Original article

The epidemiology of urinary complaints in women with pelvic organ prolapse: a five-year review

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Abstract: *Aim*: The relationship between Pelvic Organ Prolapse (POP) and Lower Urinary Tract Symptoms (LUTS) remains unclear. Our aim was to update evidence on the prevalence of LUTS in patients with POP. *Method*: Pub Med was searched for English-language manuscripts reporting on the prevalence of LUTS in women with POP, published from 2010 onwards. *Results*: 7 cross-sectional studies and 15 surgical series of prolapse repair reported on the prevalence LUTS. Focus on different symptoms and various methods of diagnosing them do not allow direct comparisons or grouping of the studies. Stress Urinary Incontinence (SUI) is the most commonly assessed symptom with a prevalence ranging from 25 to 64% in surgical series and from 40 to 56% in epidemiologic studies. The prevalence of occult SUI, demonstrable only after prolapse reduction, is reported to be as high as 35.8%. Voiding symptoms are also prevalent particularly in patients with advanced prolapse. Overactive bladder (OAB) affects more than half of women with prolapse. *Conclusions*: Lower urinary tract symptoms are common in women with pelvic organ prolapse. The exact pathophysiology of the symptoms remains to be elucidated.

Keywords: Epidemiology; Lower urinary tract symptoms; Prevalence; Pelvic organ prolapse.

INTRODUCTION

Pelvic Organ Prolapse (POP) has been defined by the International Urogynecological Association (IUGA) - International Continence Society (ICS) joint report[1], as the descent of one or more of the anterior vaginal wall, posterior vaginal wall, the uterus or the apex of the vagina, in cases of previous hysterectomy. The exact prolapsing vaginal compartment and the degree of descent are described and quantified using the Pelvic Organ Prolapse - Quantification system (POP-Q)[2]. The sign of prolapse is accompanied by a variety of symptoms that include complaints of the prolapse itself, as well as urinary, anorectal dysfunction and sexual dysfunction symptoms. POP is an increasingly common female health problem and has a significant, negative impact on all aspects of daily life[3, 4].

As both POP and Lower Urinary Tract Symptoms (LUTS) are common[5] they frequently coexist. Available evidence, which has been summarized in previous reviews[6], suggests that this coexistence is not random and there is a pathophysiologic link between the two conditions. Nevertheless the exact relationship between POP characteristics and LUTS remains unclear.

One of the reasons for the existence of gaps in our understanding of the epidemiology and pathogenesis of various LUTS in women with POP is the variety of methods of diagnosing and reporting them: clinical interviews as well as validated questionnaires have been used. It is often that signs and urodynamic observations are sought and reported instead of the symptoms themselves.

This review aims to summarize recent evidence on the epidemiology of urinary complaints in women with pelvic organ prolapse.

MATERIALS AND METHODS

Pub Med was searched in September 2015 for English language papers reporting on the prevalence of LUTS in women with prolapse using the following terms: "lower urinary tract symptoms" OR "voiding symptoms" OR "voiding dysfunction" OR "overactive bladder" OR "incontinence" AND "pelvic organ prolapse" OR "cystocele". Search was limited to manuscripts published from 2010 onwards.

213 eligible papers were identified. 181 were excluded after reading the abstract as not relevant. 37 full papers were read and reference lists checked for missed manuscripts. In total 22 papers were included.

RESULTS

Twenty-two manuscripts are included in this review and summarized hereunder. The majority of evidence for the prevalence of urinary complaints in patients with pelvic organ prolapse comes from retrospective surgical series of prolapse repair. Seven population-based, cross-sectional studies were also identified.

1. Population based studies

Lowder *et al*.[7] conducted a cross-sectional study of women with at least stage I, according to POP-Q, prolapse, aiming to describe incontinence and other lower urinary tract symptoms. Three hundred thirty-six women attending a pelvic floor dysfunction clinic were enrolled; most of them with stage II (38%) or stage III (53%) prolapse. Lower urinary tract symptoms were assessed by the Urogenital Distress Inventory (UDI)[8] and Medical, Epidemiological and Social Aspects of Aging (MESA) questionnaire[9]. The UDI has subscales for stress, "irritative", and "obstructive" urinary symptoms and the MESA has subscales for stress and urge symptoms. Patients were categorized as having stress-only, urge-only, mixed, urge-predominant mixed, and stress-predominant mixed urinary incontinence based on UDI and MESA subscales. Only 4% of subjects reported no urinary symptoms on UDI. Based on questionnaire scores, 72% of women had mixed UI symptoms, 24% had urge-only symptoms, and only one had stress-only symptoms. In subjects with mixed UI symptoms, 57% had stress-predominant and 43% urge-predominant mixed symptoms. Despite the high prevalence of urge-relate symptoms only 9% of the patients had overactive detrusor contractions on urodynamic testing. Thirty-four percent had no urodynamic abnormality. Another observation in this study was that women with prior hysterectomy had more severe "irritative" urinary symptoms and greater symptoms bother.

