CRSQ
Creation Research Society Quarterly

Was the Prostate Gland Poorly Designed?

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Abstract

The common claim that the prostate is poorly designed is reviewed, and it is concluded that many very good reasons exist for its design and placement around the urethra. The main prostate problem, benign prostatic hypertrophy, is caused by disease, hormone imbalance, and other health problems, not poor design.

Introduction

Enlargement of the prostate, a condition called *benign prostatic hypertrophy* (BPH), or *benign prostatic hyperplasia*, occurs in approximately half of all men by age 60. The most common result of BPH is blockage of urine flow in males. This problem is widely touted by Darwinists as proof of poor design and evidence that humans were not designed but rather evolved by natural selection of random mutations.

The Prostate Gland

The prostate in an average adult male is a walnut-shaped gland four cm long by two cm wide and weighing about 20 grams. Found only in males, it is small at birth, enlarges rapidly at puberty, and sometimes shrinks in octogenarians. Located directly below the bladder, it surrounds the urethra where the urethra exits the bladder (see Figure 1). The prostate gland itself is a complex fibromuscular structure that contains a conglomerate of 30 to 50 small saccular glands. The entire prostate is divided into two main lobes and is totally enclosed in a tough fibrous capsule (Garnick, 1996, p. 27). The proximal section connected to the bladder is called the base, the opposite end, the narrow distal part, the apex. The main divisions of the prostate are the central region, the transitional (inner) region, which surrounds the urethra, and the peripheral, or outer layer (Naz, 1997). For a diagram of its internal structure, see Figures 2 and 3.

Among the prostate's several functions, one is to produce the secretions that constitute much of the volume of the seminal fluid (Swanson and Forrest, 1984). The prostate is called a complex semen factory; and its secretions consist of a thin, opalescent liquid that contains a soup of complex compounds, including citric acid, phosphatase, prostaglandin (named after the prostate gland because it was first discovered there), diastase, fructose, beta glucuronidase, a potent fibrinolysin, spermine, and several proteolytic enzymes (Bloom and Fawcett, 1969). Semen contains mucus, which has an alkaline pH of 7 to 8 and serves to neutralize the acidic male urethra and female reproductive tract to allow sperm to survive their trip from the testicles to the uterine (fallopian) tubes.

The Poor Design Argument

A common dysteleological claim is that the human prostate gland is poorly designed because it surrounds the urethra, a thin tube resembling a miniature straw that carries urine from the bladder to exit the body (Garnick, 1996, p. 26). An example of this poor-design argument is the following claim:

> In human males, the urethra passes right through the prostate gland, a gland very prone to infection and subsequent enlargement. This blocks the urethra and is a very common medical problem in males. Putting a collapsible tube through an organ that is very likely to expand and block flow in this tube is not good design. Any moron with half a brain (or less) could design

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Accepted for publication May 9, 2007

