

## Body Excreta Control and Incontinence

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### Abstract

**Introduction:** Body excreta (urine, feces and flatus) are expelled through the urethra in front and the anal canal posterior. Both the urethra and the anal canal are derived embryological from the cloaca and have the same neuro-vascular bundle, thoraco-lumbar sympathetic nerves (T10-L2) through the inferior hypogastric nerve plexus as exciter, and sacral sensory nerves (S 2, 3 &4). Everybody organ has a strong collagen chassiss, this include the internal urethral sphincter (IUS) and the internal anal sphincter (IAS). Toilet training in early childhood leads to acquiring and keeping high sympathetic tone at the IUS and the IAS causing their contraction and the urethra and the anal canal are kept empty and closed all the time until there is a need/or a desire to expel at proper social circumstances.

**Clinical Study:** Function of the IUS is proved by urodynamic studies, while structural damage of both the IUS and the IAS is demonstrated by medical imaging.

**Results:** We proved that there is high sympathetic tone at the IUS, recording the UPP at rest, and then we gave alpha-sympathetic drug, the UPP dropped markedly. We gave sympathomimetic drug the UPP raised immediately. Medical imaging proved lacerated IUS in cases of stress urinary incontinence (SUI) and lacerated IAS in cases of fecal incontinence (FI).

**Conclusion:** Urinary continence depends on a closed and empty urethra. Fecal continence depends on a closed and empty anal canal. Healthy reactive CNS, intact sensory nerves, intact sympathetic nerves producing normal neuro-transmitter are essential for continence.

### Introduction

Toilet training in early childhood leads to acquiring and keeping high sympathetic tone at the IUS and the IAS causing their contraction and the urethra and the anal canal are empty and closed all the time until there is a need/or a desire to expel at proper social circumstances.

### Pelvic floor dysfunction

It is better called pelvic organs dysfunction, there are anatomical derangement of the pelvic organs and physiological changes [1-9]. Trauma especially child birth trauma (CBT) disturbs the anatomy and physiology of the pelvic organs.

### Micturition, urinary continence and incontinence

Urinary continence depends on a closed and empty urethra. An empty closed urethra depends on two factors, one is inherent and the other is acquired. The inherent factor is a strong intact internal urethral sphincter (IUS) [1-5]. The acquired factor is gaining high sympathetic tone at the IUS from toilet training early in childhood. The IUS is a collagen-muscle tissue cylinder that extends from the bladder neck to the perineal membrane in both sexes. High sympathetic tone (T10-L2) at the IUS through neuro-transmitter (nor-epinephrine) that acts on receptors on the plain muscle fibers constituents of the IUS keeping the sphincter in a state of sustained

contraction until there is a desire and/ or a need to void at suitable social circumstances.

Clinically we proved that toilet training induces and keeps high sympathetic tone at the IUS. Using urodynamic studies we recorded the urethral pressure profile at rest (UPP), then we gave an alpha-sympathetic blocker (5 mg phentolamine, Regitine) the pressure dropped significantly. Furthermore we by IV drip gave nor-adrenaline the pressure rose up immediately [4].

Sometimes there is a deficiency in secreting the neuro-transmitter, this will lead to a relaxed IUS and an open urethra with unwilling voiding (nocturnal enuresis) which can be partial (only at night) or complete (day and night). This can be treated by giving ephedrine which stimulate the sympathetic nerve endings to produce and secretes nor-epinephrine, and also acts as sympathomimetic on the receptors on the muscle fibers to the IUS causing its sustained contraction [2].

Clinically we studied the structure of the IUS both histologically and by imaging. We proved the presence of a strong collagen chassiss of the IUS in normal continent women, and torn chassiss in incontinent women.

In women the IUS is intimately lying on the anterior vaginal wall. Vaginal delivery (CBT) may cause damage and lacerations of the strong collagen chassiss of the vagina resulting in redundant weak vaginal wall with subsequent vaginal prolapse. CBT will also lacerate the strong collagen chassiss of the IUS causing its weakness so it cannot

stand against sudden rise of abdominal pressure allowing urine to enter the urethra. The lacerations are usually in the upper part of the IUS causing funneling of the bladder neck and gives false impression of descent of the bladder neck. Urine entering the open upper part of the urethra induces an urgent need to void and/or urinary incontinence (over active bladder OAB). There is increased frequency and nocturia, the amount of urine is usually small. OAB is the clinical term, the urodynamic term of such condition is detrusor instability, detrusor over activity (DI, DO). Also sudden increase of abdominal pressure leads to stress urinary incontinence (SUI). As soon as the woman feels wet, reactive sympathetic activity will increase the already existing sympathetic tone at the IUS preventing further leak of urine. When the lacerations in the chasis of the IUS affect the entire length of the IUS there is a mixed type of SUI which is the commonest type of SUI. In men with prostatic enlargement there is uneven constriction of the upper part of the urethra that causes irregular widening of the uppermost part of the urethra, allowing some urine to enter the urethra leading to urgent desire to void, frequency and urge incontinence. Hesitancy occurs from the compression on the urethra, especially more apparent with any annoying factors that increase the sympathetic tone further closing the urethra interrupting the stream.

### Fecal continence and fecal incontinence (FI)

Fecal continence depends on a closed and empty anal canal. An empty closed anal canal depends on two factors, one is inherent and the other is acquired [6,7]. The inherent factor is the presence of a strong intact internal anal sphincter (IAS), which is a collagen-muscle tissue cylinder that surrounds the anal canal and is surrounded in its lower part with the external anal sphincter (EAS). The muscle is plain muscle fibers has its nerve supply from the thoraco-lumbar sympathetic nerves (T10- L2) through the inferior hypogastric plexus. Toilet training leads to gaining and keeping high sympathetic tone at the IAS that maintains its contraction, thus keeping the anal canal empty and closed all the time. The IAS is closely related to the posterior vaginal wall. CBT causes invisible lacerations of the strong collagen chasis of the posterior vaginal wall leading to a redundant prolapsed posterior vaginal wall, and the intimately lying IAS lacerating its strong collagen chasis and causing FI.

### Diagnosis

Medical history and clinical examination, in the local examination two important observations are kept in mind, if you see the anterior and/or the posterior vaginal wall without asking the patient to strain this means vaginal wall prolapse. In addition, the direction of the external urethral meatus is important, normally it is directed directly anterior [1-7], if it looks up and forward this means loss of posterior urethra-vesical angle. In addition, investigations to be done, an

important note is structural damage is seen by medical imaging and functional changes are demonstrated by urodynamic studies.

### Reconstructive surgery

Urethro-Ano-Vaginoplasty is a novel reconstructive operation to help restore the normal anatomy and functions. It consists of two parts, an anterior division and a posterior one. In the anterior part we dissect the anterior vaginal wall clear from the torn IUS, then we mend the torn IUS with simple interrupted sutures. We do overlapping of the bisected anterior vaginal wall over the mended IUS [8,9]. In the posterior section we mend the torn IAS after dissecting it free from the posterior vaginal wall. We approximate the levator ani muscles by two or three sutures not to be tied until we did the overlapping of the posterior vaginal wall. We approximate the levators and tie the sutures and then repair the perineum.

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