

## Pelvic floor disorders

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### INTRODUCTION

Pelvic Floor Disorders is a Prima) Pictures software. Prima) Pictures was established in 1991 with the goal of creating a complete and medically accurate 3D mode) of the human anatomy. This mission was completed and the software is now widely adopted in education and is currently used for patients, practitioners, students, teachers and specialists in over 20 countries in the world. Prima) Pictures works on many customisation projects every year to tailor the mode) to the needs of training programs as well as to animate surgery or disease looking for detailed accurate knowledge, medical and graphics expertise.

The representation of the body in the range of the software is unique because of its accuracy and details. It is derived from genuine medical scan data that have been interpreted by a team of anatomists and then translated into three-dimensional images by an expert team of graphics specialists. The anatomy visuals are accompanied by three-dimensional animations that demonstrate function, biomechanics and surgical procedures. To supplement the core three-dimensional anatomy data there are clinical videos and texts written by some of the world's leading medical specialists.

### DESCRIPTION AND COMMENT

*Pelvic Floor Disorders* covers the anatomy of the female pelvis and pelvic floor in 3D images, alongside related text, bibliographical references and animations. Forty seven highly detailed and labeled views of the pelvis include muscles of the pelvic floor, reproductive system, urinary and digestive systems, bone regions, surface markings, neurology - including the lumbar plexus and sacral and coccygeal plexuses - and the autonomic nervous system.

The DVD has a comprehensive guide to all the tabs, tools, and icons. A box shows the Quickstart, Tutorial, and Getting Started text every time the application is used. It also includes an extensive clinical section covering diagnosis, treatment and rehabilitation of commonly presenting pelvic floor disorders. This helps in quickly understanding how to use the DVD-ROM and gives an overview of all the functions and contents. All structures have accompanying text and links to additional images including labeled coronal sections of the female pelvis and clinical slides. This device is easy to use and educationally immediate in its anatomical data. It allows a deep understanding of different structures and their relationships, being extremely useful for surgeons, urologists, gynecologists.

When initializing, the browser displays a list of all available 3D views to quickly navigate around the selected subject. Selecting the "contents icon", a list of expandable folders containing text articles for all structures as well as slides, movies, animations, 3D views, clinical text, and patient information sheets, will open.

The Anatomy Section is very interesting, showing a large number of views covering the anatomy of the pelvis and female reproductive system with alongside related text, not only in bi-dimensional planes (slides) but also in 3D. The images can be analyzed by focusing on the details by adding/removing layers of anatomy using the layer control at the bottom of

the screen. Clicking on any structure inside the image, the related text appears to the right of the screen. The images can be rotated and zoomed; the structures can be underlined inside the images (the name of the structure appears when it's selected) or found inside the image once the topic has been selected in the displayed list. Besides the anatomical images there are superficial cutaneous representations of female abdominal-pelvic structures, with skin innervations, dermatomes and nervous supply. Also pelvic bones can be visualized apart, showing the different junctions with muscles, tendons and nerves.

Entering the *Clinical Information* icon it is possible to explore a range of pelvic floor disorders, such as pelvic organ prolapse, incontinence, and pain syndromes. Data on definitions, physical examination, diagnosis and treatments are updated, with references in the literature, scientifically quite reliable. One can go back to anatomical images or slides by specific links. This section is useful for those who want a rapid revision on pelvic floor problems, or that approach for the first time to this subject and need a general summary.

There is a specific section for *Patient Information on pelvic floor disorders*. It includes an extensive clinical section covering diagnosis, treatment and rehabilitation of commonly presenting pelvic floor disorders (prolapses, incontinences, pelvic pain syndromes, pelvic floor damages, and treatments) speaking about their definition, description, diagnosis and treatment, plus a dedicated patient education section with printable easy to understand information sheets (Kegel exercises, postpartum pelvic floor rehabilitation, etc.).