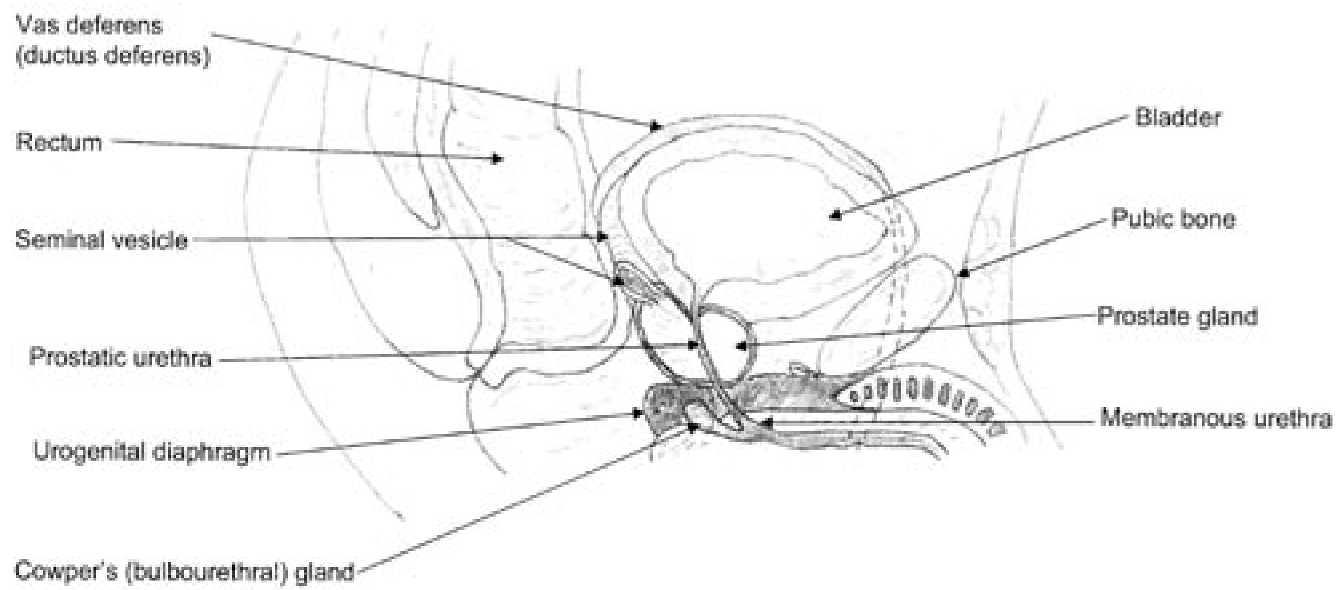

Figure 1. Cross section of the male reproductive system showing the prostate located below the bladder, and the deferent duct (vas deferens), the tube along which sperm travels to the prostate, then to the urethra and out of the body. Also shown are the urogenital diaphragm, which supports the prostate and separates it from the structures below. Last, the seminal vesicle and bulbourethral (Cowpers) gland are seen, two other secretory organs that add their secretions to the semen. From Baggish, 1996. Drawn by B. L. Lindley-Anderson.

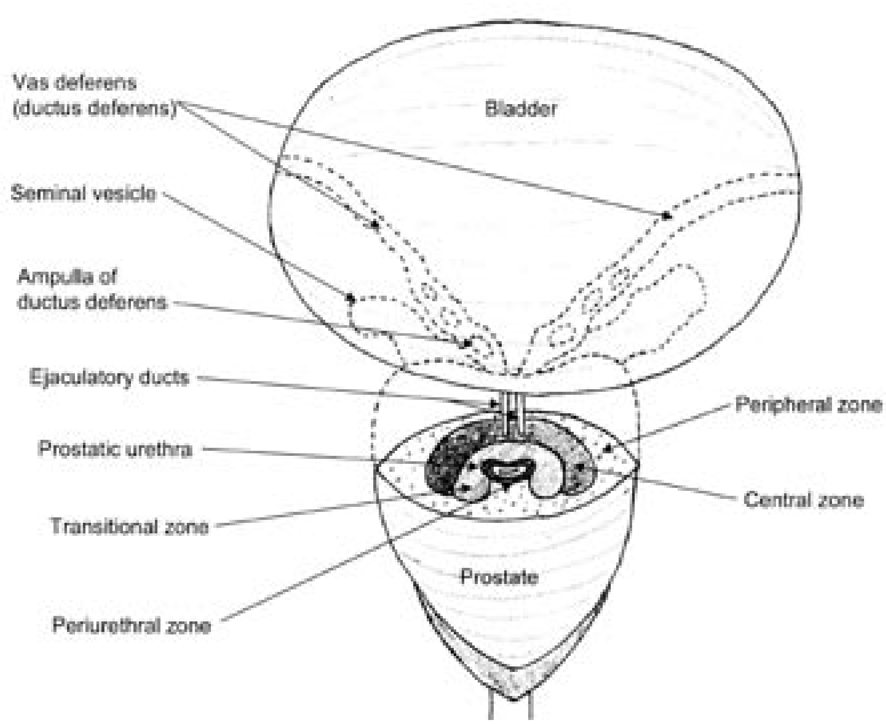

Figure 2. A cutaway of the prostate showing the internal structures. The four distinct zones shown are based on microscopic structural differences. All of these zones have differences based on anatomy and function. The two vas duct tubes and the two seminal vesicles are located behind the bladder and for this reason are shown as dotted lines. From Baggish, 1996. Drawn by B. L. Lindley-Anderson.

> male plumbing better (Colby et al., 1993, p. 1).

University of Chicago Biologist Jerry Coyne wrote:

> Why did God—sorry, the Intelligent Designer—give whales a vestigial pelvis, and the flightless kiwi bird tiny, nonfunctional wings? ... What a joker! And the Designer doesn't seem all that intelligent, either. He must have been asleep at the wheel when he designed our appendix, back, and prostate gland (Coyne, 2006 p. 1).

