SEMINAL VESICLES
Glandulae Vesciculosae, Vesicular Glands, Seminal Glands

One of two simple tubular glands responsible for the production of about 60 percent of the fluid that ultimately becomes semen.

♀ Organ  ♂ Male

About Seminal vesicles

Function

The paired seminal vesicles are glands that contribute approximately 60 percent of the semen volume. The excretory duct of each seminal gland opens into the corresponding vas deferens as it enters the prostate gland (Pic.1). The vesicle produces a substance that causes the semen to become sticky and jelly-like after ejaculation. Lipofuscin granules from dead epithelial cells give the secretion its yellowish color. Seminal vesicle fluid is alkaline, resulting in human semen having a mildly alkaline pH. The alkalinity of semen helps neutralize the acidity of the vaginal tract, prolonging the lifespan of sperm. Acidic ejaculate (pH < 7.2) may be associated with ejaculatory duct obstruction.

The thick secretions from the seminal vesicles contain proteins, enzymes, mucus, vitamin C, flavins, phosphorylcholine and prostaglandins. Seminal vesicle fluid contains large amounts of fructose, which is used by the sperm mitochondria to generate ATP as an energy source to allow movement through the female reproductive tract.

Development

Each vesicle forms as an outpocketing of the wall of the ampulla of one vas deferens. The seminal vesicles develop as one of three structures of the male reproductive system that develops at the junction between the urethra and vas deferens. Both the urethra and vas deferens are derived from the mesonephric ducts, structures that develop from mesoderm.

Anatomical structure

The seminal vesicles are a pair of glands that are positioned below the urinary bladder and lateral to the vas deferens (Pic.2). Each vesicle consists of a single tube folded and coiled on itself, with occasional diverticula in its wall.

The excretory duct of each seminal gland unites with the corresponding vas deferens to form the two ejaculatory ducts, which immediately pass through the substance of the prostate gland before opening separately into the verumontanum of the prostatic urethra.

Each seminal vesicle spans approximately 5 cm, though its full unfolded length is approximately 10 cm, but it is curled up inside the gland’s structure.

Histological structure

Seminal vesicles (Pic.3), (Pic.4), are composed of mucosa, consisting of:

- Lining of interspersed columnar cells.
- Lamina propria - containing underlying small blood vessels and lymphatics. Together with the epithelia, this is called the mucosa, and is arranged into convoluted folds, increasing the overall surface area.
- Thick muscular wall - consisting of an inner circular and outer longitudinal layer of smooth muscle.

The lumen of the glands is highly irregular and stores secretions from the glands of the vesicles.
The epithelia is pseudostratified columnar in character, similar to other tissues in the male reproductive system. The height of these columnar cells, and therefore activity, is dependent upon testosterone levels in the blood.

Spermatozoa may occasionally be found within the lumen of the glands, even though the vesicles are blind-ended in nature. This is thought to be because of slight reflux due to muscular contractions of the urethra during ejaculation.

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

Aspermia
Male diagnosis connected with male infertility characterised by the complete absence of semen.
Learn more at: www.fertilitypedia.org/therapy/diag/aspermia

Azoospermia
Complete absence of sperm in the ejaculate of a man.
Learn more at: www.fertilitypedia.org/therapy/diag/azoospermia

Hypospermia
A condition in which a man has an unusually low ejaculate (or semen) volume.
Learn more at: www.fertilitypedia.org/therapy/diag/hypospermia

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

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

Symptoms

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The pathological inability to ejaculate in males, with (orgasmic) or without (anorgasmic) orgasm.
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