimes a man is born with the problems that affect his sperm. Other times problems start later in life due to illness or injury. For example, cystic fibrosis often causes infertility in men. Thus, male infertility can be caused by:

- Environmental pollutants
- Infection, or Scarring from sexually transmitted diseases, injury, or surgery
- Exposing the scrotum to high temperatures for prolonged periods
- Heavy use of alcohol, marijuana, or cocaine and smoking
- Impotence
- Older age
- Cancer treatments, including chemotherapy and radiation
- Retrograde ejaculation
- Use of certain drugs, such as cimetidine, spironolactone, and nitrofurantoin
- Birth defects

Symptoms

The main symptom of infertility is the inability to become pregnant, after a specified period of trying. Specific associated symptoms depend on what is causing the infertility. Infertility can result in very stressful and many painful emotions in one or both partners.

Signs and tests

It is recommended that women under 30 should generally try to get pregnant on their own for 1 year before seeking testing. Infertility testing involves a complete medical history and physical examination of both partners. Blood and imaging tests will be done. In women, this may include:

- Blood tests to check hormone levels, including progesterone and follicle stimulating hormone and Luteinizing hormone urine test (ovulation prediction)
- Checking body temperature first thing in the morning to check if the ovaries are releasing eggs
- FSH and clomid challenge test
- Hysterosalpingography (HSG)
- Pelvic ultrasound
- Laparoscopy
- Thyroid function tests

Tests in men may include: Blood Test for various medical conditions, Chromosome analysis, Sperm testing, Testicular biopsy (rarely done)

Treatment

The chances of becoming pregnant increase each month by having sex at least every 3 days before and during ovulation. It is especially important to do so 72 hours before ovulation begins. Ovulation occurs about 2 weeks before the next menstrual cycle (period) starts. If a woman gets her period every 28 days, the couple should have sex at least every 3 days between the 10th and 18th day after the period starts. Maintaining a healthy diet, weight, and lifestyle may increase the chances for getting pregnant and having a healthy pregnancy. Specific treatment depends on the cause of infertility. It may involve:

- Medicines that help the woman grow and release eggs from the ovaries (ovulation induction),
- Surgery – to free the fallopian tubes and to destroy deposits of endometriosis
- Education and counselling and emotional support
- Fertility treatments such as intrauterine insemination (IUI) and in vitro fertilization (IVF)
- Medicines to treat infections and clotting disorders -

Ovulation Induction medications – See under Anovulation Treatment:

Many fertility drugs increase a woman's chance of having twins, triplets, or other multiples. Women who are pregnant with multiple fetuses have more problems during pregnancy. Multiple fetuses have a high risk of being born too early (prematurely). Premature babies are at a higher risk of health and developmental problems.

Infertility in men can be addressed by treating impotence or premature ejaculation using behavioral therapy and/or medicines. **Too few sperm (Oligospermia):** Sometimes can be corrected by removing sperm directly from the male reproductive tract or unblocking any blockage of the male tract. Antibiotics can also be used to clear up infections affecting sperm count.

Intrauterine insemination (IUI) is an infertility treatment that is often called artificial insemination. In this procedure, the woman is injected with specially prepared sperm. Sometimes the woman is also treated with medicines that stimulate ovulation before IUI. IUI is often used to treat mild male factor infertility, women who have problems with their cervical mucus and couples with unexplained infertility

Assisted reproductive technology (ART)

This a group of different methods used to help infertile couples. ART works by removing eggs from a woman's body. The eggs are then mixed with sperm to make embryos. The embryos are then put back in the woman's body.

Success rates vary and depend on many factors. Some things that affect the success rate of ART include: age of the partners, reason for infertility, the clinic's success rate, type of ART, if the egg is fresh or frozen and if the embryo is fresh or frozen

The average percentage of ART cycles that led to a live birth were:

- 39 percent in women under the age of 35
- 30 percent in women aged 35-37
- 21 percent in women aged 37-40
- 11 percent in women aged 41-42

ART can be expensive and time-consuming. But it has allowed many couples to have children that otherwise would not have been conceived. The most common complication of ART is multiple fetuses. But this is a problem that can be prevented or minimized in several different ways.