Salvatore *et al*.[10] used a computer-based model analysis (Artificial Neural Network Analysis)[11] to assess the rela-

tionship between lower urinary tract symptoms, pelvic organ prolapse stage and other patient characteristics. They conducted a cross-sectional, observational study of women seeking care for lower urinary tract symptoms and POP which enrolled 1.344 subjects. Authors found that age, Body Mass Index (BMI), POP-Q stage I, and previous surgery for urinary incontinence were predictors of urgency and stress incontinence. POP-Q stages III-IV were related to voiding dysfunction and prolapse symptoms.

In a cross-sectional study evaluating the epidemiologic relation of OAB and pelvic organ prolapse, conducted in Dutch women 45 to 85years old by de Boer *et al*.[12], 1397 participants filled-out a self-reported questionnaire. The questionnaire used was a composite of validated questionnaires. Prevalence of urgency was 34%, frequency 28.7%, urge incontinence 29.8% and any OAB symptom 49%. Pelvic organ prolapse was reported by 11.4% of the women. Among women with symptomatic prolapse 69.4% had at least one of the OAB symptoms compared to 46.6% of subjects without POP: this difference was statistically significant. Frequency and urge incontinence were reported by 41.8% and 40.3% of women with POP versus 26.9% and 28.3% in women without POP, respectively. In a multivariate logistic regression model symptomatic POP was an independent risk factor for OAB with an odds ratio of 2.6.

Lien *et al*.[13] reported a cross-sectional study evaluating the prevalence of POP and associated risk factors for POP and LUTS, in Nepal. 174 women were included in the analysis. Sixty-eight (39.1%) had normal pelvic floor support or stage I prolapse and 106 (60.9%) had stage II POP or greater. Among the 106 women with prolapse stages II to IV, anterior compartment prolapse, posterior compartment prolapse and uterine or vaginal vault prolapse were reported in 53.4%, 36.2% and 21.3% respectively. Lower urinary tract symptoms were assessed using the Short form of the UDI questionnaire (UDI-6). It was found that 53.4% of women had urinary frequency, 56.3% stress incontinence, 46.6% urgency incontinence and 39.1% difficulty emptying the bladder. Authors noted that, as their analyses were conducted in women seeking care for pelvic problems, their results may not represent the general population of Nepal.

Cetinkaya *et al*.[14] evaluated the relationship between POP staging and lower urinary tract symptoms. They conducted a cross-sectional study of women attending a urogynecology unit with LUTS and/or vaginal bulging symptoms. Three hundred eighty-eight women were enrolled. Their distribution to POP stages was 27.8%, 21.4%, 38.9 % and 11.8 % for stages 0, I, II, and III or greater respectively. LUTS were evaluated using the short form of Urinary Distress Inventory (UDI-6) total and subscale scores. Incontinence was clinically assessed with the cough stress test. The stress test was positive in 167 patients (43 %) and positivity was highest in stages I and II compared to stages III and IV. Total scores for the UDI-6 did not differ among the POP stages, but "irritative", stress and obstructive subscales did: "irritative" and stress symptom scores were significantly higher in patients with stage II or greater POP, while "obstructive" symptom scores were higher in patients with stage III or greater.

A multicenter cross-sectional study of 521 women seeking treatment for pelvic floor dysfunction was reported by Espuña-Pons *et al*.[15]. Among the 521 women 224 had POP of grades II-IV (102 with stage II and 122 with stages III&IV). Urinary symptoms were assessed with the EPIQ questionnaire[16]. Stress incontinence, urge incontinence, frequency and nocturia were present in 52.2, 66.5, 61.6 and 36.6% of the patients respectively. Difficulty emptying the bladder was reported by 30% of patients with grade II and 52.4% of patients with grades III&IV POP. The positive association of urinary symptoms to prolapse was not confirmed in the multivariate analysis suggesting that other factors apart from the POP stage are involved in the pathogenesis of urinary symptoms in POP.

