American Urological Association, Inc.®

A BASIC GUIDE TO MALE

INFERTILITY

Answers to Your Questions About Varicoceles

A doctor's guide for patients developed by the American Urological Association, Inc.®

Based on the AUA Best Practice Policy and ASRM Practice Committee Report

Glossary

Aspermia: the complete absence of semen.

Azoospermia: the complete absence of sperm from the semen.

Ejaculatory duct: paired ducts in males that are located behind the bladder and within the prostate. The end of the vas deferens continues into the ejaculatory duct which transports sperm into the urethra.

Epididymis: a tightly coiled tubule located behind the testes. Sperm mature as they travel through the epididymis.

Prostate: a small gland about the size of a walnut, located below the bladder. It produces some of the sperm-carrying fluid for the semen.

Scrotum: the pouch of skin that hangs from the lower abdominal region below the penis.

Semen: fluid that comes out during ejaculation and orgasm. It contains sperm and secretions from glands of the male reproductive tract.

Seminiferous tubules: specialized microscopic ducts located within the testes. Immature sperm begin to mature in these tubules.

Testes (testicles): the organs that produce sperm. They are paired oval-shaped glands located in the scrotum.

Urethra: the tube that carries the urine from the bladder and the semen from the prostate and ejaculatory ducts out through the tip of the penis. It is the final passageway for both urine and sperm to leave the body.

Urologist: a doctor who specializes in diseases of the urinary tract and male reproductive system.

Varicocele: enlarged veins within the scrotum, similar to dilated or varicose veins of the leg.

Vas deferens (also called the vas): a muscular tube through which the sperm flow. It begins at the epididymis and ends behind the bladder.

Infertility problems affect about 15% of all couples. This condition often results from problems in both partners. In fact, a male factor is involved in as many as half of all infertile couples. There are many possible causes of male infertility. This booklet focuses only on varicoceles.

What Is a Varicocele and How Common Is It?

Definition: *a varicocele is made up of enlarged veins within the scrotum. They are similar to varicose veins of the legs. Varicoceles are found in about 15% of the normal male population and in about 40% of men with infertility.*

Most evidence indicates that varicoceles can hinder sperm production, often resulting in infertility. It is important to remember that female factors can also contribute to infertility. Therefore, successful outcomes can depend on both partners being treated. Both you and your partner should have complete evaluations before any treatment choices are made.

The purpose of this booklet is to answer your questions about treatment options for varicoceles. This information may help you and your partner, together with your physician, make a wise choice about how to manage your infertility.

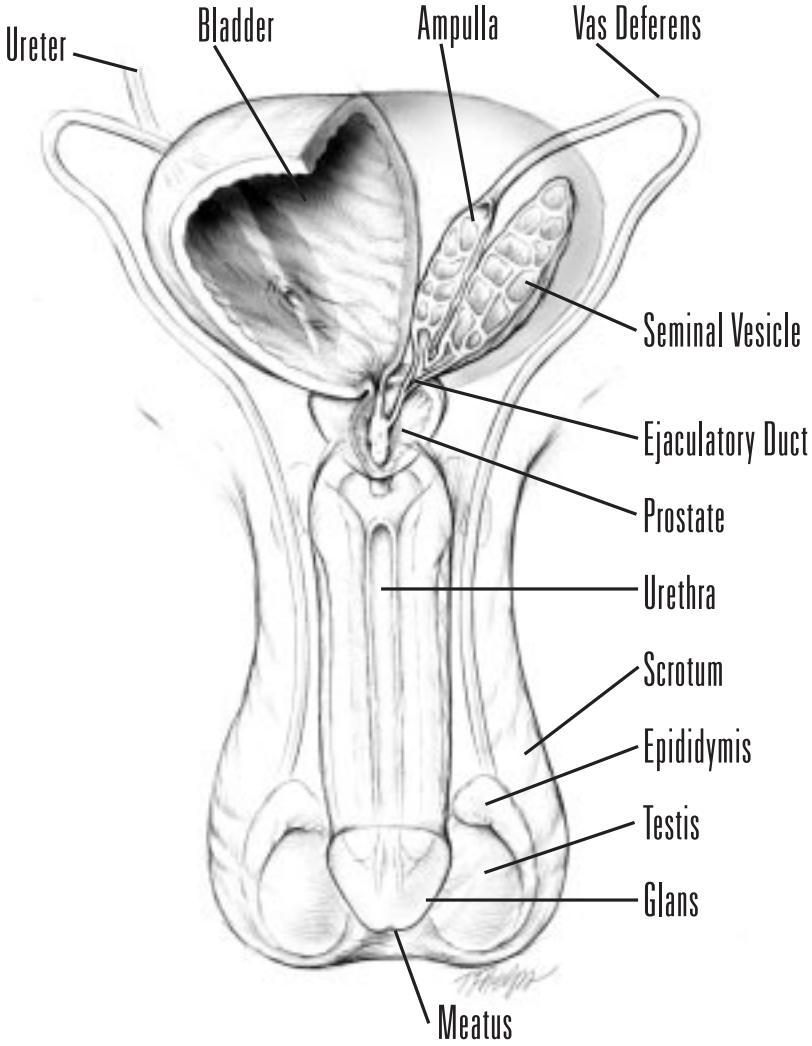
Overview of the Male Reproductive System: How Are Sperm Produced?