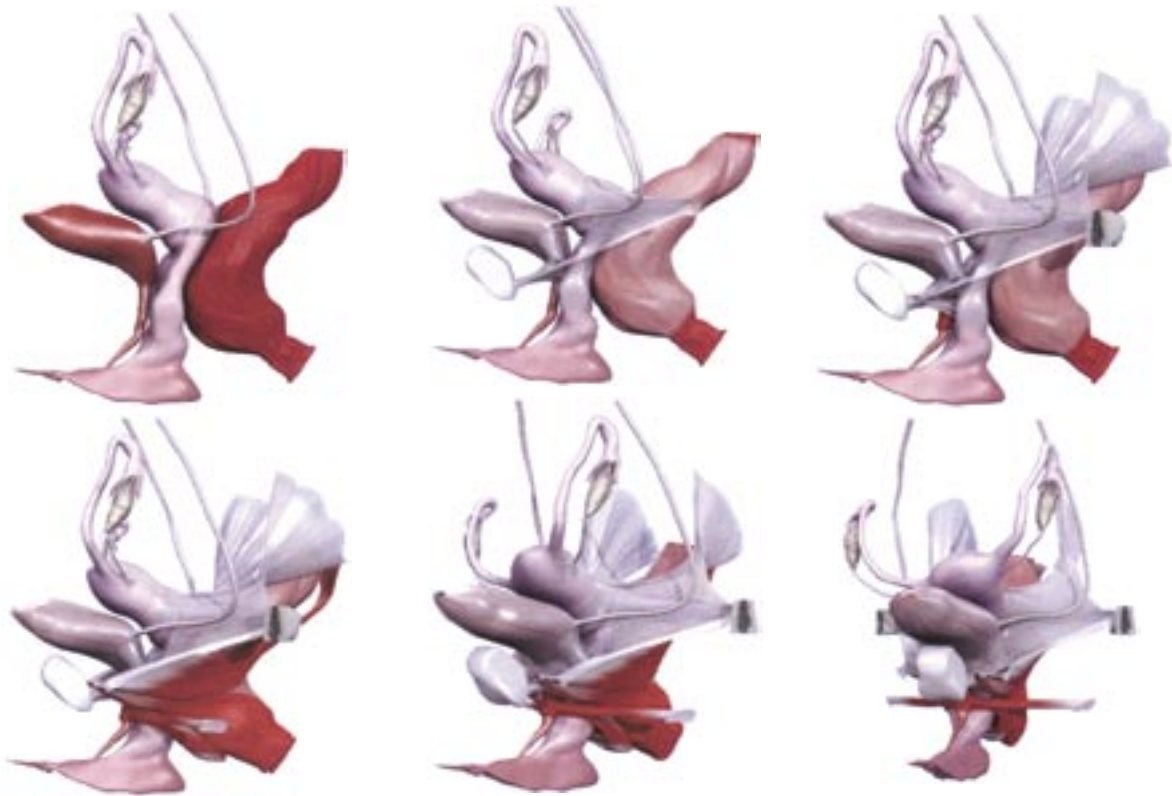
There is a *dynamic representation* of a pelvic floor that shows the relationships between muscles, ligaments and pelvic organs as a unique entity. There are animations on pelvic floor contraction, slides (coronal section through female pelvis) and movies that show some examples of genital prolapse of different type (anterior, posterior) and degree, or of pelvic floor real contraction movement from different perspectives with or without pelvic organs.

Finally through the *Search* icon clicking on a specific topic the entire contents of each title can be rapidly found. This function allows to search for any item (e.g. a 3D image or text article) contained within the title. Typing in a word or a short phrase as a search term, results will be displayed in the lower part of the window, divided in Anatomical Names, Slide Structures, Clinical info text, Animation Titles, Slides and so on.

The *Index* icon lists all anatomical structures, slides, movies, animations, 3D views, clinical text, and patient information sheets alphabetically so that the search will be easier. Everything can be saved and printed (for personal use, power point, classes, etc).