In a cross-sectional study of incontinent female patients older than 55 years, Casteleijn *et al*.[17] investigated the prevalence of voiding dysfunction in women with POP. Two hundred thirty- three incontinent women with POP stages I to III, were included. Ninety one % of the women had POP stages I and II. Urinary symptoms were assessed by the UDI-6 and voiding dysfunction by free uroflowmetry and post void residual (PVR). "Obstructive" urinary symptoms were present in 39.7% according to the UDI-6 and 24.8% of patients had voiding dysfunction, defined as a maximum flow rate ≤15 ml/s and-or a PVR ≥50 ml. No significant differences in urinary symptoms were observed between the POP-Q stages. Increasing age and anterior as well as posterior wall prolapse were predictors for voiding dysfunction.

2. POP repair series

In a series of 233 continent women planned for POP repair, Jundt *et al*.[18] performed a stress test with the prolapse reduced and reported a 35.8% prevalence of occult incontinence.

Elser *et al*.[19] evaluated the use of preoperative urodynamics in determining the need for an anti-incontinence procedure at the time of abdominal sacrocolpopexy. They conducted a retrospective review of 441 patients and reported preoperative urodymamic diagnoses. The distribution to prolapse stages was 23.4% stage II, 43.9% stage III and 32.7% stage IV. Two hundred-four patients (43.6%) had SUI on preoperative urodynamics: 122 without prolapse reduction during the urodynamic study and 82 had occult SUI which became evident with prolapse reduction. Two hundred thirty-seven patients had no demonstrable SUI. Detrusor overactivity was diagnosed in 88 patients (20%). Women with urodynamic SUI were significantly younger and had a higher percentage of patients with stage II prolapse, compared to women without SUI.

In a retrospective cohort study of 88 patients undergoing anterior compartment prolapse surgery Fletcher *et al*.[20] analyzed demographic and urodymamic data as predictors of postoperative outcomes. The presence of and bother from individual LUTS, including frequency, urge incontinence and difficulty voiding, was assessed using individual questions from the UDI-6 (questions 1, 2 and 5 respectively). POP was objectively graded according to the Baden-Walker halfway system[21]. There were 74 (71%) patients with moderate/severe urinary frequency, 67 (64%) with moderate/severe urgency incontinence, and 30 (29%) with difficulty emptying their bladder. Authors reported that there was no correlation between prolapse grade and baseline complaints of frequency or urge incontinence. There was a significant correlation between prolapse grade and complaints of difficulty emptying, with 87% of patients reporting moderate/severe difficulty emptying having advanced prolapse.

Dain *et al*.[22] reviewed preoperative data of 81 women scheduled for pelvic reconstructive surgery for POP aiming to determine whether "obstructive" voiding symptoms in women with advanced pelvic organ prolapse are associated with objective bladder outflow obstruction. Forty of 81 (49.4%) women reported incomplete bladder emptying preoperatively, according to the Pelvic Floor Distress Inventory (PFDI)-20 questionnaire[23]. Interestingly only 7 (17.5%) had obstructive uroflowmetry, defined as a maximal flow below 15 ml/s. These women did not differ from those without subjective voiding difficulty in terms of ob-

structive uroflowmetry, mean postvoid residual volume, maximum and average flow rates.

Wolter *et al*.[24] retrospectively analyzed the records of 111 female patients who underwent grade 3 or 4 cystocele repair and a concomitant midurethral sling procedure. All patients had a history of previous hysterectomy. 12% of the patients were asymptomatic as far as incontinence is concerned. Based on patient history and voiding diary at presentation mixed, urgency and stress incontinence were present at 54%, 9% and 25% respectively. Ten women with urgency incontinence and 13 asymptomatic patients were found to have occult SUI.

