VAS DEFERENS
Vasa Deferentia, Ductus Deferens, Ductus Deferentes

The duct in the testicle that carries semen from the epididymis to the ejaculatory duct.

Traits:  
- Organ: Male

About Vas deferens

Function

Ejaculation

During ejaculation, the smooth muscle in the walls of the vas deferens contracts reflexively, thus propelling the sperm forward. This is also known as peristalsis. As sperm pass through the ampulla of the ductus deferens at ejaculation, they mix with fluid from the associated seminal vesicle. The paired seminal vesicles are glands that contribute approximately 60 percent of the semen volume. Seminal vesicle fluid contains large amounts of fructose, which is used by the sperm mitochondria to generate ATP to allow movement through the female reproductive tract. The fluid, now containing both sperm and seminal vesicle secretions, next moves into the associated ejaculatory duct, a short structure formed from the ampulla of the ductus deferens and the duct of the seminal vesicle. The paired ejaculatory ducts transport the seminal fluid into the next structure, the prostate gland.

Contraception

The procedure of deferentectomy, also known as a vasectomy, is a method of contraception in which the vasa deferentia are permanently cut, though in some cases it can be reversed. A modern variation, which is also known as a vasectomy even though it does not include cutting the vas, involves injecting an obstructive material into the ductus to block the flow of sperm.

Investigational attempts for male contraception have focused on the vas with the use of the intra vas device and reversible inhibition of sperm under guidance.

Anatomical structure

The ductus deferens (Latin: “carrying-away duct”) is a thick, muscular tube that is bundled together inside the scrotum (Pic. 1) with connective tissue, blood vessels, and nerves into a structure called the spermatic cord. There are two ducts, connecting the left and right epididymis to the ejaculatory ducts in order to move sperm. Each tube is about 30 centimeters (1 ft) long in humans, 3 to 5 mm in diameter and is muscular (surrounded by smooth muscle) (Pic. 2).

The vas deferens may be obstructed, or it may be completely absent in a condition known as congenital absence of the vas deferens (CAVD, a potential feature of cystic fibrosis), causing male infertility. Acquired obstructions can occur due to infections. To treat these causes of male infertility, sperm can be harvested by testicular sperm extraction (TESE), microsurgical epididymal sperm aspiration (MESA), or other methods of collecting sperm cells directly from the testicle or epididymis.

Histological structure
The wall of vas deferens is formed mainly by 2 layers of longitudinal smooth muscle, with the circular one in the middle. The duct is lined with pseudostratified epithelia with stereocilia. Stereocilia (or stereo-villi) are non-motile apical modifications of the cell, which are distinct from cilia and microvilli, but closely related to the latter. They are long cytoplasmic projections that have no motility. These membrane extensions increase the surface area of the cell, allowing for greater absorption and secretion. The layer absorbs excess liquid and dead sperm while secreting nutrients to support sperm during their storage and transportation. The absorption creates a fluid current that moves the immobile sperm. Spermatozoa do not reach full motility until they reach the vagina, where the alkaline pH is neutralized by acidic vaginal fluids.

Find more about related issues

**Diagnoses**

Anejaculation
The pathological inability to ejaculate in males, with (orgasmic) or without (anorgasmic) orgasm.
Learn more at: [www.fertilitypedia.org/therapy/diag/anejaculation](http://www.fertilitypedia.org/therapy/diag/anejaculation)

Ejaculatory disorders
A class of sexual disorders defined as the subjective lack of normal ejaculation.
Learn more at: [www.fertilitypedia.org/therapy/diag/ejaculatory-disorders](http://www.fertilitypedia.org/therapy/diag/ejaculatory-disorders)

Idiopathic male infertility
A condition in which fertility impairment occurs spontaneously or due to an unknown cause.
Learn more at: [www.fertilitypedia.org/therapy/diag/idiopathic-male-infertility](http://www.fertilitypedia.org/therapy/diag/idiopathic-male-infertility)

Obstructive azoospermia
Absence of sperm in the ejaculate despite normal spermatogenesis, caused by an obstruction of the genital tract.
Learn more at: [www.fertilitypedia.org/therapy/diag/obstructive-azoospermia](http://www.fertilitypedia.org/therapy/diag/obstructive-azoospermia)

Orchitis
An inflammation of the testes, involving swelling and heavy pains.
Learn more at: [www.fertilitypedia.org/therapy/diag/orchitis](http://www.fertilitypedia.org/therapy/diag/orchitis)

Painful ejaculation
A physical syndrome described by pain or burning sensation of the urethra or perineum during or following ejaculation.
Learn more at: [www.fertilitypedia.org/therapy/diag/painful-ejaculation](http://www.fertilitypedia.org/therapy/diag/painful-ejaculation)

Retrograde ejaculation
The semen, which would normally be ejaculated via the urethra, is redirected to the urinary bladder.
Learn more at: [www.fertilitypedia.org/therapy/diag/retrograde-ejaculation](http://www.fertilitypedia.org/therapy/diag/retrograde-ejaculation)

Teratospermia
Teratospermia is a condition characterized by the presence of sperm with abnormal morphology that affects fertility in males.
Learn more at: [www.fertilitypedia.org/therapy/diag/teratospermia](http://www.fertilitypedia.org/therapy/diag/teratospermia)

**Main Organ**

**Testes**
Male gonads which produce both sperm and androgens, such as testosterone, and are active throughout the reproductive lifespan of the male.
Learn more at: [www.fertilitypedia.org/edu/organs/testes](http://www.fertilitypedia.org/edu/organs/testes)

**Symptoms**
Anejaculation
The pathological inability to ejaculate in males, with (orgasmic) or without (anorgasmic) orgasm.
Learn more at: www.fertilitypedia.org/edu/symptoms/anejaculation

Infertility
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/infertility

Lowered libido
The absence of sexual appetite.
Learn more at: www.fertilitypedia.org/edu/symptoms/lowered-libido

Sexual frustration
A frustration caused by a discrepancy between a person’s desired and achieved sexual activity.
Learn more at: www.fertilitypedia.org/edu/symptoms/sexual-frustration

Sources
"Anatomy and Physiology of the Female Reproductive System" [http://cnx.org/contents/FPhK1zmh@8.1:nMy65WSO@5/Anatomy-and-Physiology-of-the-] —sourced from OpenStax College licensed under CC BY 4.0 Download for free at http://cnx.org/content/col11496/latest/

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