New Dimensions of Pelviperineology: Integral Theory and Native Tissue Repair in Pelvic Floor Disorders

Pelviperineology is evolving rapidly, propelled by ground breaking conceptual frameworks and innovative surgical techniques that reshape our understanding and management of pelvic floor disorders. Among these, the Integral Theory—pioneered by Professor Peter Petros—stands out as a transformative paradigm that offers a comprehensive, biomechanical explanation for conditions like anterior and posterior vaginal prolapse, as well as urinary incontinence.[1]

The Integral Theory fundamentally redefines pelvic floor dysfunction as a consequence of ligamentous and fascial laxity, disrupting the intricate balance of forces required for normal pelvic organ support and function.[1,2] The ligament-based system offers a new way forward. It is a different way of thinking. In contrast to previous thinking; the ligament-based system aims primarily to treat the pelvic symptoms even if prolapse is minimal. This is because even a slightly altered anatomy can cause severe symptoms.

A new surgical principle for repair of collagen-deficient ligaments, a method for the creation of artificial collagenous neoligaments by harnessing the tissue reaction is a significant advancement.[3] It is tailored to reinforce weakened ligaments and fascia without the complications associated with synthetic mesh. Such repairs reduce risks of erosion, chronic pain, and mesh-related complications while achieving durable anatomical and functional restoration. Native tissue repair of cystocele and rectocele and pubourethral ligament plication for stress urinary incontinence align seamlessly with the Integral Theory's emphasis on ligament integrity.[4,5] It offers a patient-centred, anatomical, and functional strategy that emphasizes restoration rather than replacement, minimizing morbidity while maximizing long-term outcomes.

A core concept of the Integral Theory System is that "ligaments are for structure; vagina is for function.[6] The vagina and uterus should be conserved. Because the vagina is an organ, its collagen and elastin, which are so necessary for its function, cannot regenerate once they are removed. Removing the uterus involves severing the descending uterine artery, which is the principal blood supply of the proximal part of the uterosacral ligaments (USLs), and so may cause atrophy, which can cause future incontinence problems because of collagen loss after menopause.

Native ligament plication can be adequate for prolapse/symptom cure, but only in premenopausal women.[7] Postmenopausal women are usually collagen deficient and require collagen-creating tapes or wide-bore polyester sutures to restore structural collagen in the ligaments. Of extreme importance, vaginal tissue excision should be avoided, as consequent scarring may cause "tethered vagina syndrome" classically, massive uncontrollable urine loss on getting out of bed in the morning.[8]

Looking forward, these concepts inspire further research into tissue engineering and regenerative therapies that could augment native tissue repairs, enhancing healing and resilience. They also encourage multidisciplinary collaboration among surgeons, physiotherapists, and researchers to refine diagnostic tools and individualized treatment protocols.

In conclusion, the fusion of Integral Theory and native tissue repair in pelviperineology heralds a new era—one defined by precision, safety, and functional restoration. This integrative approach promises to improve the lives of countless patients suffering from pelvic floor disorders, transforming what was once a challenging clinical landscape into one of hope and renewed quality of life.

REFERENCES

1. Petros PE, Ulmsten U. Integral theory of female urinary incontinence. UU Acta Obstet Gynecol Scand 1990; 69 (S153): 1-79. Foreword by Professor Axel Ingelman- Sundberg (p4).
2. Kuhn T. The structure of scientific revolutions.3rd ed. Chicago, IL; University of Chicago Press; 1996.
3. Petros PE, Ulmsten U, Papadimitriou J. The autogenic neoligament procedure: a technique for planned formation of an artificial neo-ligament. Acta Obstet Gyn Scan 1990; 69(153): 43–51.
4. Inoue H, Kohata Y, Fukuda T. Repair of damaged ligaments with tissue fixation system minisling is sufficient to cure major prolapse in all three compartments: 5-year data. J Obstet Gynaecol Res 2017; 43: 1570-1577. https://doi.org/10.1111/jog.13413
5. Petros P, Palma P. Conceptualizing stress urinary incontinence surgery beyond midurethral slings: Very early results from simplified ligament repair without tapes. Neurourol Urodyn 2023; 42: 383-388. https://doi.org/10.1002/nau.25049
6. Neuman M, Farnsworth B, Sun X, Sekiguchi Y, Wenk M, Inoue H. Principles of surgery according to the Integral Theory Paradigm (ITP). Ann Transl Med. 2024; 12(2): 28. https://doi.org/10.21037/atm-23-1769

7. Shkarupa D, Zaytseva A, Kubin N. Native tissue repair of cardinal/uterosacral ligaments cures overactive bladder and prolapse, but only in pre-menopausal women. Cent European J Urol 2021; 74: 372-378.
8. Goeschen K, Müller-Funogea A, Petros P. Tethered vagina syndrome: cure of severe involuntary urinary loss by skin graft to the bladder neck area of vagina. Pelviperineology 2010; 29: 100-102.

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