### AN EXAMPLE FROM THE DVD-ROM: THE ENDOPELVIC FASCIA

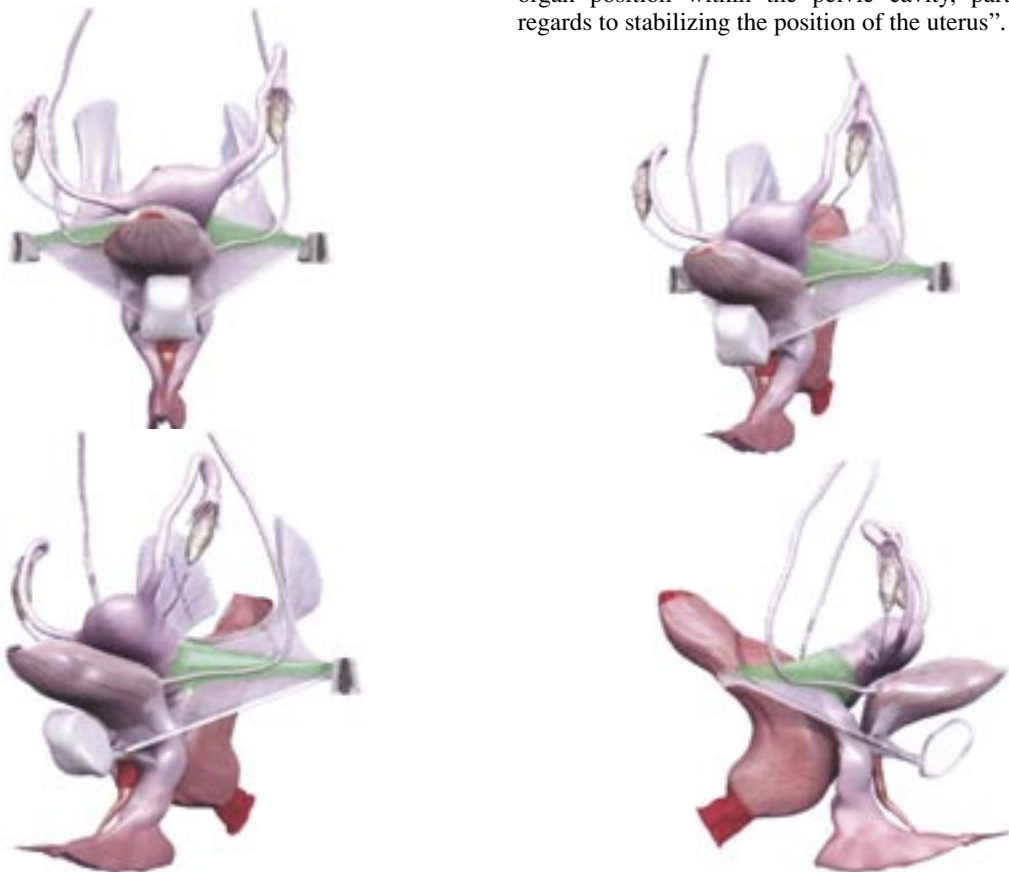
The endopelvic fascia has a great interest in pelvic surgery. For this article some of the elements of endopelvic fascia have been selected trying to show what often is difficult to understand, as knowing exactly where a sling blindly goes through the fascia or a mesh is fixed or connected to the fascia or to the ligaments.



### THE CARDINAL LIGAMENT

“Considered to be the posterolateral condensations of the endopelvic fascia, the cardinal ligaments, also known as the -transverse cervical ligaments, are sheets of connective tissue that extend from the lateral aspects of the cervix and the fornix of the vagina to the lateral pelvic wall. At the cervix, each merges with the cervical ring as well as the

uterosacral, pubocervical and rectovaginal ligaments. In its course, the superior-most portion is located at the base of the broad ligament. Here, the uterine arteries and veins pass transversely through the cardinal ligaments to reach the cervix, while the ureters pass beneath them. The cardinal ligaments function together with the other fasciae ligaments of the female reproductive tract to support and maintain organ position within the pelvic cavity, particularly in regards to stabilizing the position of the uterus”.



### THE PUBO-URETHRAL LIGAMENT

“Considered to be an anterior condensation of the endopelvic fascia, the pubo-urethral ligament extends from the inferior surface of the pubic bone to the middle part of the urethra. It extends superiorly to the neck of the bladder as the pubovesical ligament. It acts to stabilize the urethra by preventing anteroposterior movement”.