Common methods of ART include:

- **In vitro fertilization (IVF)** means fertilization outside of the body. IVF is the most effective ART. It is often used when a woman's fallopian tubes are blocked or when a man produces too few sperm. Doctors treat the woman with a drug that causes the ovaries to produce multiple eggs. Once mature, the eggs are removed from the woman. They are put in a dish in the lab along with the man's sperm for fertilization. After 3 to 5 days, healthy embryos are implanted in the woman's uterus.
- **Zygote intrafallopian transfer (ZIFT) or Tubal Embryo Transfer** is similar to IVF. Fertilization occurs in the laboratory. Then the very young embryo is transferred to the fallopian tube instead of the uterus.
- **Gamete intrafallopian transfer (GIFT)** involves transferring eggs and sperm into the woman's fallopian tube. So fertilization occurs in the woman's body. Few practices offer GIFT as an option.
- **Intracytoplasmic sperm injection (ICSI)** is often used for couples in which there are serious problems with the sperm. Sometimes it is also used for older couples or for those with failed IVF attempts. In ICSI, a single sperm is injected into a mature egg. Then the embryo is transferred to the uterus or fallopian tube.

ART procedures sometimes involve the use of donor eggs (eggs from another woman), donor sperm, or previously frozen embryos. Donor eggs are sometimes used for women who can not produce eggs. Also, donor eggs or donor sperm is sometimes used when the woman or man has a genetic disease that can be passed on to the baby. An infertile woman or couple may also use donor embryos. These are embryos that were either created by couples in infertility treatment or were created from donor sperm and donor eggs. The donated embryo is transferred to the uterus. The child will not be genetically related to either parent.

Surrogacy / Gestational Carrier

Women with no eggs or unhealthy eggs might also want to consider surrogacy. A surrogate is a woman who agrees to become pregnant using the man's sperm and her own egg. The child will be genetically related to the surrogate and the male partner. After birth, the surrogate will give up the baby for adoption by the parents. Women with ovaries but no uterus may be able to use a gestational carrier. This may also be an option for women who shouldn't become pregnant because of a serious health problem. In this case, a woman uses her own egg. It is fertilized by the man's sperm and the embryo is placed inside the carrier's uterus. The carrier will not be related to the baby and gives him or her to the parents at birth.

Damaged Tubes – Tubal Factor Infertility

Tubal disease, one of the many causes of female infertility, is a disorder in which the fallopian tubes are blocked or damaged. This is usually diagnosed through review of medical history, performing pelvic exam, and undergoing additional tests, including hysterosalpingogram and laparoscopy, to confirm the diagnosis.

Scar tissue, infections and tubal ligation are often causes of tubal disease. The most common reason why tubes get damaged or blocked is a condition called **pelvic inflammatory disease (PID)**. This is an infection that can affect the womb, ovaries or tubes. It's very common. This infection can block or damage the fallopian tubes, so that eggs may not be able to pass down the tubes and the sperm may not be able to travel up them. Scar tissue resulting from endometriosis or abdominal or gynecological surgery, such as bowel surgery, cesarean section or a ruptured appendix, can block an egg from entering or traveling down the fallopian tube to meet the sperm, preventing fertilisation.

Infections, including chlamydia, can damage the cilia, the tiny hairs lining the fallopian tubes that help transport the egg, often preventing the sperm and egg from meeting. One result of damaged cilia is an ectopic pregnancy, which occurs when an egg is fertilized but, due to the damaged cilia, it is unable to travel to the uterus, growing instead in the wall of the fallopian tube. This condition can result in rupture, internal bleeding and further tubal damage. Many women who have undergone tubal ligation, had their "tubes tied", decide they want to have a baby at some point after the procedure. These patients most often undergo in vitro fertilization to bypass the blockage. In some rare cases, surgery can be done to reattach tubes after ligation.

There are a number of treatment options available to overcome infertility caused by tubal disease. This includes surgical removal of scar tissue, surgical repair of damaged tubes, tubal ligation reversal or in vitro fertilization. IVF typically provides the best results; however, surgical approaches may be advisable due to insurance issues, or other pelvic findings such as hydrosalpinx or leiomyoma (fibroid)

Tubal reanastomosis is used to reverse a tubal ligation or to repair a portion of the fallopian tube damaged by disease. The blocked or diseased portion of the tube is removed, and the two healthy ends of the tube are then joined. This procedure usually is done through an abdominal incision (laparotomy), but some specialists can perform this procedure using laparoscopy.