In order to understand the relationships between urinary symptoms, urodynamic findings and POP staging, Serati *et al*.[25] used the Artificial Neural Network Analysis to process data from a prospective cohort of women with pelvic floor dysfunction. Eight hundred- two women were included in the analysis. As far as symptoms are concerned 61.8% (496) had stress incontinence 68.6% (550) had overactive bladder with or without urgency incontinence and 33.3% (267) had voiding dysfunction. On urodynamic evaluation urodynamic stress incontinence, detrusor overactivity and mixed incontinence were found in 33.8% (271), 18.7% (150) and 24.3% (195) of the patients, respectively. The remaining 23.2% (186) women had normal urodynamic studies. Authors found that urodynamic diagnosis and anatomic findings were poorly correlated. They concluded that urodynamics is still superior to any sophisticated statistical method of predicting outcomes and the associations between baseline data, symptoms, anatomic findings, and urodynamic diagnosis, even if statistically significant, cannot be used in the clinical setting.

Chermansky *et al*.[26] analyzed the records of 30 patients who underwent POP-Q stage III or IV prolapse repair. Preoperative evaluation included a supine or standing stress test with prolapse reduction to check for urine leakage. Prolapse was reduced with a single speculum blade when supine and vaginal packing when standing. In patients without demonstrable SUI urodynamic testing with and without prolapse reduction was performed. During filling cystometry Valsalva testing was performed at 150 ml and at 50 ml increments thereafter until SUI was recorded or cystometric capacity was reached. Stress incontinence was revealed during stress test or urodynamics in 16 of 30 women. In the remainder 14 no stress leakage could be demonstrated.

In a retrospective cohort study of 183 women undergoing repair for anterior or apical compartment prolapse, Miranne *et al*.[27] found no difference in prevalence of urinary frequency and urge incontinence between patients with stage I and II prolapse (91% and 72% respectively) and patient with stage III and IV prolapse (89% and 75% respectively). Nevertheless, the urodynamic observation of detrusor overactivity was significantly more common in patients with more severe prolapse (35% in women with stages III and IV compared to 17 % in women with stages I and II POP). Similarly, in a series of 43 women with a prominent posterior compartment prolapse Costantini *et al*.[28] reported a 76.74% (33 patients) prevalence of urgency. Nevertheless detrusor overactivity was found in 25.6% (11 patients).

Smith *et al*.[29] conducted a secondary analysis of a prospectively enrolled case-control study to evaluate differences in levator ani defects and pelvic floor function among women with prolapse and controls. Inclusion criteria were either anterior or posterior predominant prolapse, at least to the level of the hymen, and a stress incontinence testing with prolapse reduction. 214 women were included. An overall rate of 9.8% for a positive stress test was reported. Rates of positive stress test for the anterior (n=169) and the posterior (n=45) compartment prolapse group were 11.2% and 4.4% respectively without prolapse reduction and 10.7% and 13.3% respectively with prolapse reduction.

In a retrospective review of the medical records of 308 women with stage III or IV prolapse, Liang *et al*.[30] assessed urinary symptoms during patient interviews. Authors reported daytime frequency in 73.4%, nocturia in 42.8%, urgency in 47%, urgency incontinence in 26%, stress incontinence in 46.1%, straining to void in 22.4% and difficulty in voiding in 38% of the patients. Authors were particularly interested in the cystoscopic finding of bladder trabeculation which was present in 54.9% (169) patients. Patients with bladder trabeculation had more detrusor overactivity and greater post-void residual volumes than patients without, but other urodynamic parameters, including bladder outflow obstruction, did not differ significantly. As far as symptoms are concerned, patients with bladder trabeculation had more urgency and urge incontinence than patients without.

Gowda *et al*.[31] also conducted a retrospective cohort study to investigate the association between urinary symptoms, prolapse stage and bladder trabeculation. 551 women who underwent cystoscopy for various indications in a urogynecology center were included and 86 were found to have bladder trabeculation. Overall there was no association between presence of trabeculation and stage of POP, even though women with stage IV anterior compartment prolapse had grater odds of having bladder trabeculation compared to women with stage 0 prolapse. Urodynamic data, available for 357 women, were not conclusive for the relation of BOO and trabeculation. As far as symptoms are concerned women who reported urge urinary incontinence had 4 times grated risk of trabeculation compared to women without.

Kanasaki *et al*.[32] analyzed the records of 105 Japanese women who underwent transvaginal mesh repair for pelvic organ prolapse between 2009 and 2012. POP-Q stage III was the most common stage (73 patients), followed by stage II (23 patients). Anterior prolapse (cystocele) was the predominant prolapsing compartment in 60% of the study population. The presence of preoperative SUI was confirmed at the time of surgery in 50 of the 105 patients. There was no significant association between patients' age, POP-Q stage or predominant prolapsed organ and the presence of SUI.

