Letters to the Editor

Letter to the Editor on "Topography-guided Anatomical Reassembly for Distal Penile Hypospadias Without Chordee: A Comprehensive Illustration and Midterm Results of a Novel Approach"

I congratulate the author on this beautifully written article. Topographic anatomy deals with the arrangement and relationships of structures within a particular area of the body. Although the author's conclusions relate to the topographic anatomy of hypospadias and are based on remarkable observations, I consider it important to first know the normal topographic features of the human penis and urethra. This will also help avoid the use of subjective statements, definitions, and conclusions that we have seen for decades in hypospadias surgery.

The "*navicular fossa*" is the most important topographic anatomical feature of the male urethra and forms the glanular urethra. The glanular urethra has unique structural features with different boundaries, attachments and elasticity. We have described the anatomy of the penis and glans, the structural differences between the penile and glanular urethra, and their functional roles in male voiding.[1-4] It is very interesting that the navicular fossa and the "*septum glandis*" were overlooked in the history of hypospadias. Our studies revealed the following information about the topographic anatomy of the normal penis, glans and the penile and glanular urethra (Fig. 1):

1. The fibrous-ligamentous framework of the penis (formed by the tunica albuginea of the corpora cavernosa and the corpus spongiosum) is the main structure that ensures the stable connection between the glans and the shaft of the penis. This framework has strong (dense) extensions into the glans on the upper side (the distal ligament and the upper median septum) and on the ventrum (the lower median septum), between the glans wings,
2. The wings of the glans are separated by the lower median septum of the septum glandis and the frenulum, which form the ventral wall of the glanular urethra,
3. The navicular fossa is not covered by the corpus spongiosum, but by the fine extensions of its tunica albuginea, which form the septum glandis. The septum glandis, a fibroelastic connective tissue, holds the glanular urethra in the midline in a vertical slit shape and ensures its adaptive configuration during micturition,
4. The male urethra is not a straight, uniform tubular structure with the navicular fossa, which is wider and slightly higher than the penile urethra. The different configurations of the "groove" of the glans in hypospadias must be considered as the faulty development of the future navicular fossa at different stages,

In hypospadias, the glans is a developmentally misconfigured tissue and not a "splayed" tissue. However, I would like to congratulate the author for recognizing the fact that dissection of the glans wings is not necessary in hypospadias repair. Furthermore, uniform tubularization of the neourethra is a misconception in hypospadias surgery. I also hope that these morphological features of the penis will help the author to accurately define the terms "glistening urothelial sheet", "underlying connective tissue", "white tunical line" and the "spongiosal plate", as well as their anatomical boundaries. These anatomical facts indicate that hypospadias surgery should be redesigned taking into account a new perspective,