Salpingectomy, or removal of part of a fallopian tube, is done to improve in vitro fertilization (IVF) success when a tube has developed a buildup of fluid (hydrosalpinx). **Hydrosalpinx** makes it half as likely that an IVF procedure will succeed.¹ Salpingectomy is preferred over salpingostomy for treating a hydrosalpinx before IVF.

Salpingostomy is done when the end of the fallopian tube is blocked by a buildup of fluid (hydrosalpinx). This procedure creates a new opening in the part of the tube closest to the ovary. But it is common for scar tissue to regrow after a salpingostomy, reblocking the tube.

Fimbrioplasty may be done when the part of the tube closest to the ovary is partially blocked or has scar tissue, preventing normal egg pickup. This procedure rebuilds the fringed ends of the fallopian tube.

Selective tubal cannulation For a tubal blockage next to the uterus, a nonsurgical procedure called selective tubal cannulation is the first treatment of choice. Using real-time X-Ray or hysteroscopy to guide the instruments, a doctor inserts a catheter, or cannula, through the cervix and the uterus and into the fallopian tube.

The success of a fallopian tube procedure depends in part on the location and extent of the blockage, as well as the presence or absence of other fertility problems. Clearing a blockage in the part of the tube closest to the uterus (proximal occlusion) is more likely to be successful. These blockages often are functional (such as a mucus plug) rather than structural (such as scarring or other obstruction). Up to 60% of women with proximal occlusion have been reported to have successful pregnancies after tubal surgery.

Anovulation

Anovulation is a condition in which a woman does not release an egg for fertilization each month during her [menstrual cycle](#). In other words, no ovulation takes place. Typically, the ovaries release a matured egg into the fallopian tubes every month where it can be fertilized. When a woman is anovulatory, a mature egg is not released regularly every month. Instead, this cycle is either erratic or else no eggs are released at all. In either case, conception is very difficult and couples often struggle when trying to conceive. Between 6% and 15% of women of childbearing age are believed to be affected by anovulation.

Anovulation Causes

Anovulation is caused by an imbalance of the hormones within the body, which affects the regulation of menstruation as well as ovulation. When these hormones are imbalanced, the entire reproductive system may be affected, leading to infertility. Factors that may cause anovulation include breastfeeding, over exercise, stress, frequent [travel](#), eating disorders and drug use. Anovulation is also sometimes associated with underlying problems such as:

- polycystic ovarian syndrome (PCOS),
- thyroid and / or pituitary problems
- weight loss or obesity

Symptoms of Anovulation

Since women with anovulation can also continue menstruating, it can be difficult to detect the symptoms of anovulation. However, when no ovulation takes place, the following symptoms may appear:

- irregular basal body temperature (BBT)
- heavy or excessive bleeding during menstruation
- no menstrual period (amenorrhea)
- irregular menstruation (oligomenorrhea)
- decreased or absent symptoms of pre-menstrual symptoms

Diagnosing and Treating Anovulation

Anovulation can be diagnosed by charting and reviewing basal body temperatures (body temperature rises immediately prior to ovulation and a basal body temperature measurement (BBT Chart) can be used to signal when ovulation will occur), and performing blood tests to assess the levels of certain hormones including luteinizing hormones (LH), follicle stimulating hormones (FSH) and thyroid-stimulating hormones. Further tests may include ultrasounds, laparoscopy and pelvic examinations.

Treating anovulation may include the following treatment options:

- **Lifestyle Changes:** eating a balanced diet, reducing exercise, relaxation and stress relief
- **Medications:** clomiphene or gonadotropin therapy may be recommended to induce ovulation
- **Surgical:** removal of parts of the ovaries (ovarian wedge resection or ovarian drilling) may help balance hormones

