

## The prostate: myth, morphology and function

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The Prostate (προστάτης, “in front of” in the pelvis) is usually known for the urinary and mictional symptoms caused by the diseases that affect it, while little is known about how its anatomy and physiology were discovered.

Erofilo of Calcedonia, physician of the 4<sup>th</sup> century b.C. and founder of the Alexandria medical school, was the first to describe this gland and, according to Aulo Cornelio Celso, he also coined the name.

Very little was known about this gland during the following centuries, until Vesalio described it (*De Humani Corporis Fabrica*) identifying the two lobes placed under the bladder neck; a similar description of the prostate was reported in the *Historia Anatomica Humani Corporis Partes* written by André du Laurens.

The modern anatomy of the gland was described in the 1970s by McNeal, who studied it on corpses and surgical samples. Bladder neck, ejaculatory ducts and urethral rbdomyosphincter were used as anatomical landmarks. He also described some regions of the prostate: central region, transitional regions (which are the site of the BPH) and peripheral zones (the most common site of a carcinoma).

This anatomic description made it possible to identify the sites of the prostatic diseases more precisely, improving the bioptic procedure and the surgical procedures regarding the gland.

The anatomic structure of the prostate can be described as numerous tubulo-acinar glandular groups, immersed in a stromal tissue composed by connective and fibromuscular cells; the secretive component becomes increasingly sparse in extreme periphery of the gland and it is replaced by stromal tissue. This area is crossed by the vessels and nervous fibers (erigentes nerves) controlling the erectile function.

Physiologically, the prostate is a secretive organ, producing 30% of the ejaculate.

This secretion contains enzymes, especially acid prostatic phosphatase, which produces coline from phosphorylcoline and PSA, a callicrein allowing a lysis of the ejaculated clot. The secretive cells of the prostate produce corpuscles –the prostasomes- which contain enzymes, proteins appertaining to the Rho and RAS systems and electrolytes (Zn,Mg,Ca).

The prostasomes support the sperm in the capacitation and acrosomial reaction.

The fibromuscular cells of the prostate, controlled by  $\alpha$ -adrenergic system, interfere with the urethral resistance, thus cooperating in the regulation of the urinary flux and, in case of prostatic diseases, causing mictional troubles.

To conclude, the effects of prostatic diseases are widely known, unlike the morphology and function of the gland. However, this small organ is crucial for sexual/reproductive and mictional functions. The subject deserves therefore more recognition, in order to promote further research protocols and enrich the scientific knowledge of this normal and physiological domain