### THE PUBOCERVICAL LIGAMENT

“Considered to be the anterosuperior condensation of the endopelvic fascia, the pubocervical ligament is a continuous sheet of connective tissue that extends from the body of the



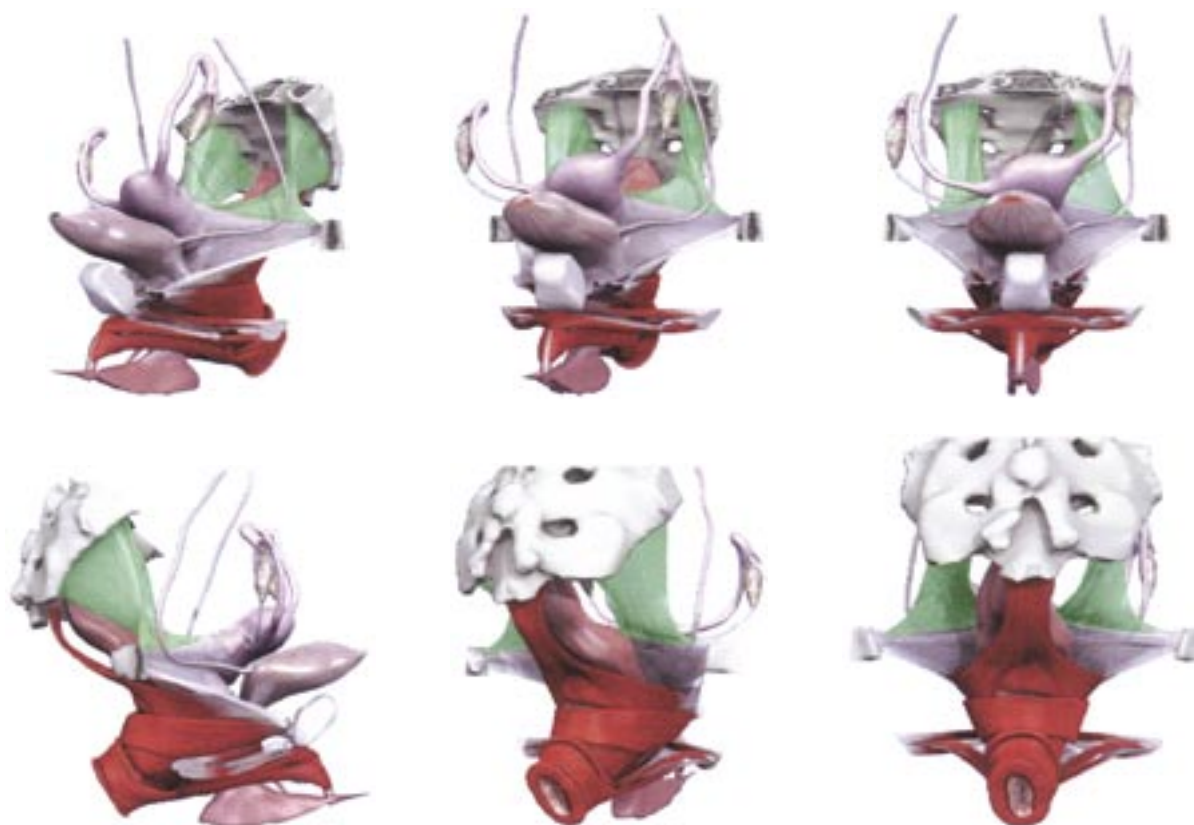
pubis to the anterior part of the cervical ring. It is anchored laterally to the tendineus arch of the pelvic fascia and is continuous with the pubovesical ligaments anteriorly and the transverse cervical ligaments posteriorly. The pubocervical ligament functions together with the other fasciae ligaments of the female reproductive tract to support and maintain organ position within the pelvic cavity”.

### THE UTEROSACRAL LIGAMENT

“Considered to be the posterosuperior condensations of the endopelvic fascia, the uterosacral ligaments are condensed mix of fibrous connective tissues and smooth muscle fibres that connect the cervix to the sacrum. The paired ligaments emerge posterolaterally from the cervix where they are merged with the cervical ring and cardinal ligaments; they ascend posteriorly to attach with the presacral fascia to the anterior surface of the fourth to first sacral vertebrae. On their course they envelop visceral branches of the internal iliac vessels (uterine, vaginal and rectal arteries) and the inferior hypogastric plexus. The uterosacral ligaments function together with the other fasciae ligaments of the female reproductive tract to support and maintain organ position within the pelvic cavity, particularly in regards to the uterus”.