Ovulation Induction Medications

- **Clomiphene citrate (*Clomid*):** is often used as a first line therapy to "induce and regulate" ovulation. This medicine causes ovulation by acting on the pituitary gland. It is often used in women who have polycystic ovarian syndrome (PCOS) or other problems with ovulation. This medicine is taken by mouth, and is often now combined with Metformin treatment, with likelihood of higher success rate, especially in women whose ovulation problem is due to polycystic ovarian syndrome - PCOS (see below).
- **Human menopausal gonadotropin or hMG (*Pergonal*):** is used for women who don't ovulate due to problems with their pituitary gland. hMG acts directly on the ovaries to stimulate ovulation. It is only given by injection.
- **Follicle-stimulating hormone or FSH (*Gonal-F*):** FSH works much like hMG. It causes the ovaries to begin the process of ovulation. This is also given as injection.
- **Gonadotropin-releasing hormone (Gn-RH) analogues:** are often used for women who don't ovulate regularly each month. Women who ovulate before the egg is ready can also use these medicines. Gn-RH analogs act on the pituitary gland to change when the body ovulates. It prepares the ovary to better respond to ovulation induction medication.
- **Metformin (*Glucophage*):** is used for women who have insulin resistance and/or PCOS. This drug helps lower the high levels of male hormones in women with these conditions. This helps the body to ovulate. Sometimes clomiphene citrate or FSH is combined with metformin.
- **Bromocriptine (*Parlodel*):** This medicine is used for women with ovulation problems due to high levels of prolactin. Prolactin is a hormone that causes milk production.

Polycystic Ovarian Syndrome (PCOS)

POLYCYSTIC OVARIAN SYNDROME:

Polycystic Ovarian Syndrome (PCOS) is the most common hormonal abnormality in reproductive-aged women affecting approximately 5-10% of population. It is the most common cause of infertility in women. The symptoms of PCOS may begin in adolescence with menstrual irregularities, or a woman may not know she has PCOS until later in life when symptoms and/or infertility occur.

The principal signs and symptoms of PCOS are related to menstrual disturbances and elevated levels of male hormones (androgens) and obesity. Menstrual disturbances can include delay of normal menstruation (primary amenorrhea), the presence of fewer than normal menstrual periods (oligomenorrhea), or the absence of menstruation for more than three months (secondary amenorrhea). Menstrual cycles may not be associated with ovulation (anovulatory cycles) and may result in heavy bleeding.

Symptoms related to elevated androgen levels include acne, excess hair growth on the body (hirsutism), and male-pattern hair loss.

Other signs and symptoms of PCOS include:

- obesity and weight gain, elevated insulin levels and insulin resistance
- oily skin, dandruff, skin discolorations,
- infertility,
- high cholesterol levels, elevated blood pressure, and
- multiple, small cysts in the ovaries.

Any of the above symptoms and signs may be absent in PCOS, with the exception of irregular or no menstrual periods. All women with PCOS will have irregular or no menstrual periods. Women who have PCOS do not regularly ovulate; that is, they do not release an egg every month. This is why they do not have regular periods and typically have difficulty conceiving.

PCOS involves a "vicious cycle" of hormonal imbalance that may begin with a oversensitivity of the pituitary to GnRH. The pituitary responds with an increase in LH secretion resulting in increased ovarian androgen production. Consequently, FSH production is inhibited thereby further preventing follicle development and ovulation. Additionally, oestrone proliferates the endometrium unopposed and increases the risk of endometrial hyperplasia. .

Causes

No one is quite sure what causes PCOS, and it is likely to be the result of a number of both genetic (inherited) as well as environmental factors. Women with PCOS often have a mother or sister with the condition, and researchers are examining the role that genetics or gene mutations might play in its development. The ovaries of women with PCOS frequently contain a number of small cysts, hence the name poly=many cystic ovarian syndrome. A similar number of cysts may occur in women without PCOS. Therefore, the cysts themselves do not seem to be the cause of the problem.

A malfunction of the body's blood sugar control system (insulin system) is frequent in women with PCOS, who often have insulin resistance and elevated blood insulin levels, and researchers believe that these abnormalities may be related to the development of PCOS. It is also known that the ovaries of women with PCOS produce excess amounts of male hormones known as androgens. This excessive production of male hormones may be a result of or related to the abnormalities in insulin production.

Another hormonal abnormality in women with PCOS is excessive production of the hormone LH, which is involved in stimulating the ovaries to produce hormones and is released from the pituitary gland in the brain. Other possible contributing factors in the development of PCOS may include a low level of chronic inflammation in the body and fetal exposure to male hormones.

