

# Prostate

## Function

It produces a thin, opaque, **weakly acidic** secretion (pH 6.45) which contains among other material:

1. Proteases (for liquefaction of ejaculate)
2. Citric acid (for buffer effect)
3. Spermine and spermidine (as fertility influencers)
4. Prostaglandins (for stimulation of the uterus)

## Structure

The prostate has a walnut-size. It the largest accessory gland of the male reproductive system. Consists of the glandular part (~66%) and fibromuscular part (~33%). - It is enclosed in a fibrous capsule which is dense and neurovascular, incorporating prostatic plexuses of veins and nerves. All these are surrounded by the visceral layer of the pelvic fascia, forming the fibrous prostatic sheath, which continues anterolaterally with the puboprostatic ligaments, and posteriorly with the rectovesical septum.

The prostate has:

- A base, closely related to the neck of the urinary bladder
- An apex that is in contact with fascia on the superior aspect of the external urethral sphincter and deep perineal muscles.
- A muscular anterior surface that forms rhabdosphincter, part of the urethral sphincter, separated from the pubic symphysis by fatty tissue in the retropubic space.
- A posterior surface that is related to the ampulla of the rectum
- Inferolateral surfaces that are related to levator ani muscle

The four parts of the prostate:

1. **Isthmus** of the prostate: it lies anterior to the urethra. It is fibromuscular.
2. **Inferoposterior lobe**: it lies posterior to the urethra and inferior to the ejaculatory ducts. It is readily palpable by per rectum examination.
3. **Right & Left lobes**: they lie on either side of the urethra and form the major part of the prostate.
4. **Middle Lobe**: it lies between the urethra and the ejaculatory ducts.

The prostatic ducts open mainly into the grooves of the prostatic urethra, called prostatic sinuses. There are around 20-30 prostatic ducts. These sinuses lie on either side of the seminal colliculus, which is located on the posterior wall of the prostatic urethra.

The prostate can also be divided into zones:

1. transitional zone - the area surrounding the prostatic urethra, where benign prostatic hyperplasia usually arise
2. central zone - surrounding ejaculatory ducts
3. peripheral zone - where prostate carcinomas usually arise

## Vasculature

- **Arterial supply**: by the prostatic branches of the internal iliac aa, the inferior vesical aa, internal pudendal and middle rectal aa.
- **Venous drainage**: is facilitated by a venous plexus that is formed around the base and sides of the prostate, located between the fibrous capsule and the prostatic sheath, and it drains into the internal iliac vein. The prostatic venous plexus is continuous superiorly with the vesical venous plexus and communicates also with the internal vertebral venous plexus.
- **Lymphatic drainage**: ends in internal iliac lymph nodes but some drainage can also pass to the sacral nodes.

## Topographic relations

- It lies between the base of the bladder and the deep transverse perineal muscle.
- It is 1-1.5cm behind the pubic symphysis, connected with via the puboprostatic ligaments
- It is located in front of the rectum (separated by rectovesical septum). That is why you can palpate the prostate by a per rectum examination.

## Prostatic Urethra

It is 3-4cm length. Descends through anterior prostate, forming anteriorly concave curve. It features the urethral crest with the seminal colliculus, into which ejaculatory ducts open. It lies between the prostatic sinuses, into which prostatic ducts open. It is the place where the urinary and reproductive parts merge.

## Ejaculatory ducts

They arise by the union of the ducts of seminal vesicles with vas deferens, near the posterior side of the neck of urinary bladder and run anteroinferiorly through the prostate and open on either sides of the prostatic utricle, within the prostatic urethra.

## Vasculature & Innervation

- **Arterial supply:** by the artery to vas deferens, branches from the superior/inferior vesical arteries.
- **Venous drainage:** from the prostatic and vesical venous plexuses
- **Lymphatic drainage:** principally into the internal iliac lymph nodes and external iliac nodes, and communicates with pre sacral and paraaortic nodes.
- **Innervation:** by the inferior hypogastric plexus.

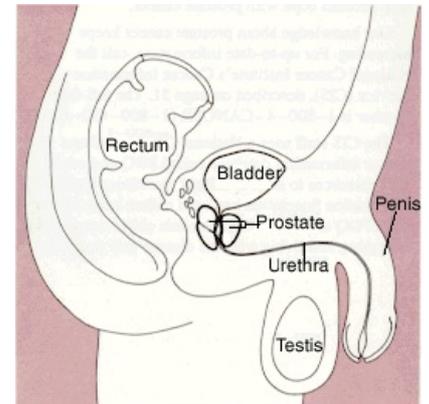
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## Bibliography

- MOORE, Keith L - DALLEY, Arthur F. *Clinically Oriented Anatomy*. 5. edition. Lippincott Williams & Wilkins, 2005. ISBN 0781736390.



This picture shows the prostate and nearby organs.