MR Imaging of the Female Perineum
Clitoris, Labia, and Introitus

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KEYWORDS

• MR imaging • Perineum • Clitoris • Introitus • Labia • Female

KEY POINTS

- A variety of common and uncommon pathologies affect the clitoris, labia, and introitus.
- These can be better evaluated by knowledge of the normal anatomy and optimized MR imaging techniques to facilitate observation of these entities.
- This is important to avoid unnecessary surgeries for benign conditions and to assist with surgical planning.

INTRODUCTION

MR imaging is an ideal technique to evaluate the female perineal structures owing to its excellent soft tissue contrast differentiation, high sensitivity to detect fluid, and multiplanar imaging capability.[1–3] In this article, we specifically focus on the evaluation of the clitoris, labia, and introitus. We discuss the normal anatomy of these structures, techniques to optimize their MR imaging evaluation, and several common and uncommon entities that may affect them. Knowledge of these conditions can prevent unnecessary surgeries in benign entities and assist with preoperative planning when surgery is needed.

NORMAL ANATOMY

The female perineal anatomy is complex.[4] The mons pubis is adipose tissue that overlies the pubic symphysis and separates inferiorly into thick skin folds, which are the labia majora,[4] bilateral anterior structures at the medial borders of the thighs.[3] The labia minora arise at the medial borders of the labia majora in the midline.[3,4] The anterior borders of the labia minora fuse at the level of the clitoral glans, forming the clitoral dorsal hood or prepuce.[3,4]

The clitoris is a pyramidal structure with the distal urethra and vagina as a core in the midline.[4,5] It is deep to the labia minora and the bulbospongiosus and ischiocavernosus muscles.[5] The clitoris and the perineal neurovascular bundles are large, paired terminations of the pudendal neurovascular bundles.[5] The clitoris is composed of erectile tissue (paired crura, bulbs, and corpora) and a nonerectile tip (glans),[3–6] as detailed below (**Fig. 1**).

Crura
- Parallel and medial to the ischiopubic rami
- Each tapers posteriorly to a thin line that becomes continuous with the ischiocavernosus muscle (dark on MR imaging)

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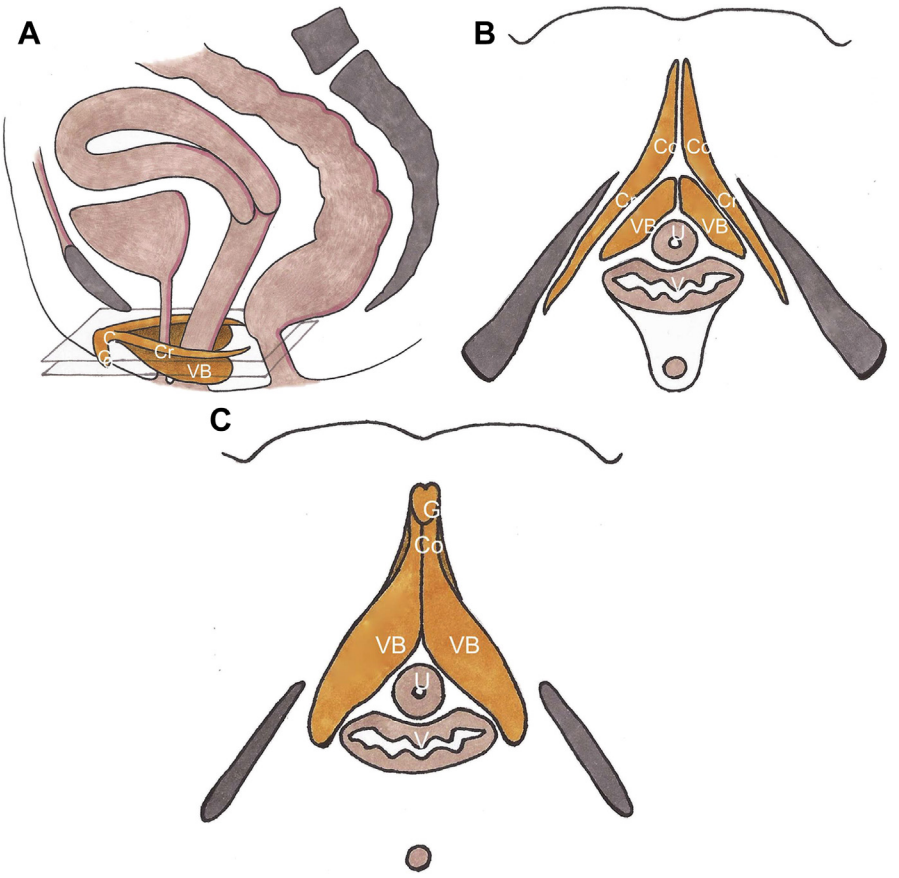

Fig. 1. (*A*) Sagittal diagram of pelvis including clitoris. Paired erectile tissue of the crura cranially (Cr) and vestibular bulbs caudally (VB) combine to form the corpora (Co). Glans (G) extends inferiorly from the corpora and is partially external. (*B*) Axial diagram of the cranial aspect of the clitoris. Paired Cr laterally, VB medially, and Co comprise the pyramidal clitoris, surrounding the distal urethra (U) and vagina (V). (*C*) Axial diagram of caudal aspect of the clitoris. The bulk of the VB extends inferiorly into the labia and continue anteriorly as the Co. The glans extends further inferiorly, originating at the inferior margin of the Co.

- Each continues anteriorly as the bodies (corpora)

Bodies (Corpora)

- Formed by 2 corpora cavernosa within a fibrous envelope, separated by an incomplete septum
- Start posteriorly as the crura and join anteriorly as a single body
- Descends and folds back on itself in a "boomerang-like" shape (best seen on the sagittal view)
- Superior body is attached by the deep suspensory ligament to pubic symphysis undersurface
- Most caudal part is contiguous with the glans

Bulbs

- Paramedian erectile tissue, parallel to the crura
- Surround urethra and vagina anterolaterally
- Convene anteriorly at the commissure, ventral to the urethra and close to the body and glans
- There may be point(s) of communication between commissure of the bulbs and the clitoral bodies

Glans

- Nonerectile tissue
- Caudal end of the body
- Partly external
- Projects into the mons pubic fat
- Midline septum is evident

The ischiocavernosus muscles cover the crura and attach to the ischiopubic rami, aiding in clitoral erection in combination with the bulbospongiosus mucles.[4] There is no difference in clitoral morphology between premenopausal and postmenopausal women.[3]

OPTIMIZED MR IMAGING TECHNIQUES

In our practice, we place gauze between the labia for labial separation and better delineation of the