Clinical Presentation Explained

a) Infertility:

Approximately 40% of female infertility factors result from ovulation problems. Women with PCOS may experience a wide range of ovulation problems, from oligoovulation to anovulation. In addition to anovulation, other factors appear to be involved, as these women may have a lower rate of conception in response to ovulation inducing agents (clomiphene citrate, gonadotropins) in comparison to women with hypothalamic amenorrhea (ovulation problem resulting from malfunction of this part of the brain). Many studies have also described the almost two fold increased miscarriage rate in PCOS, the mechanism of which is poorly understood.

b) Abnormal Uterine Bleeding and Endometrial Hyperplasia

Due to chronic anovulation, women with PCOS usually have irregular menstrual bleeding. The high androgens levels can be converted peripherally to estrogens, particularly estrone, even in the absence of normal ovarian function. As a result, these women are exposed to continuous unopposed estrogen stimulation of the endometrium. Due to anovulation they are deficient in progesterone secretion, which is needed for endometrial differentiation and withdrawal bleeding. Thus, they are at risk for dysfunctional uterine bleeding and, ultimately, endometrial hyperplasia and/or carcinoma.

c) Hyperandrogenism

The clinical features of androgen excess in women with PCOS include hirsutism, acne, male pattern balding (alopecia), and rarely signs of virilisation (maleness) including deepening of the voice, increased muscle mass, and clitoromegaly. Hirsutism occurs in approximately 70 - 80% of PCOS patients and is defined as the conversion of vellus (soft, unpigmented) to terminal (thick, pigmented) in a male pattern distribution along sex dependent regions, e.g. upper lip, around the nipple, and lower abdomen. Virilization is rare and women who present with rapidly progressive masculinizing signs should be evaluated for androgen tumors of the adrenal gland or ovary.

d) Obesity

Obesity is a common, but not necessary, finding in at least 50% to 65% of women with PCOS. Patients usually have central (android) body fat distribution. Android obesity, which is characterized by increased waist-to-hip ratio (>0.80), is correlated with increased plasma testosterone, decreased sex-hormone-binding globulin, hyperinsulinemia, impaired glucose tolerance, and dyslipidemias.

e) Insulin Resistance and Diabetes

Many women with PCOS exhibit insulin resistance and hyperinsulinemia. Although it is more commonly associated with obesity, it is also found in normal-weight women with PCOS. Because of insulin resistance, women with PCOS are at increased risk for impaired glucose tolerance and diabetes mellitus. A recent study determined that up to 40% of obese reproductive-age women with PCOS had impaired glucose tolerance and 7.5% had diabetes mellitus. In addition, 15% of normal-weight women with PCOS had impaired glucose tolerance and 1.5% had diabetes, a rate almost three-times that of the general population. The underlying reason for insulin resistance remains unclear. It has been reported that insulin resistance may be related to decreased insulin receptor processing (autophosphorylation) in about 50% of women with PCOS. If untreated, insulin resistance leads to diabetes in approximately one-third of patients.

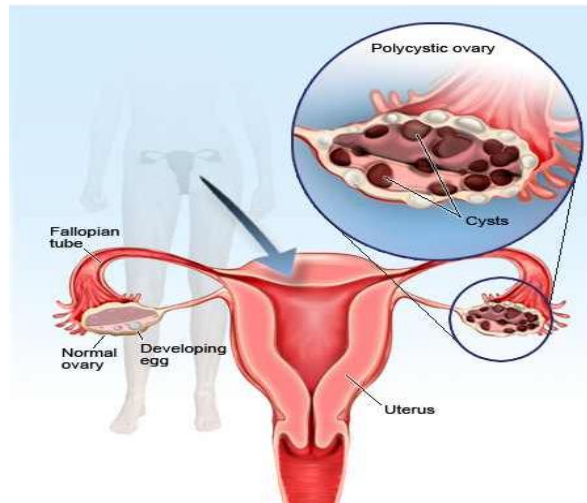
f) Possible predisposition to coronary heart disease:

Insulin resistance is a key finding along with elevated cholesterol, triglycerides, blood pressure, and waist circumference. The presence of obesity, insulin resistance, and lipid abnormalities may predispose women with PCOS to coronary heart disease. Several studies have shown that women with PCOS have abnormal levels of LDL ("bad") cholesterol and lowered levels of HDL ("good") cholesterol in the blood.