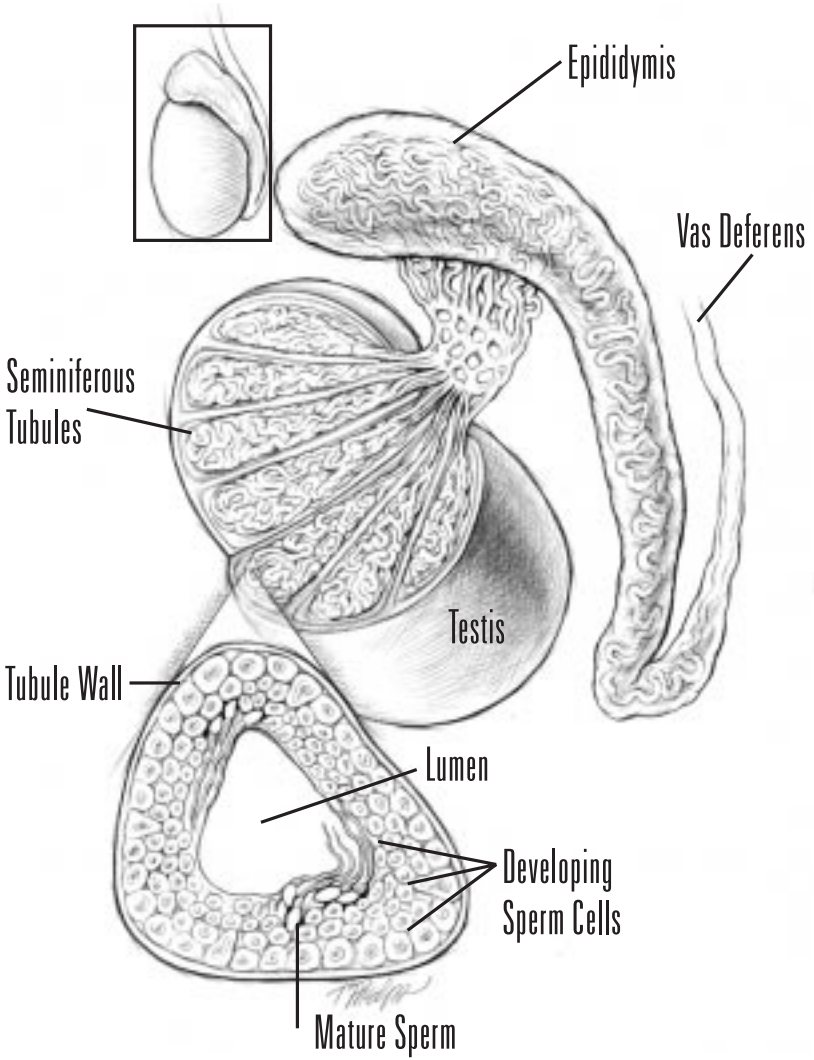
The functions of the male reproductive system are to produce sperm and store sperm. The system also transports the sperm to the outside of the body. These 3 steps occur throughout the reproductive life of a male. This process is regulated by a number of hormones. The following diagrams will help you to understand how the male reproductive system works.