Professor Karen Bartelt wrote that if we assume, as intelligent design postulates, that

> humans can discern design, then I submit that they can also discern poor design (we sue companies for this all the time!). In *Darwin's Black Box*, Behe refers to design as the purposeful arrangement of parts. What about when the parts aren't purposeful, by any standard engineering

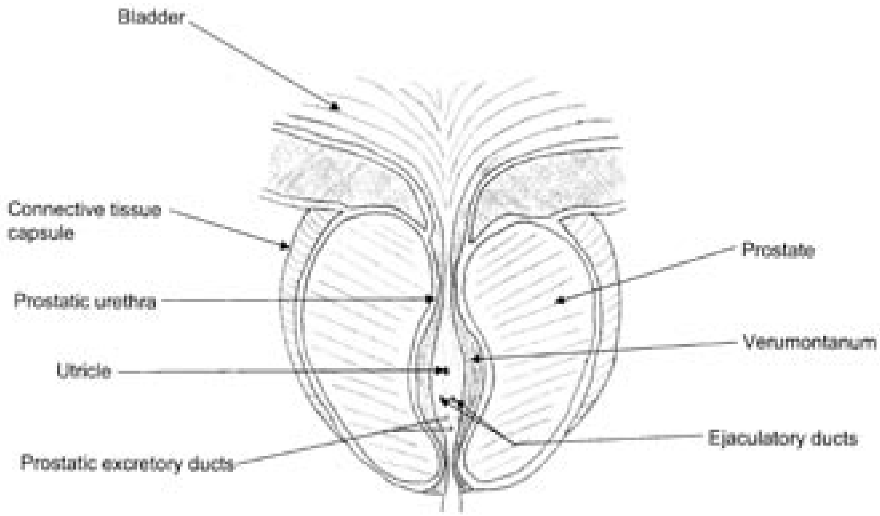

Figure 3. A cross section of the prostate gland showing the body of the gland, the connective capsule that protects it, and the ejaculatory ducts through which the sperm travel. The prostate secretions enter the urethra via the prostate excretory ducts. The verumontanum is an elevation, or crest, in the wall of the urethra where the seminal ducts enter. From Baggish, 1996. Drawn by B. L. Lindley-Anderson.

> criteria? When confronted with the "All-Thumbs Designer," whoever designed the spine, the birth canal, the prostate gland, the back of the throat, etc. Behe and the ID people retreat into theology (1999, p. 4).

The online encyclopedia Wikipedia (2006), under the heading "Argument from Poor Design, a Dysteleological Argument against the Existence of God," listed as the first example of poor design the "urinary tract in the human male, especially the unnecessary passage of the urethra through the prostate gland. As the prostate almost always grows with age, it eventually compresses the urethra and often makes urination difficult or even impossible." Contrary to anti-intelligent design proponents, this claim assumes that you *can* detect design in biological systems.

Evaluation of the Claim

It is true that when the prostate becomes diseased or enlarges as a man approaches retirement age, it can interfere with urine flow. Also, when the prostate enlarges, it obstructs the urethra, distorts the bladder neck outflow tract, and interferes with the normal sphincter mechanisms so that bladder evacuation can become incomplete. This condition causes the patient to assume that he has emptied himself, but some urine always remains in the bladder. This results in the problem that requires a patient who has just passed urine to urinate again after only a very short time.

Urine flow blockage in males is usually caused by the enlargement of the prostate, the medical condition known as benign prostatic hypertrophy (BPH). Although enlargement occurs in about half of all men by age 60, the condition often can be treated with medication and in about 70% of all cases the enlargement is minor (rated less than moderate), and the number of moderate to severe cases increases with age (Naz, 1997, p. 9).

One study found only 25 to 30 percent of men in the 70 to 74 age range had clinical BPH (Naz, 1997, p. 10). Furthermore Naz found that the prostate is not likely to expand or enlarge because of poor design, but rather it usually enlarges as a result of poor health, bacterial or viral infection, or other diseases, genetic mutations, hormonal imbalance, race or ethnicity influences, poor diet, smoking, sexual habits, obesity, use of certain medications, excess androgen production, lack of testosterone regulation, or cancer (Naz, 1997).

For this reason, blockage is not the result of poor design but rather is a clear early indication that something is wrong (such as BPH or prostate cancer), and that the affected person should consult a physician to determine the cause. It is for this reason that changes in urine flow often trigger an examination that allows early detection of prostate cancer, usually by taking a Prostate Specific Antigen (PSA) test and by digital examination of the prostate. Thus, early systems of prostrate problems can actually have the benefit of yielding a higher level of probability of successful treatment of more severe conditions (Foster and Bostwick, 1998). Cancer cells often originate in the posterior region of the prostate, hence early cancer can be felt as very hard nodules on rectal examination.

