



The Tethered vagina syndrome teaching module

THE EDITORS

With its application to obstetric fistula incontinence, the Tethered vagina syndrome (TVS) has become a very important part of pelvic floor surgery; 3,000,000 women suffer from obstetric fistula in Africa alone. Unfortunately, TVS has received scant attention by the specialist gynaecological or urology journals. TVS was first described by Professors Petros and Ulmsten in their 1990 and 1993 publications of their Integral Theory.^{1,2} This included specific examples of the condition, its pathogenesis and how to cure it either with an “I-plasty” or skin graft applied to the anterior vaginal wall. Professor Goeschen expanded the original TVS skin graft treatment proposed by Professor Petros, applying a “skin-on Martius graft” from the labium majus with attached blood supply.^{3,4} In this issue, Pelviperineology (PPJ) continues with its teaching modules with a fairly typical case report, comments by invited experts, the outcome of corrective surgery using a skin graft, and a learning module by an acknowledged expert in the field, Professor Klaus Goeschen. The classic symptom of TVS is sudden massive urine loss when the patient gets out of bed in the morning, or getting off a chair. Usually there is little or no stress urinary incontinence. The mechanics of the massive urine loss is explained by the two figures, Figure 1. In the upper figure, the forward arrow depicts a forward-acting muscle, anterior pubococcygeus which closes the distal urethra. The backward acting arrows depict the backward/downward acting muscles levator plate/longitudinal muscle of the anus which close the bladder neck and open it for micturition. Because the muscle forces act in opposite directions, significant elasticity is required in the bladder neck area of the vagina “zone of critical elasticity” (ZCE) so as to allow separate closure actions at bladder neck and distal urethra. Scarring in the ZCE “tethers” the more powerful backward muscles to the weaker

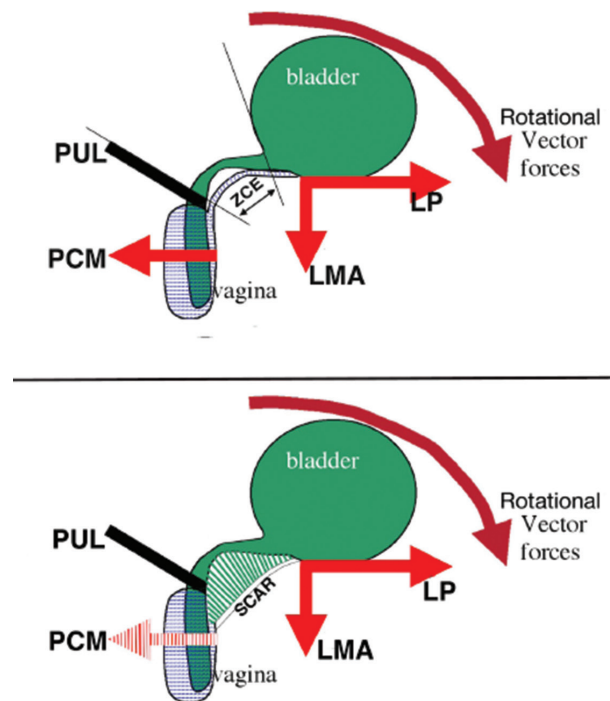


Figure 1. Anatomy and pathogenesis of the Tethered vagina syndrome Normal bladder (*upper figure*) Sagittal view of bladder urethra, and the 3 directional forces which close the distal and proximal urethra the anus. Tethered vagina syndrome (*lower figure*) The scar replaces ZCE and links the opposite muscle forces; PCM is overcome (indicated by broken arrow); urethrovaginal angle is forcibly pulled open. ZCE: Zone of critical elasticity, PUL: Pubourethral ligament, PCM: Anterior portion of m. pubococcygeus, LP: Levator plate, LMA: conjoint longitudinal muscle of the anus forward muscle; the bladder outlet is forcibly pulled open much as happens during micturition; urine flows out uncontrollably. In first world countries, TVS is not so common. The

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cause of TVS is always iatrogenic, following scarring from vaginal excision during vaginal repairs or excessive vaginal stretching from bladder neck elevation following a Burch colposuspension or sacrocolpopexy, or scarring from mesh sheets which removed vaginal elasticity from ZCE, Figure 1. The most important application of TVS, however, has been in the treatment of continued massive urine loss after successful fistula closure. Two famous fistula surgeons, Professor Gordon Williams and Dr Andrew Browning applied the TVS concept prophylactically and correctively to the 50% of women with obstetric fistulas who continued to leak urine after fistula closure with dramatic results, using the Singapore flap taken from the groin with attached blood supply.⁵⁻⁸ The results were immediate and dramatic, with an initial 400% improvement over previous methods. Dr Browning has contributed a short update on his results for the module. The editors of PPJ highly recommend study of this teaching module.

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