The organs that produce sperm are called the testes. There are 2 testes. They are located in the scrotum, the pouch of skin that hangs from the lower abdomen below the penis. In addition to producing sperm, the testes produce the male hormone testosterone.

Sperm production begins with immature sperm cells that grow and develop within the seminiferous tubules. These are very tiny tubules located within the testes. In the seminiferous tubules, the sperm in the testes are not yet fully mature. As a result, they are unable to move on their own.

With the help of other accessory organs the sperm mature and become functional. The main organ in this process is called the epididymis. The epididymis is a coiled tubule located behind the testis. Sperm mature as they travel through the epididymis. During the climax (orgasm), the semen (the fluid that contains the sperm) is ejaculated. Semen is composed of





fluid from the epididymis, vas deferens, seminal vesicles, and prostate. The sperm must travel through a series of ducts, including the epididymis, vas deferens, ampulla of the vas and ejaculatory ducts. Once the semen is ejaculated, the sperm live about 2 days in the female reproductive tract.

The development and transportation of mature, functional sperm depend on a specific sequence of events. There are a number of places where this process can go wrong. A proper evaluation, including an evaluation for varicocele, may determine where your problem is located.

What Is the Purpose of an Evaluation for a Varicocele? Are all varicoceles associated with infertility?

Not all men with varicoceles are infertile. However, most infertile men with varicoceles have improvement of semen quality after varicocele repair and some infertile men with varicoceles are able to achieve a conception after varicocele repair. Varicoceles are found by a doctor's physical examination. Further tests, including at least two semen analyses (sperm counts), may be performed to find out whether the varicocele is associated with infertility. Once an evaluation is complete, your doctor can tell you about treatment options that are available for you and your partner.

To the doctor, a varicocele feels like a "bag of worms" when you are in the standing position. Varicoceles often seem much smaller, harder to feel, or even absent in the lying (supine) position. Only those varicoceles that the doctor can feel during a physical exam are significant. Sometimes when it is difficult to feel the varicocele, your doctor may perform an ultrasound of the scrotum.

Should I Think About Varicocele Treatment?

If you and your partner are trying to conceive a child, and you have been told you have a varicocele, you should think about treatment when *all* of the following are present:

- The varicocele can be felt when your doctor examines the scrotum.
- You and your partner have been unable to get pregnant.
- Your partner has normal fertility or a treatable cause of female infertility.
- Your semen analysis or sperm function tests are not normal.

An adult male who is not currently trying to become a father, but has a varicocele that the doctor can feel, has abnormal semen analyses, and wants to father a child in the future may also choose to consider treatment.

Adolescent males who have a unilateral (one side) or bilateral (both sides) varicocele and reduced testicle size should also be considered for varicocele repair.

What Treatments Are There for Repair of a Varicocele?

There are now two ways to treat a varicocele:

- Surgical repair – There are a number of surgical options. Your doctor should talk with you about these options.

  Surgical repair of a varicocele often is done in an outpatient center with general or local anesthesia. The operation takes about an hour. Pain after surgery is usually mild. Patients should be out of work for 3-7 days. Desk/telephone work can be done the day after surgery.

- Percutaneous embolization – A procedure aimed at blocking off the varicocele after it is seen with a specialized x-ray technique. It is a minimally invasive procedure that uses a flexible tube inserted into the groin area to place the blocking material (a coil or a balloon). It is often less painful than the surgical approach. It requires a doctor with experience in interventional radiologic techniques and it may be a lengthy procedure.

  This option is done in a radiology (x-ray) department. The patient goes home a few hours later. It does not require general anesthesia. Post-treatment pain usually is mild. Patients should expect to miss a few days of work.

Neither choice has proven better than the other in its ability to improve semen. Surgery gets rid of over 90% of varicoceles. Percutaneous embolization gets rid of about 80-85% of varicoceles that are on one side only. About 60% of men have an improved sperm count and/or motility after repair of a varicocele. (Motility refers to the swimming action of sperm in semen).

