Editorial

The September issue is an important one for the journal and as well for what it means in the science of pelviperineology: it is edited for the 12th ISPP Congress of the International Society of Pelviperineology, an event to which we attribute multiple meanings.

Thanks to the support of the ISPP Scientific Board, of the local University Hospital well represented by the co-president Giulio Santoro, to the sponsors, and to the scientific national and international societies involved in the pelvic floor, this congress is definitely the full expression of the multidisciplinary and interdisciplinary spirit of pelviperineology, a branch of medicine that deals holistically with all the complex and fascinating components of that part of our body.

The journal contains a supplement with the abstracts of the congress and of the numerous workshops, where a central role in this overall and future-oriented vision is represented by the Integral Theory. For this we have requested contributors from the dedicated workshop to distil some of their thoughts in a short pithy resume as Words of Wisdom. We hope to present in Pelviperineology journal from time to time this new feature designed by Peter Petros.

As the presentation of the scientific program states, the chosen theme of the congress is Current status, technological advances and perspectives. We have the ambitious aim to provide not only a consensus on the management of pelvic floor disorders, according to the evidence-based medicine, but to look forward foreseeing and hoping for it an interesting future.

The approach to the pelvic floor belongs to urologists, gynaecologists, colorectal surgeons, gastroenterologists, physiatrists, obstetricians, nurses, physiotherapists, psychologists, radiologists, sexologists, andrologists: a patient-centered vision is obviously needed and is being accepted. All these figures are represented in the Treviso meeting as well as they are in this journal, which is the voice of ISPP.

Aims of ISPP are to realize Masterclasses, Fellowships, and the School for the Pelvic Floor Surgeon, as well as to develop technology partnership with all the interested Companies in this field.

Research and education are the basis of the progress in science. Many functions and dysfunctions of the pelvic floor commonly met in the everyday life are still mysterious, as Darren Gold states in his Word of Wisdom, and a great effort is needed to improve our knowledge.

Professor Giuseppe Dodi
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Words of Wisdom

Knowing what you don’t know

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Einstein said, “Any fool can know. The point is to understand.” The perpetual problem with pelvic organ dysfunction is that the lack of understanding of normal physiology has hampered progress in the management of these conditions for well over a century. How we empty our bladder and bowel and also maintain continence is still considered a mystery. The most significant breakthrough came in 1990 with the advent of the mid-urethral sling, that was based on a new and still controversial understanding of stress incontinence and pelvic organ function.

It revolutionised the management of stress incontinence and became one of the most studied operations in the history of surgery. It was adopted by almost all practising urogynaecologists and is still considered the gold standard. It introduced the use of prosthetic materials as standard practice for the management of stress incontinence.

The problem was that very few understood how the midurethral sling (MUS) restored the continence mechanism, but once they knew how to do it there was no going back. Unfortunately, the lack of understanding of its mechanism of restoring continence led to personal modifications, a misunderstanding of the role of prosthetic material in the management of these conditions and what was later to be known as the ‘mesh disaster’. The largest group to lose in this tale of woe are women themselves. They have lost their trust in all forms of prosthetic reconstructive surgery and many will refuse to have surgery, remaining incontinent and miserable.

We must take stock and start again. We must rebuild from the ground up by understanding the normal mechanisms of bowel and bladder emptying and continence and relearn our anatomy and reassess our understanding of physiology in order to appreciate how these mechanisms may be restored by surgical techniques that are based on this understanding. The knowledge is there. It is not too late, but time is running out.
Understanding the Integral Theory- what do we need to know?

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The Integral Theory System (ITS) uses functional anatomy to explain how nerves, ligaments, muscles work holistically for organ support, bladder, bowel function and dysfunction. Ligament laxity due to collagen defect is the weak point in the system and the basis of the ITS diagnostic and management system. Bladder and bowel have only two modes, open or closed, involuntary, controlled by closure or opening reflexes. Oppositely-acting directional muscle forces, fig 1, contract against pubourethral and uterosacral ligaments to close urethral and anal tubes (continence), open them (evacuation), and stretch the organs sufficiently to prevent stretch receptors from firing off prematurely to activate the opening reflexes (micturition, defecation). Damaged ligaments weaken these muscle forces, so they cannot adequately close outlet tubes (incontinence) open them, (evacuation difficulties) or stretch organs sufficiently to control evacuation reflexes (urge incontinence). Reinforcing weakened ligaments with tensioned tapes reverses the cascade of events to cure up to 90% of organ prolapse, plus symptoms, bladder, bowel, chronic pelvic pain.

Fig 1. Binary control of bladder & bowel. Schematic 3D sagittal view. System in normal closed mode. Like a trampoline, the organs are stretched and balanced by 3 opposite vector forces (arrows), contracting against PUL (pubourethral ligaments) and USL (uterosacral ligaments). Afferent impulses from stretch receptors ‘N’ are reflexly suppressed cortically (white arrow). When required, the cortex activates the defection and micturition reflexes: the forward muscles relax, pubococcygeus for urethra (broken circle), puborectalis for anus (not shown); this allows evacuation by smooth muscles contraction (spasm). If PUL or USL are loose, the muscles contracting against them (arrows) weaken. Urethra/anus cannot be closed (incontinence), opened (emptying problems) or organs stretched to support ‘N’, (urge incontinence).