### CONCLUSION

Primal Pictures warns that the material on this software is for educational purposes only and is not intended to represent the test approach, method or procedure for the situations discussed, but just to present various approaches, procedures, views, or analysis of several authors that may be helpful to others who face similar situations. The DVD-ROM is for noncommercial non-profit use and includes private educational use, lectures to students and colleagues and patient education handouts. Non-commercial non-profit use is allowed and does not require any additional permission or license. Its public domain and commercial/for profit use includes websites, books, videos, TV programmes, Journal article, used in medical devices.



A *Getting Start Guide* allows training through the product by getting used to the images and their visualizing options, saving, printing and the DVD contents. A technical support staff can be contacted for assistance at [techsupport@primapictures.com](mailto:techsupport@primapictures.com).

*Minimum requirements* are: operating systems: Microsoft® Windows XP or Vista and MAC OSX 10.3-10.5. Processor speed: 1.5GHz with 512MB of RAM,

200MB free disk space for all platforms. Screen display: 1024x768 screen. DVD-ROM drive.

Primal Pictures has a range of other DVDs available: Radiological Cross Sectional Interactive Anatomy with multi-detector CT: Thorax, Abdomen and Pelvis; Anatomy for Urology; Interactive Functional Anatomy 2nd Edition - 2009 release; Interactive Complete Human Anatomy Series. Full details can be found at [www.primapictures.com](http://www.primapictures.com) and online trials are available at [www.anatomy.tv](http://www.anatomy.tv).

## Pelvic Floor Digest

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### 3 – DIAGNOSTICS

**Validation of Spanish versions of the Pelvic Floor Distress Inventory (PFDI) and Pelvic Floor Impact Questionnaire (PFIQ): a multicenter validation randomized study.** *Omotoshio TB, Hardart A, Rogers RG et al. Int Urogyn J Pelvic Floor Dysf. EPUB: 2009-02-14.* Valid and reliable Spanish versions of the PFIQ and PFDI have been developed using back translation and by randomizing 44 bilingual women to complete the Spanish or English versions of the questionnaires (weighted kappa statistics assessed agreement for individual questions, interclass correlation coefficients (ICC) compared primary and subscale scores, and Cronbach's alpha assessed internal consistency of Spanish versions).

**Three-dimensional endoanal ultrasonography: intraobserver and interobserver agreement using scoring systems for classification of anal sphincter defects.** *Norderval S, Dehli T, Vonen B. Ultrasound in Obst & Gyn. EPUB: 2009-02-19.* To determine the degree of intraobserver and interobserver agreement for an experienced and an inexperienced sonologist using an endoanal ultrasound defect score system and the Starck score for ultrasonographic assessment of anal sphincter defects, datasets of 55 women were included and their sphincter defects were classified. Intraobserver and interobserver agreement was acceptable for both scoring systems. The experienced sonologist obtained a higher degree of intraobserver agreement than did the inexperienced sonologist.

### 4 – PROLAPSES

**Multiple perineal abscesses and sinus tracts as a complication of vaginal mesh.** *Lewicky-Gaupp C, McGuire EJ, Fenner DE. Int Urogyn J Pelvic Floor Dysf EPUB: 2009-02-21.* A 54-year-old woman with constant perineal pain, and copious, foul-smelling vaginal discharge after anterior and posterior placement of a synthetic mesh and mid-urethral sling 3 months earlier, was found to have two vaginocutaneous sinus tracts (to the left ischioirectal fossa and to the left labia majora), as well as bilateral abscess cavities within the ischioirectal fossae. The posterior mesh was completely excised, the tracts were opened, and the wound was packed and allowed to heal by secondary intention.

**Clinical, physiological and radiological assessment of rectovaginal septum reinforcement with mesh for complex rectocele.** *Zbar AP, Ansari A. Brit J Surg. EPUB 2009-02-19.*

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