Causes of Benign Prostate Hypertrophy

The causes of BPH are not well understood. BPH occurs mainly in older men and does not develop in men who were castrated before puberty. For this reason, factors related to aging and the misregulation of hormones produced by the testes are believed to be major causes of BPH. Men produce both testosterone and small amounts of estrogen, a female hormone, throughout their lives. As men age, the amount of active testosterone in the blood decreases, leaving a higher proportion of estrogen (Snyder et al., 1999). Animal studies suggest that BPH may result from the higher amount of estrogen within the gland and this condition increases the activity of cell growth promotion hormones.

Another cause focuses on dihydrotestosterone (DHT), which is a testosterone-derived substance that may help to regulate prostate growth. Most animals lose their ability to produce DHT as they age. Even with a decrease in blood testosterone level, some older men continue to produce high levels of DHT in the prostate. High levels of DHT and other hormones such as oxytocin may encourage abnormal cell division, causing BPH (Cook and Sheridan, 2000; Nicholson, 1996). Evidence for this conclusion includes the finding that men who do not produce excessive DHT levels do not develop BPH.

Research also suggests that BPH can develop due to instructions given to cells early in life. This theory concludes that BPH occurs because cells in one section of the gland reawaken later in life as a result of these instructions. These reawakened cells then deliver signals to other cells in the gland, either instructing them to grow or making them more sensitive to certain growth hormones.

Reasons for the Existing Urethra Designs

One reason for the existing design is the prostate serves both as a support for the bladder and a spacer between the bladder and the urogenital diaphragm. This allows the vas deferens and the seminal vesicles room to connect to the urethra. Because the urethra is a small, narrow tube without a substantial support system, the bladder, when full, would cause kinking of the urethra. One possible solution could be support of the bladder by ligaments to prevent its interfering with possible urethra outflow, but this would require a new support system, new attachment sites, and other structures. Economy allows the prostate to serve this role as well as the other roles noted in this paper.

Rather than the urethra going through the prostate, it is more accurate to describe the prostate as an expanded part of the urethral wall. Each of the distinct glandular regions of the prostate develops from a different segment of the prostatic urethra (see McNeal, 1998, p. 19). The fact that the prostate is part of the urethra is actually an example of intelligent design because this design allows the prostate to more rapidly deposit its secretions into the urethra, where they mix with the seminal vesicle secretions. The prostate's 30 to 50 glands secrete into 16 to 32 small excretory ducts that open independently into the urethra so that they rapidly transfer their products (Foster and Bostwick, 1998, p. 3). This rapid transfer is required in order for the system to operate effectively. The prostate's smooth muscle is a highly effective system to empty the tubules during the sexual response, thus forcing semen rapidly into the urethra. The tubules open on both the right and left sides of the colliculus seminalis, a U-shaped opening that runs along the urethra.

The entire prostate also contracts during the sexual response, in turn contracting the U-shaped urethra, thus forcing semen forward in the urethra. Because the many small cavernous holes all open directly into the U-shaped opening, prostate contraction helps to effectively propel the semen forward during the sexual response. It must travel out of the urethra with sufficient force to make its journey successfully in order to achieve fertilization. In the words of Baggish, the urethral capsule segment squeezes fluid out of the prostate during ejaculation (1996, p. 2).

The rhythmic contractions of the prostate propel the semen forward in the urethra during the first stage of the sexual response (Katchadourian, 1989, p. 71; deGroat and Booth, 1980; Dunsmuir, and Emberton, 1997). A one-way valve (the preprostatic sphincter) prevents retrograde flow of semen. This complex and intricate structure is very similar in different mammalian species and is highly conserved, which is evidence that the system is well designed, highly effective, and functional (Foster and Bostwick, 1998).

Those claiming that the prostate is poorly designed must have a better alternate design in mind. The only other option is a separate prostate located to one side of the urethra. This would require a new duct system that would add a cumbersome set of structures and greatly slow the flow of semen into the urethra. This alternative design would require another structure to propel the semen into the urethra and yet another system to help propel the semen along the urethra to replace the several roles that the prostate now serves.

The Nerve Plexuses

The prostate also contains abundant nerve plexuses, mostly consisting of non-myelinated nerve fibers and sensory nerve endings. As noted, the prostate itself contracts during sexual excitement, and it is this contraction that produces much of the pleasure accompanying sexual activity due to the abundant nerve plexuses. Autonomic nerves arising from the hypogastric plexus contribute to the prostate plexus. The normal healthy prostate is, for this reason, a source of pleasure rather than of pain (see Morganstern and Abrahams, 1996, p. 4).