The clinical and urodynamic records of 66 women who underwent anterior vaginal prolapse surgery for grade III or IV cystocele and a concomitant midurethral sling, were retrospectively analyzed by Chae *et al*.[33]. Of the 66 women, 36 had voiding dysfunction preoperatively, defined objectively as maximal flow rate below 15 ml/s and/or postvoid residual urine volume >50 ml on uroflowmetry. Women with voiding dysfunction were further categorized as having bladder outflow obstruction [23 patients (64%)] or detrusor underactivity [13 patients (36%)] using a cutoff of 20 cmH_2O for the detrusor pressure at maximum flow. POP-Q stage was significantly higher, and points Aa and Ba were significantly longer in the voiding dysfunction group. There were no significant differences between patients with and without voiding dysfunction in age, parity, body mass index, SUI grade, presence of urgency and urge incontinence, and urodynamic parameters, except in uroflowmetry.

Majkusiak *et al*.[34] assessed in a prospective study the quality-of-life changes in 40 women with POP stage III or IV who underwent prolapse correction with supracervical hysterectomy and cervicosacropexy with polypropylene mesh. Stress urinary incontinence was diagnosed in 42% (21) of the patients preoperatively, overactive bladder (OAB) in 50% of women, and postvoid residual urine greater than 100 ml in 32.36%.

Tomoe H.[35] prospectively evaluated 100 consecutive women with POP stage II or greater and an associated cystocele. Overactive bladder was diagnosed in 53 of 100 patients preoperatively while detrusor overactivity was observed in 52.8% of overactive bladder cases.

DISCUSSION

The results of this review confirm that the epidemiology of lower urinary tract symptoms in women with pelvic organ prolapse is not extensively studied. From 2010 onwards only seven cross-sectional studies have been identified in the literature involving 4,000 patients. Despite the fact that these studies used validated questionnaires, most often the Urogenital Distress Inventory, to diagnose and quantify the symptoms, they focus on different symptoms or combinations of symptoms. As a consequence, their results are not directly comparable. Nevertheless, it seems that all studies agree that lower urinary tract dysfunction is highly prevalent in female populations with pelvic organ prolapse. The most commonly addressed symptom is that of incontinence with stress incontinence reported in 40-56% and urgency incontinence reported in 29-66% of the studied populations. Prevalence of overactive bladder symptoms is also reported with urgency rates ranging between 35% and 72%. A formal diagnosis of Overactive Bladder (OAB) can be made in more than half the women with POP. Interestingly voiding symptoms are not often addressed by their prevalence ranges between 18 and 39%.

The prevalence of urinary complaints has also been reported by several recent surgical series of women undergoing treatment for prolapse. In theses series patient populations are small and urinary symptoms are almost invariably reported and analyzed retrospectively. In surgical series the focus is clearly on stress incontinence and, in particular, occult stress incontinence which is demonstrated only when prolapse is reduced. For this reason some studies report on the symptom of stress incontinence while the majority report the urodynamic observation or the clinical sign of incontinence during a stress test. In any case, the prevalence of SUI in surgical series ranges from as low as 20% to as high 64% while occult stress incontinence is reported to affect approximately 20%-35% of women for whom a prolapse repair is planned. Voiding difficulty is another dysfunction often addresses in surgical series and is reported for 23 to 60% of women.

The correlation of urinary symptoms to stage of prolapse showed contradictory results but, in general, lower stages of prolapse are associated with overactive bladder symptoms and stress incontinence while advanced prolapse is associated with more voiding difficulty and less stress incontinence. This finding is in line with the presumed pathophysiology of urinary dysfunction in advanced prolapse where the proximal and mid-urethra are compressed against the pubic bone causing increased outlet resistance and "protecting" from stress incontinence[36].The unmasking of SUI with prolapse reduction has been reported in more than half of clinically continent women with severe POP[37] and the need for prophylactic anti-incontinence surgery has been one of the most interesting topics of research in recent years.

In summary, despite differences in assessment methods and reporting of urinary symptoms in women with pelvic organ prolapse, lower urinary tract dysfunction is highly prevalent in this growing female population. Further research is needed for a better understanding of the pathophysiology of urinary symptoms in relation to prolapse which will hopefully improve our ability to efficiently address them during prolapse management.