DIAGNOSIS

PCOS is usually diagnosed clinically in women who present with oligomenorrhea (menstrual intervals >35 days), hyperandrogenism (elevated testosterone or hirsutism/acne) and obesity, after excluding other hormonal disorders. However, most women with PCOS do not exhibit all of these features and there is a considerable controversy about the definition and required criteria for the diagnosis. The new criteria include two of the following three signs: ovulation dysfunction; excessive hair growth and/or acne; and polycystic appearing ovaries on ultrasound. The diagnosis of PCOS does not require the presence of polycystic ovaries on ultrasound since approximately 20% of fertile women may have polycystic appearing ovaries. Polycystic ovaries are present in more than 90% of women with PCOS but may sometimes be absent in women with all the other clinical characteristics of PCOS.

Polycystic ovary syndrome is primarily a clinical diagnosis, and laboratory findings should only be used to support the clinical testing and rule out other serious disorders. Evaluation should include measurement of thyroid-stimulating hormone (TSH), DHEA and testosterone, prolactin, and in some cases, morning 17alpha hydroxyprogesterone to rule out late-onset adrenal hyperplasia. The levels of testosterone that are highly elevated are not unusual with PCOS and call for additional evaluation. Additionally, levels of a hormone released by the pituitary gland in the brain (LH) that is involved in ovarian hormone production are elevated. Patients, regardless of age, with a greater than 3 month menstrual interval and/or an endometrial thickness of ≥ 7 mm on ultrasound should undergo an endometrial biopsy to assess the risk of hyperplasia. Insulin resistance can best be evaluated by a 2-hour glucose tolerance test (GTT).



MANAGEMENT

Weight reduction, diet and exercise are recommended for all women with PCOS. Some studies have also shown a 5-10% loss in body weight may result in a return of ovulatory cycles and a higher spontaneous pregnancy rate. However, it is very difficult for PCOS patients to lose weight. If body weight is reduced, it is also difficult to maintain due to a variety of reasons.

Monthly **progesterone therapy** can be used to prevent abnormal endometrial proliferation by inducing withdrawal bleeding. Another option for these women is to use **low dose oral contraceptive pills (OCP)** to regulate the menstrual cycle and provide contraception. Antiandrogens may be combined with oral contraceptive pills for the treatment of hirsutism and acne.

Also for acne or excess hair growth, a water pill (diuretic) called **Spironolactone** (Aldactone) may be prescribed to help reverse these problems. The use of spironolactone requires occasional monitoring of blood tests because of its potential effect on the blood potassium levels and kidney function. **Eflornithine (Vaniqa)** is a cream medication that can be used to slow facial hair growth in women. Electrolysis and over-the-counter depilatory creams are other options for controlling excess hair growth. Hair removal using laser and nonlaser light sources damages individual hair follicles so they do not grow back. This can be expensive and multiple treatments are needed. Laser removal can be combined with other medicines and hormones.

In patients desiring pregnancy, **ovulation induction** is often required usually with clomiphene citrate. Approximately 80% of women with PCOS ovulate in response to clomiphene, but only about 40% of them become pregnant. Most recently, an enzyme inhibitor of aromatase, letrozole, has been shown to have equal success as clomiphene with ovulation but less of a negative impact on endometrial proliferation. (Note: recently the drug manufacturer has advised against the use of letrozole in women pursuing pregnancy.). See other ovulation induction agents under "anovulation". .

Insulin resistance has been implicated in the reproductive consequences of PCOS, namely infertility, miscarriage, and gestational diabetes. Multiple studies have supported the use of metformin to ameliorate these problems. **Metformin** "sensitizes" cells to insulin and PCOS patients are typically hyperinsulinemic (abnormally high level of insulin in the blood). It works by activating glucose transporters which allow passage of glucose into liver and muscle cells thereby decreasing peripheral insulin resistance. It is useful in reducing a number of the symptoms and complications of PCOS,

being useful in the management of irregular periods, ovulation induction, weight loss, prevention of type 2 diabetes, and prevention of gestational diabetes mellitus in women with PCOS.

PCOS is sometimes treated with injectable follicle stimulating hormone. When Clomid or metformin fail to induce ovulation they are sometimes administered together. FSH is also sometimes combined with metformin.

Ovarian surgery has been an effective therapy for patients resistant to clomiphene citrate and/or letrozole. Laparoscopy with bilateral ovarian diathermy involves "drilling" holes in the ovary utilizing electrocautery or laser providing an approximate 84% ovulation induction rate and 56% pregnancy rate with maintenance of ovulation demonstrated for up to 20 years in the majority of patients.

