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Letters to the Editors

Anatomy, histology, and nerve density of clitoris and associated structures: clinical applications to vulvar surgery

TO THE EDITORS: We applaud the publication of “Anatomy, histology, and nerve density of clitoris and associated structures: clinical applications to vulvar surgery” by Jackson et al.1 The absence of the neural anatomy of the clitoris from obstetrical and gynecologic literature has been a long-standing omission, and it is encouraging to have this information available for dissemination. However, there are a few errors in the study, and we believe that readers of the American Journal of Obstetrics and Gynecology would benefit from us pointing these out.

First, labial hypertrophy is not caused by excess androgens. The most common cause of excess androgens in females is congenital adrenal hyperplasia, which is characterized by clitoral enlargement and typically underdeveloped or fused labia minora.2 The misconception that labial hypertrophy may be caused by excess androgens needs to cease because there is no evidence to support it, and the perpetuation of the idea that large labia minora are masculine can cause healthy women to seek unnecessary and risky vulvar surgery.

There is also a problem with the illustration in Figure 7. Unlike the penis, the clitoris does not have circumferential skin. In addition, unlike penises, the deep arteries are medial, along the fibrous tissues of the median septum, rather than in the middle of each cavernosa. This is well documented in “Anatomic study of the clitoris and bulbo-clitoral organ” by Lepidi and Di Marino (2014) (Figure 10.1; page 96).3

Another issue is that Jackson et al1 reported an average glans width of 4 mm, which is not consistent with the average glans length of 8 mm, the same length we reported in our study.4 We believe that the length and width measurements are not consistent with the reported measurements and photographs of the cadaveric dissections presented in the article and elsewhere.3,4 To elaborate, in the photographs of the cadaveric dissections presented in Figure 4, A, and Figure 6, the clitoral glans is not twice as long as it is wide, suggesting that the width is only slightly less than the length. Furthermore, although the width at the base of the glans was not measured in our study, we did measure the clitoral body diameter where the dorsal nerves terminally arborized near the glans. Our data suggest that the glans is just slightly longer than it is wide.4

We would like to respectfully suggest that there was an error in calculating the mean clitoral glans width because the range in this study is 3–10 mm, whereas the reported average is 4 mm. None of the other distributions reported thus far are this skewed.

Overall, the study by Jackson et al1 is a monumental and long-overdue contribution to female genital anatomy and should be cited and circulated as much as possible in the obstetrical and gynecologic literature. For that reason, we wish for it to be accurate.

REFERENCES

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Lin Lin Su, MRCOG
Department of Obstetrics and Gynecology
National University Hospital
Singapore

Pradip Dashraath Vijayakumar
National University Hospital
Singapore

Lin Lin Su, MRCOG
Department of Obstetrics and Gynecology
Yong Loo Lin School of Medicine
National University of Singapore
1E Kent Ridge Rd.
NUHS Tower Block, Level 12
Singapore 119228

The authors report no conflict of interest.
We appreciate the thoughtful comments by Dr Pin and Ms Pin in their Letter to the Editors regarding our article entitled “Anatomy, histology, and nerve density of clitoris and associated structures: clinical applications to vulvar surgery.” Below are our responses to each comment.

The effects of androgens on the female external genitalia were beyond the scope of this descriptive study, and no data were presented on this subject. In our Comment section, we do paraphrase the following sentence from the American College of Obstetricians and Gynecologists (ACOG) Committee Opinion number 378 (reference 27 in the original manuscript): “The American College of Obstetricians and Gynecologists recommends labial alteration procedures for medical indications such as repair of female genital cutting, treatment of labial hypertrophy or asymmetrical labial growth, chronic irritation, or excessive androgenic hormones.” Since the publication of our manuscript, ACOG Committee Opinion number 795 has replaced the aforementioned Committee Opinion.

In the letter, the authors also commented on the skin and arteries of the clitoris. A review of the sections of the clitoral body from our study specimens demonstrated that the deep arteries of the clitoris are located medially within the corpora, close to the midline septum, and not centrally, as depicted in our original schematic diagram in Figure 7. This relationship was clearly evident and consistently demonstrated. In many sections, the deep arteries were noted to be surrounded by a cuff of dense fibroconnective tissue that was continuous with

**FIGURE 1**
Cross-section of the body of clitoris

![Cross-section of the body of clitoris](image1)

Schematic view through the midclitoral body. Note the position of the dorsal nerves and vessels of the clitoris in relation to the corpora cavernosa and the connective tissue layers surrounding the corpora, and that of the deep arteries of clitoris in relation to the septum of corpora cavernosa.

**FIGURE 2**
Photomicrograph of midclitoral body

![Photomicrograph of midclitoral body](image2)

Hematoxylin and eosin–stained photomicrograph of the midclitoral body at 2× magnification. Note the position of the deep arteries of clitoris (arrow heads) adjacent to the septum of corpora cavernosa (S), the surrounding cuff of dense fibroconnective tissue associated with each deep artery, and the dorsal vascular connections between the 2 corpora, resulting in the histologic appearance of an incomplete septum.

CC, corpora cavernosa; DNC, dorsal nerve of clitoris; TA, tunica albuginea.