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Multidisciplinary Uro-Gyne-Procto Editorial Comment

To improve the integration among the three segments of the pelvic floor, some of the articles published in **Pelviperineology** are commented on by **Urologists**, **Gynecologists**, **Proctologists/Colo Rectal Surgeons** or **other Specialists** with their critical opinion and a teaching purpose. Differences, similarities and possible relationships between the data presented and what is known in the three or more fields of competence are stressed, or the absence of any analogy is indicated. The discussion is not a peer review, it concerns concepts, ideas, theories, not the methodology of the presentation.

Gynecologist... Thank you for asking me to comment this article. The review provides a good summary of the relationship between bladder symptoms and prolapse, but no anatomical solutions are offered to explain this link. The authors conclude "Further research is needed for a better understanding of the pathophysiology of urinary symptoms in relation to prolapse which will hopefully improve our ability to efficiently address them during prolapse management." It is unfortunate that this otherwise excellent review did not extend to the 1997 IUJ article.[1] This was the first article to challenge the Integral Theory[2] which now states Pelvic organ prolapse, bladder and bowel dysfunction and some types of pelvic pain, mainly derive, for different reasons, from laxity in the vagina or its supporting ligaments a result of altered, collagen/elastin. The abstract of the 1997 paper is reproduced with two figures from the original paper

Abstract: The aim of the study was to introduce an anatomical classification for the management of urinary dysfunction based on the Integral Theory, a new connective tissue theory for female incontinence. Eighty-five unselected patients were classified as having laxity in the anterior, middle or posterior zones of the vagina, using specific symptoms, signs and urodynamic parameters summarized in a pictorial algorithm. Special ambulatory surgical techniques, which included the creation of neoligaments, repaired specific connective tissue defects in the anterior (intravaginal slingplasty (IVS), n = 85), middle (cystocele repair, n = 6), or posterior zones (uterine prolapse repair, n = 31, or infracoccygeal sacropexy, n = 33). Almost all patients were discharged within 24 hours of surgery, without postoperative catheterization, returning to fairly normal activities within 7-14 days. At (mean) 21-month follow-up cure rates were: stress incontinence 88% (n = 85), frequency 85% (n = 42), nocturia 80% (n = 30), urge incontinence 86% (n = 74), emptying symptoms 50% (n = 65). Mean objective urine loss (cough stress test) was reduced from 8.9 g preoperatively to 0.3 g postoperatively, and mean residual urine >50 ml from 110 ml to 63 ml, P = <0.02. Pre- and postoperative urodynamics indicated that detrusor instability was not associated with surgical failure. Two new directions, based on the Integral Theory, are presented for the management of female urinary dysfunction, an anatomical classification which delineates three zones of vaginal damage, and a series of ambulatory surgical operations which repair these defects. The operations are fairly simple, safe, effective and easily learnt by any practising gynecologist.

The mechanism for ligament damage is shown in figure 1 and the relationship of damaged ligaments to symptoms in figure 2.

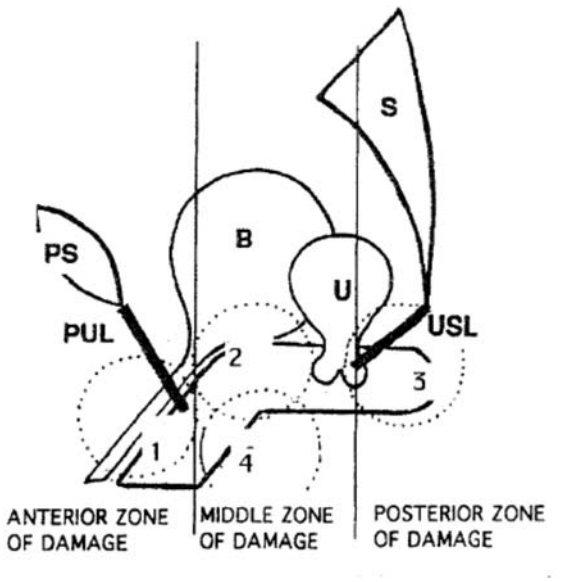

Figure 1. – Damage to vagina at childbirth. The circles represent the fetal head overstretching the connective tissue of the vagina and its supporting ligaments as it descends through the birth canal. 1. hammock and pubourethral ligament laxity; 2. cystocele and arcus tendineus fasciae pelvis defect; 3. uterine prolapse, enterocele; 4. rectocele.