The full effects of varicocele treatment on fertility are not yet clear. Some studies show that treatment of varicoceles improves fertility. In other studies, fertility has failed to improve. However, many infertile couples choose to have varicocele repair because: 1) varicocele repair does improve the semen in most men, 2) varicocele treatment may improve fertility, and 3) the risks of varicocele treatment are small.

Should We Think About Using Assisted Reproductive Techniques?

Assisted reproductive techniques (ART) such as intrauterine insemination (IUI) and in vitro fertilization/intracytoplasmic sperm injection (IVF/ICSI) are two options for couples with male factor infertility associated with a varicocele.

- IVF – a type of assisted reproduction in which the male's sperm and the female's egg are joined in a lab dish. The embryo that results is then placed in the uterus to develop further.
- ICSI – the injection of a single sperm into a mature oocyte (egg).
- IUI – Artificial insemination in which the sperm are placed into the uterus with a catheter (flexible tube).

If both partners have infertility factors, ART may be more useful than varicocele repair.

Repair of a Varicocele or Assisted Reproductive Techniques: Which One Is Right for You?

The choice that is right for you and your partner is not always clear. Very often there are many factors involved in making the choice. Although your doctor should help you and your partner make the choice, you may want to consider the following:

- Varicocele repair – Varicocele repair may restore your infertility.
- Assisted reproductive technique (ART) – ART is needed for each try at pregnancy.
- Female fertility – Female fertility is known to decrease after age 35.

- Failure to treat a varicocele – Failure to treat a varicocele at a young age may result in a gradual drop in semen quality, lowering the chances for future fertility.

Varicocele repair should be thought about as the first treatment choice when a man with a varicocele does not have ideal semen but has a normal female partner. On the other hand, IVF, with or without ICSI, should be considered the first choice when there is a special need for such methods to treat a female factor.

Will I Need Follow-up Care After Varicocele Repair?

After varicocele repair, your doctor should check to see if the varicocele is really gone or has come back. After the repair, semen should be tested about every 3 months for at least one year, or until pregnancy occurs. If your varicocele remains or returns, there are more treatments that can be offered. Assisted reproductive techniques should be thought about when infertility remains after the varicocele has been repaired.

For More Information...

The following list of organizations is intended as a resource for couples who would like more information. If you still have unanswered questions, need help finding a specialist, or need some emotional support, there are groups you can contact. Remember, there are many couples experiencing similar difficulties. Getting the support and education you need can save you both time and frustration. The more you know, the better decision you can make.

American Society for Reproductive Medicine
1209 Montgomery Highway
Birmingham, Alabama 35216-2809
Phone: (205) 978-5000
Web: http://www.asrm.org

Reproductive Health Council
c/o American Foundation for Urologic Disease
1128 North Charles Street
Baltimore, MD 21201
Phone: (410) 468-1800
Fax: (410) 468-1808
Web: www.afud.org

RESOLVE
1310 Broadway
Somerville, MA 02144-1779
National HelpLine: (617) 623-0744
Business Office: (617) 623-1156
Web: www.resolve.org

Society for the Study of Male Reproduction
Executive Director: Wendy J. Weiser
1111 N. Plaza Dr. Suite 550
Schaumburg, IL 60173
Phone: (847) 517-7225
Fax: (847) 517-7229
Web: http://www.ssmr.org/

This doctor's guide for patients is intended to stimulate and facilitate discussion between the patient and doctor regarding the types of evaluation and treatment described in summary fashion in this brochure. The brochure was developed by the Male Infertility Best Practice Policy Committee of the American Urological Association. It is based on the *Report on Varicocele and Infertility*, a document jointly developed by the American Urological Association and the American Society for Reproductive Medicine.

Other Doctor Guides for Patients in this series include: *A Basic Guide to Male Infertility: How to Find Out What's Wrong* and *A Basic Guide to Male Infertility: Getting Help for Obstructive Azoospermia.*

For additional copies of this brochure physicians may contact:
American Urological Association, Inc.®
1120 North Charles Street
Baltimore, MD 21201
Phone: (410) 223-4367
www.auanet.org