



Letter to the Editor

All hypospadias repairs should include shaping of a navicular fossa – Correspondence to “Technical aspects of the koff procedure (urethral mobilization) in anterior hypospadias”

Dr Mariani et al. in their recent article classify the severity of hypospadias as 1-hypospadias with distal division and little or no ventral curvature, 2-hypospadias with proximal division and significant curvature [1]. The division/bifurcation of the corpus spongiosum (CS) is a very important surgical finding and a significant contribution to hypospadias surgery by Dr Mouriquand. However, I have some comments on the technique of urethral mobilization, division of the CS and classification of hypospadias, and the normal anatomy of the structural framework of the penis.

First, the male urethra is not a uniform tubular structure with the navicular fossa and its uniform tubularization is not anatomical. Deficiency of the navicular fossa is a major component of hypospadias malformation. Unfortunately, almost all hypospadias techniques involve uniform tubularization of the urethra, as is the case with proximal urethral mobilization.

Second, to understand the bending forces for ventral curvature, the reference points for the start and end points of the CS are needed. When reconstructing hypospadias, it is particularly important to know where and how the CS ends. We have previously shown that the CS gradually ends at the mid-glanular level where it meets the largest diameter of the fossa navicularis and its tunica begins to form the “septum glandis”. It is the extensions of the tunica albuginea of the CS that form the septum glandis, a fine

fibrous tissue that surrounds the navicular fossa. The glans wings are separated ventrally by the lower median part of the septum glandis [2]. With its upper median component, which also represents the extension of the distal ligament, it is the complex fibrous-ligamentous connection between the glans and the shaft of the penis, which ensures stability of the glans, especially during sexual intercourse [3–6]. It is also the septum glandis that ensures the slit-shaped form of the glanular urethra (navicular fossa) and the meatus, as well as their adaptive configuration during micturition. Although the authors’ video is very clear and descriptive, the urethral mobilization procedure, like all other hypospadias techniques, does not involve the formation of a navicular fossa or the formation of a septum.

In normal anatomy of the penis, the CS and the lower median septum overlap to form the ventral wall of the glanular urethra. This anatomical detail is located in the frenular triangle, which can be clearly seen in Dr Henle’s drawing and my schematic description (Fig. 1a&b). In my experience, ectopic meatus in the frenular triangle is associated with a defective lower median septum, bifurcated tunica albuginea and bifurcated CS. In these cases, the “tilt of the glans” can be corrected by approximation of these bifurcated/divided structures and must be differentiated from “penile curvature”. More proximal forms of hypospadias with penile curvature are associated with malformation of the tunica albuginea and the CS (to be published). Therefore, I propose to include “frenular hypospadias” in the classification of hypospadias because this segment of the urethra has unique structural features in the functional anatomy of the male urethra (Fig. 1b). The Glanular-Frenular Collar (GFC) technique is the only technique described in which these bifurcated fibrous

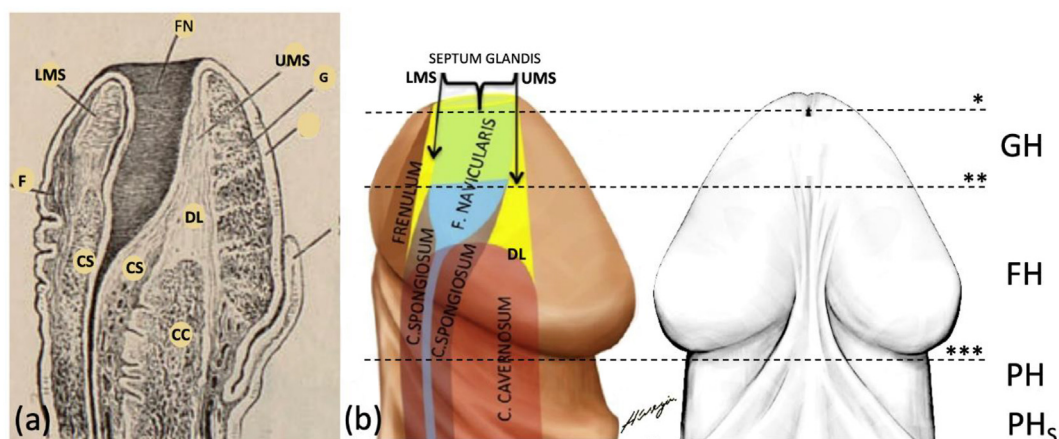


Fig. 1 Structural anatomy of the penis showing the fibrous-ligamentous structures and their relationship to the glanular and penile urethra. a) Henle's drawing (Henle, 1877), b) schematic representation of the same structures (Özbey, 2017). Hypospadias classification with the transverse planes at the submeatal level*, the beginning of the epithelial plication of the frenulum between the glans wings** and the base of the frenular plication on the ventral side or the sub-glanular level on the dorsal side of the glans***. 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 with the septum glandis and frenulum the ventral wall of the glanular urethra (CC:corpus cavernosum, CS:corpus spongiosum, SG:septum glandis, UMS:upper median septum, LMS:lower median septum, F:frenulum, FN:fossa navicularis, DL:distal ligament, G:glans, GH:glanular hypospadias, FH:frenular hypospadias, PH:penile hypospadias, PHs:penile hypospadias requiring staged reconstruction) (@Hüseyin Özbey-2023, All rights reserved).

tissues are approximated in the midline to form the septum and frenulum without dissecting the glans, also leaving a room for the formation of a fossa [7,8]. In conclusion, the shaping of a navicular fossa and septum should be recognized as standard anatomical landmarks for any type of hypospadias repair.

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Conflict of interest

None.

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