Other Functions of the Prostate

Another function of the prostate is to help control urine flow. A Cleveland clinic urologist report concluded that the "prostate gland, which surrounds the tube that allows urine to flow outside the body, also helps to hold back urine until the time to release (Shuman, 2006). When the prostate is removed, most men experience some degree of incontinence, usually lasting from three to six months, but sometimes lasting for the rest of their lives (Dierich and Felecia, 2000). Post-prostatectomy incontinence levels can range from total to incontinence occurring only under certain conditions, such as in the stress incontinence condition. About 10 percent of all men experience extreme urinary incontinence after prostate surgery. This is often temporary, but may last for years (Newman and Dzurinko, 1997; Burgio et al., 1990). As Leach (2004, p. 1) notes, loss of bladder control after prostate surgery is a devastating complication that has a significant negative impact on quality of life.

The major cause of post-operation prostatectomy incontinence is disruption of the involuntary sphincter muscle at the bladder neck. This injury from the surgery can be permanent or temporary due to swelling, leaving only the voluntary lower sphincter. Lack of the prostate after surgery, though, also contributes to the problem. Because females lack a prostate to help control urine flow, some feel this is one of several reasons why women are much more likely to suffer from incontinence. Incontinence in women results mainly from sagging (prolapse) of the anterior vaginal wall initiated by the trauma and stretching due to childbirth labor. Harvard Medical School MD, Andrew Weil wrote concerning prostatectomy:

> Surgical removal of the prostate gland is another expensive and painful operation, frequently resulting in impotence and urinary dysfunction. It is done as treatment of benign prostate hypertrophy (BPH) and early stages of prostate cancer. In the case of cancer, removal of the gland is often unnecessary if the cancer is not aggressive (Wallenchinsky and Wallace, 1993, p. 117).

Are Any Prostate Accessory Structures Vestigial?

As scientists study the prostate, they have learned that it is a complex, well-designed structure with many accessory structures, all of which are important, and none of which are vestigial as once taught by Darwinists. This brief review can only outline some of the major structures and functions of the prostate itself. An example of one structure is the *utriculus prostatius*. Once thought to be useless, it is now known to be an important accessory gland (Bloom and Fawcett, 1969, pp. 718–719).

Summary

Those claiming that the prostate is poorly designed usually show evidence of a shallow knowledge of its many functions. To prove their claim, they need to propose a better design that deals equally well with its many functions and requirements. Until then we must conclude that the prostate is well designed for its many roles. The problem is not poor design but infections, mutations, teratogens, degeneration of the genome, and unhealthy behavior.

Board specialist in pathology, Agatha Thrash, wrote that for all the prostate's lowly credentials, it is an amazing piece of engineering (Thrash, 2006. p. 1). The prostate's several functions include producing the conditions (such as the required pH) allowing sperm to survive their trip from the testicles to the fallopian tubes for fertilization. It serves all of these tasks remarkably well. After the childbearing years are past, the prostate can cause problems, but from a clinical standpoint, it is remarkably free of disease even during these later years. Only in the fifth or sixth decade of life does it cause problems, usually when long past its primarily reproductive function.

Acknowledgements

I wish to thank Vij Sodera, MD, William Morris, MD, Jody Allen, RN, David Deming, MD, E. Norbert Smith, PhD, and Clifford Lillo, MA, for their helpful comments on an earlier draft of this article.

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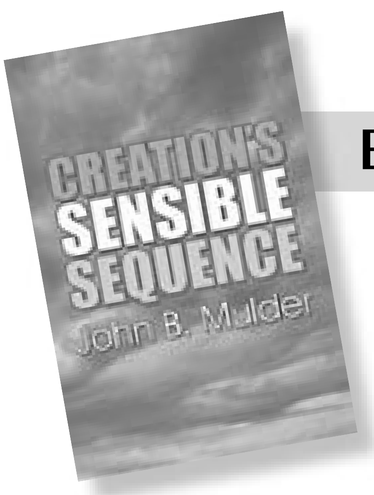

Book Review

Creation's Sensible Sequence

by John B. Mulder

Publish America, Baltimore, 2007, 82 pages, $10.00.

This small book provides a clear "walk through the creation week." Author John Mulder is a retired professor and veternarian living in Kansas. He effectively challenges the big bang and nonliteral creation days, while favoring traditional creation ideas such as the vapor canopy theory. Major emphasis is given to the practical, benevolent aspects of creation. Thus, mammals are useful for food, clothing, medical research, companionship, transportation, work, sport, hunting, protection, and entertainment.(p. 44). A future book edition can clear up some problems: The ocean tides are not caused by earth magnetism (p. 32), the Milky Way galaxy is not recognized as the center of the universe (p. 34), and there are scores of known planets beyond the seven members of the solar system (p. 38). The book has no figures or index. It concludes with a clear gospel presentation. The author's website is www.jmulder.org.

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