Male Problems – Male Factor Infertility

Infertility affects 12-15% of all couples in their reproductive years. As a result, one in eight couples will struggle with infertility regardless of whether the diagnosis is primary or secondary. Despite 40% of infertility causes attributed to the male and 30% due to both the male and female, most men are reluctant to appreciate the high prevalence of their contribution. This distribution of etiologies is maintained across cultural and ethnic boundaries.

The simplest evaluation of a male is the semen analysis (SA). Sperm density (greater than 20 million/mL), motility (greater than 50%), and morphology (greater than 30%) an integral screen of sperm fertilization potential. A persistently abnormal SA on two occasions obtained one month apart, particularly if severely low, warrants a genital examination. An abnormal SA may be the first sign of significant pathology and may be life threatening in 2% of cases.

Causes

The leading causes of male infertility are

- varicocele (42%),
- idiopathic (23%),
- obstruction (14%) and
- cryptorchidism (3%).

Male Infertility Tests

The male infertility evaluation semen analysis is one of the most important tests conducted in the workup of the infertile couple. In addition to the standard semen analysis, other tests of sperm function might include tests for antisperm antibodies, cultures to detect microorganisms, and others. In addition to the semen analyses, a male hormonal evaluation is sometimes performed.

Sometimes more than one semen analyses is necessary as sperm quality and quantity can vary for numerous reasons. Reproductive labs use the "Kruger strict criteria" which assesses the following factors:

- Volume (amount of fluid which makes up the semen, usually expressed in milliliters).
- Sperm count (number of sperm in a standard given volume).
- Motility (percent of sperm that are moving when the semen is examined under the microscope).
- Progression (forward movement of sperm cells).
- Viability (percent of sperm that are shown to be alive by use of a special staining technique).
- Sperm morphology (shape) and additional semen contents, such as white blood cells (which can indicate the presence of infection).

In specialised centres, The Sperm Chromatin Structure Assay (SCSA) is a test that is offered to measure the level of DNA fragmentation in the sperm, to enhance the diagnosis of and treatment for male infertility. Research indicates that sperm with high-levels of DNA fragmentation have a lower probability of producing a successful pregnancy. A review of data on hundreds of semen samples show that patients with a DNA fragmentation level of greater than 30% are likely to have significantly-reduced fertility potential, including a significant reduction in term pregnancies and a doubling of miscarriages.

Treatment of Male Infertility

Varicocele, can be treated effectively with surgery performed by a urologist. A varicocele is a blockage of the veins leading to the testicles which are responsible for temperature regulation. When there is a blockage the temperature of the testicles increases thus inhibiting sperm development. A varicocele can also lead to the production of antisperm antibodies. The male's immune system "mistakes" sperm for invading pathogens and seeks to destroy them. If this condition does not resolve after correcting the underlying cause, oral corticosteroids are often effective.

Male sperm counts can be reduced when FSH and LH levels are normal but the testosterone level is low (**hypogonadism**). This condition is sometimes treated with Clomid, however, improvements in sperm counts can be marginal and several months of therapy are required. This therapy is also very expensive.

Intrauterine insemination is often the treatment of first choice for mild male factor infertility. The sperm are collected, washed, concentrated, and inserted into the uterus using a small catheter. This process insures that sufficient sperm reach the egg for fertilization to occur. Donor sperm can be used in cases of moderate to severe male factor infertility.

IVF with ICSI is often the treatment of choice for men with moderate to severe male factor infertility who want genetically related children. Pregnancy rates are much higher with IVF combined with intracytoplasmic sperm injection, compared with those treated by IUI. Routine fertilization rates of more than 66% of oocytes are obtained with ICSI using sperm from men with triple sperm defects (i.e. count, motility, morphology). Clinical pregnancy rates are greater than 28% per cycle. To date there is no increased incidence of congenital malformations in children born as a result of ICSI. However, there are concerns that because some causes of male infertility are unexplained and may be genetic, male offspring might have reproductive problems as adults. However, in a study of 700 in vitro fertilization (IVF) cases in which intracytoplasmic sperm injection (ICSI) was performed, pregnancy occurred in less than 1% of the cases when the percentage of sperm with damaged DNA was greater than 30%