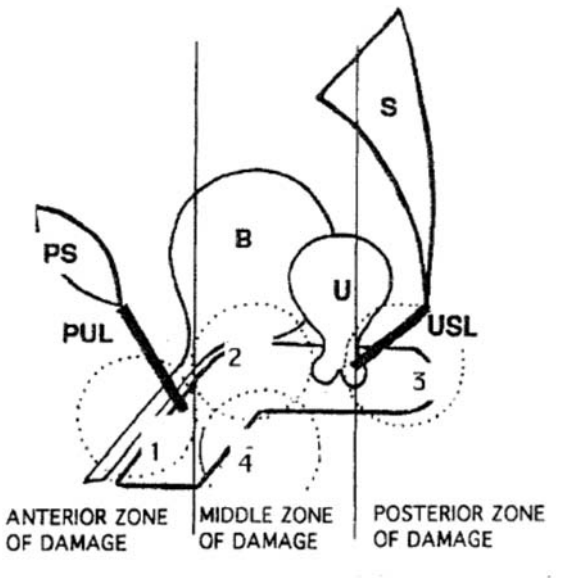

Figure 2. – Relationship between symptoms and damaged ligaments.

REFERENCES

1. Petros PE *New ambulatory surgical methods using an anatomical classification of urinary dysfunction improve stress, urge, and abnormal emptying*. Int J Urogynecology . 1997: 8, 5: 270-278
2. Petros PE & Ulmsten U. *An Integral Theory of female urinary incontinence*. Acta Obstetricia et Gynecologica Scandinavica, Supplement 153, Vol 69, 1990: 1-79.

Proctologists/Colo Rectal Surgeons... The paper by Giannitsas et al is an excellent attempt at trying to make sense of associated urinary symptoms in pelvic floor dysfunction, the causes of which are considered unknown, despite being highly prevalent and well-recognised. The findings of the paper can, in my opinion, be succinctly described as follows:

1. urinary symptoms such as over active bladder, urinary urgency, urinary urge incontinence, incomplete bladder emptying and stress urinary incontinence are common and frequently occur in combination.
2. These symptoms appear to be more prevalent in those who have pelvic organ prolapse.
3. There does not appear to be a direct correlation between symptom prevalence and stage of pelvic organ prolapse.
4. Other than for stress urinary incontinence, surgery is performed predominantly for prolapse but not with the intention of curing symptoms.
5. Urodynamics is not predictive nor helpful in the clinical setting.

Globally, urogynaecologists (and not to mention colorectal surgeons, urologists and gynaecologists) remain perplexed by these five well recognised observations and continue to strive to make sense of the situation. They appear to believe that these bladder and other symptoms are mutually exclusive and almost certainly have their own unique cause, which is as yet unknown. Interestingly, they choose to use ever increasingly complex urodynamic and manometric assessment, definitions and analysis to solve the mystery. These practitioners, who I shall call the "*Urodynamicists*" make up in excess of 99% of pelvic floor specialists and in recent years, have made little progress in finding a cure for these symptoms.

By contrast, and by far in the tiny minority are those that have already accepted that the above five statements are true and have looked for an alternative hypothesis by which they can be explained. They have chosen to familiarise themselves with the Integral Theory by Petros and Ulmsten, which theorises that pelvic floor dysfunction is due not to an abnormality in the bladder (or for that matter, rectum) but due to a lack of support of those organs. Depending upon the degree and site of loss of support, and as with most biological systems by introducing a degree of chaos, can produce any of the symptoms outlined above. Not only that, it further explains the coexistence of posterior compartment symptoms such as obstructed defecation, faecal incontinence and pelvic pain which are also well-recognised as occurring not only in combination with each other, but in combination with multiple bladder symptoms. The "*Integral Theorists*" as they may be called use the prevalence and combinations of these symptoms to determine where the weakness in support may lie, and approach treatment by trying to reconstruct the native anatomy. It is a symptom-based approach, the prolapse taking care of itself as part of the treatment. Interestingly, all the "*Urodynamicists*" who insert mid-urethral slings for stress urinary incontinence already practice the Integral Theory. They may simply not be aware of it.

At some point, hopefully in the near future pelvic floor medicine will reach a crossroads where we will either continue to try and make sense of the situation with urodynamics or in contrast look more closely at adopting the Integral Theory. It will be interesting to see who turns left and who turns right.

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