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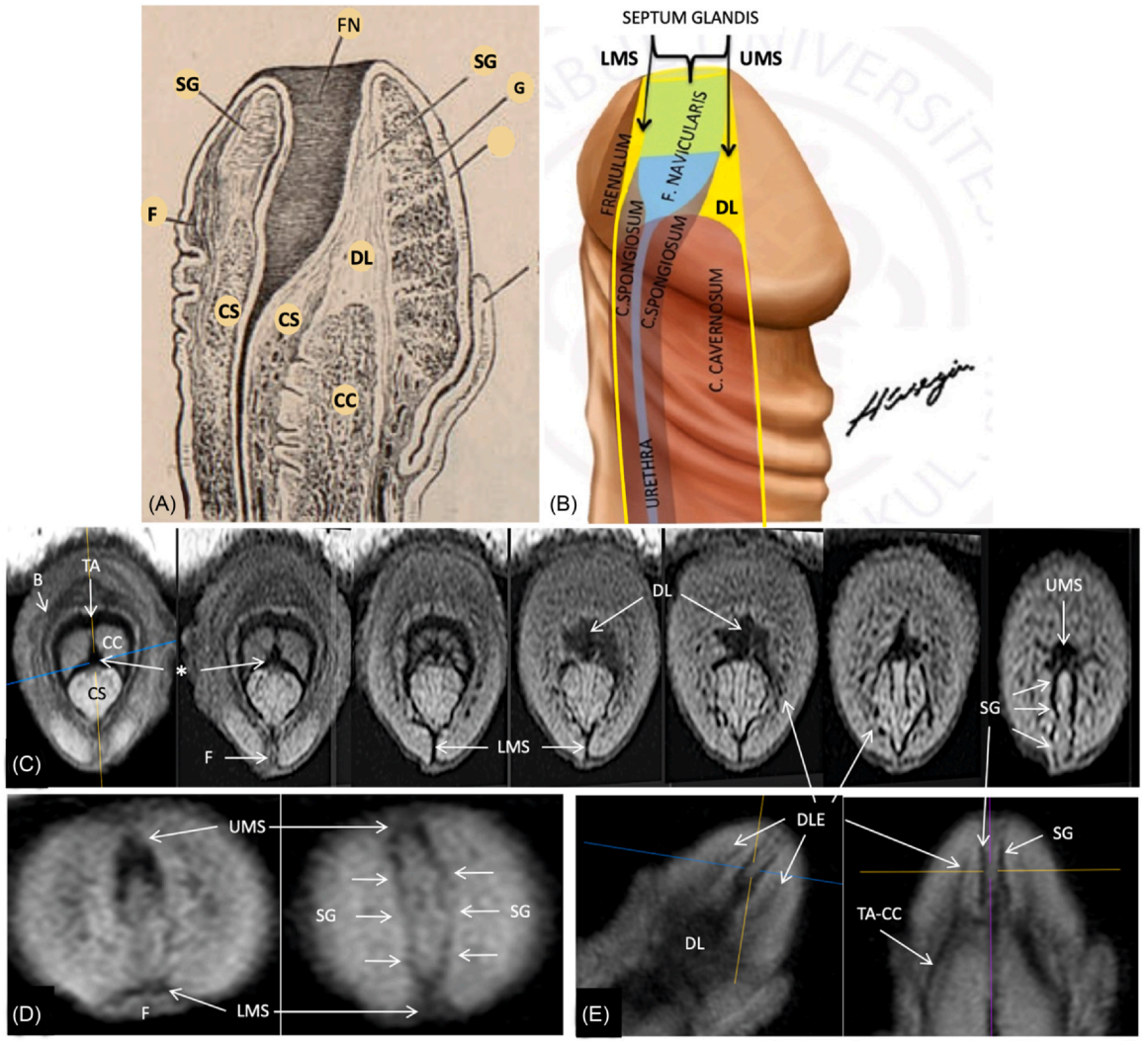

Figure 1. Topographical anatomy of the penis showing the corpora cavernosa, the corpus spongiosum and the ligamentous structures (as extensions of their tunica albuginea) in relation to the glanular and penile urethra. **(A)** Henle's drawing (Henle, 1877), **(B)** schematic representation of the same structures (Özbey, 2017). Note the gradual termination of the corpus spongiosum at the level where it meets the largest diameter of the navicular fossa and how it forms the ventral wall of the glanular urethra with the septum glandis and frenulum. Magnetic resonance imaging (MRI); **(C)** cross sections of the glans from proximal to distal, **(D)** distal and sub-meatal cross sections of the glans, **(E)** longitudinal transvers (dorsal and midpenile) sections of the penis. B, Buck's fascia; CC, corpus cavernosum; CS, corpus spongiosum; DL, distal ligament; DLE, distal extensions of the tunica albuginea of the corpora cavernosa; F, frenulum; FN, fossa navicularis; LMS, lower median septum; SG, septum glandis; TA, tunica albuginea; UMS, upper median septum; TA-CC, tunica albuginea of the corpora cavernosa. (Color version available online.)

including reconstruction of the navicular fossa and septum glandis.[5]

Author Contributions

Hüseyin Özbey: conceptualization, investigation, writing—original draft, writing—review and editing.

Declaration of Competing Interest

The authors have no conflict of interest to declare.

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Hüseyin Özbey
Department of Pediatric Surgery, Division of Pediatric Urology and Andrology, Sechenov First Moscow State Medical University, Moscow, Russian Federation
Art Hypospadias, Bakırköy, İstanbul, Türkiye
Address correspondence to: Hüseyin Özbey, M.D., Department of Pediatric Surgery, Division of Pediatric Urology and Andrology, I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation.
E-mail addresses: hozbey@istanbul.edu.tr, huseyinbey@hotmail.com

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