Since the introduction of ICSI, treatment of most men with **azoospermia** is now possible, even if the azoospermia is caused by testicular failure. Before initiating treatment it is important to determine whether the lack of sperm in the ejaculate is from retrograde ejaculation, an obstructive process, or a non-obstructive process. Evaluation of the post ejaculate urine is necessary to diagnose retrograde ejaculation. Sperm may be isolated from urine or catheterized from the bladder and used for IUI or IVF. **Men with obstructive azoospermia** typically have normal volume testis with bilaterally indurated epididymii or absent vas deferens, which is frequently found in men who carry the cystic fibrosis gene mutation. **Men with non-obstructive azoospermia** usually have small, soft testis and elevated FSH levels.

The two procedures that are most commonly used to retrieve sperm from azoospermic men are the **testicular sperm aspiration (TESA)** and the **midepididymal sperm aspiration (MESA)** procedures. TESA is an open testicular biopsy during which about 500 mgs of testicular tissue is excised using scissors. MESA involves puncturing individual epididymal tubules and aspirating the fluid. During both procedures specimens are examined in the operating room to insure an adequate number of sperm are retrieved. Similar variations are "Percutaneous epididymal sperm aspiration" or, "**PESA**." and "Testicular sperm extraction," or, "**TESE**."

In the past, sperm aspiration procedures were performed the same day as the oocyte aspiration, thus allowing the use of fresh sperm for ICSI. However, cryopreservation of epididymal and testicular sperm allows for temporary separation of sperm retrieval procedures from oocyte aspiration. It allows for multiple ICSI cycles without the need for additional sperm retrieval procedures. It also reassures a couple that they will not be cancelled the day of the oocyte aspiration due to inability to obtain sperm from TESA/MESA. Cryopreservation is known to impair motility and decrease the fertilization rate by detrimental effects on the sperm head (acrosome) structure and function. Fortunately, ICSI does not require sperm motility and acrosome function.

Unexplained Infertility and Others

The terms "unexplained infertility", or "infertility of unknown causes" can engender a great deal of frustration for infertile couples. There is always a cause for infertility; however, science has not progressed to the point where all etiologies can be identified. Many advances have been made over the last fifteen years and the number of couples falling into the "unexplained infertility" category has declined. As research proceeds, this number is expected to be reduced further. Great strides have been made in the diagnosis and treatment of male infertility and it is now known that subtle abnormalities in sperm quality can lead to sub fertility. This is why the semen analysis is one of the most important components of the infertility evaluation; especially given that male factor is present in up to 40% of infertile couples.

Well Women Clinics

It can be a good idea to undergo a well woman check every year to ensure everything is functioning properly and healthily. Many women choose to have the tests involved performed to give them peace of mind, and to catch and treat any disorders that may develop before they become a bigger problem. It is important to tend to gynaecological health, as failure to spot and prevent problems early can have unwanted consequences.

The well women checks are separated into two parts. The first part of the check is for the patient to simply talk to a gynaecologist and answer some questions. The gynaecologist will ask questions about the patient's menstrual cycle, methods of contraception and any other problems such as pain during intercourse or incontinence. It is normal for many questions to be asked to ensure nothing is overlooked during this stage of the well woman check. If the patient mentions any problems they might have noticed, these areas will be looked into during the second part of the well woman check.

Common complaints include irregular periods, unusual vaginal discharge and problems with the frequency of urination. These could all suggest disorders, but may not end up being serious at all.

The second part of the well woman check is to perform a number of tests on the patient. These tests range from simple blood and urine tests that are usually taken regardless of any complaints, to smear tests and mammograms. All women can be checked for any sexually transmitted diseases if they wish. As well as the standard tests to determine whether the patient is healthy or not, some women will be subject to more specialised tests if the gynaecologist believes they may have any more serious disorders.

A smear test is an important part of the well women checks. Not only can it highlight any abnormalities, but it can also signal more pressing issues. A gynaecologist may also perform a mammogram, which is an x-ray of the breast tissue that can show if there are any signs of breast cancer. Some women may have fertility issues that need to be investigated further. If they express concern during the discussion with their gynaecologist, tests may be performed to check their fertility. The whole process can be relatively straightforward and painless, and it is always important to make sure there are no problems by getting checked out frequently and discussing concerns when they arise.

This section still needs more development in content