Lax connective tissue and chronic pelvic pain - pathophysiology and treatment

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There is a strong interrelationship between chronic-pelvic-pain and pelvic-organ-prolapse (POP). Recent results of the PROPEL study, submitted for publication from Liedl et al., show that preoperatively two thirds of all POP-patients had relevant-pain-complaints (RPC). According to Martinus there are two pathways for pain-transmission: 1) A short mechanical way to the plexus sacralis: Deficient suspending ligaments or insufficient support from pelvic floor lead to increased tension against the plexus sacralis. This causes pain symptoms in the back: low-dragging abdominal pain or deep-sacral backache.

2) A long visceral way via spinal cord to the brain transmitted through the paired Ganglia Frankenhäuser, located in the parametrum 2cm bilaterally to the cervix. Pressure or tension on it causes pain particularly in the middle and/or front area of the pelvis. These pains radiate mainly to the anterior and lateral abdominal wall, the inguinal region and the thighs. Deficient suspending ligaments generates pain symptoms as follows: 1) utero-sacral-ligaments (USL) = back-pain, 2) cardinal-ligaments (CL) = back-pain, 3) perineal-body = middle/ back-pain, 4) arcus-tendineus-fascia-pelvis = middle/front-pain, 5) pubo-urethral-ligament (PUL) = middle/front-pain. Deficient support from pelvic floor generates mainly pain in the pelvic center.

Why is this differentiation important for therapy? In all cases lax connective tissue is responsible for pain formation! These patients can be pooled into three groups:
1) Patients with intact pelvic floor, but damaged ligamental suspension.
2) Patients with damaged pelvic floor but sufficient ligaments.
3) Patients with a combination of both.

This differentiation has important therapeutic consequences and allows explanations for different cure-rates after vaginal or abdominal surgery.
1) If USL and/or CL are exclusively damaged this problem can be solved vaginally with posterior IVS/TFS or abdominally by cervico/vagino sacropexy.
2) + 3) In case of pelvic-floor-damage only restoration of the base is sufficient, if necessary in combination with ligament-repair. In my opinion this can only be done vaginally. Abdominal surgery provides no access for damaged muscle layer or membrane repair and does not recreate the natural axis of the vagina. In contrast, this procedure creates an abnormal vertical inclined vaginal axis. Fixation of vaginal apex to the promontorium pulls the uterus forwards and opens the Douglas cavity. Intraabdominal pressure can now push the Ganglion Frankenhäuser downwards generating more pain than before.

Conclusion: Due to the fact that deficient connective tissue is mainly responsible for prolapse induced organic lumbosacal pains an isolated damage of ligaments represents an exception. In the majority of cases, pains are the consequence of both, insufficient support and suspension.

Cure of bedwetting by squatting-based pelvic floor exercises

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We hypothesized that day/night wetting was caused by loose ligaments/muscles failing to control inappropriate activation of the micturition reflex (Integral Theory). Furthermore, the reflex pelvic muscles and ligaments could be strengthened using squatting-based exercises. An RCT was conducted over 4 months on 48 children, mean 7.6 ± 2.5 years, 34 fe-
Simulated operations – a mechanical test for Integral Theory predictions

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Simulated operations are a substantial diagnostic tool for decision-making in urogynecology to predict outcome of operative interventions. According to the Integral Theory, the simulated operation restores anatomy by mimicking the effect of a surgical intervention. Once a preliminary diagnosis is made, the zone of damage can be validated (or not) by ‘simulated operations’.

Simulated operations are a technique which can give the surgeon an understanding of the contribution of each connective tissue structure in each zone to continence. The surgeon supports the connective tissue structures in each of the three zones with his small finger, a forceps or a tampon (pessary), or direct observation (percentage diminution of urine loss with coughing) as criteria.

From 01/2012 till 04/2019 we applied the technique of simulated operations evaluation before 867 urodynamic examinations in a standardized manner: the patient always empties her bladder right before the examination. During cystoscopy objective residual volumes are noted, the bladder pathology is described than the bladder is filled up to the sense of urge measured in 61%. Nocturia was significantly improved by 68%– as long as the tampon was tolerated overnight.

Simulated operations are a simple and easy way to predict the success of a pelvic floor surgery and give valuable insight of the sides of repair to relief symptoms to the surgeon. They provide direct instant proof of the Integral Theory’s predictions.

Safety and short term outcomes of a new truly minimally-invasive mesh-less and dissection-less anchoring system for pelvic organ prolapse apical repair

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A prospective study was conducted using the NeuGuide™ device system for pelvic floor apical repair. All surgeries were performed using the same surgical technique. The primary effectiveness outcome was centro-apical pelvic floor prolapse by POP-Q after six months. The primary safety outcome was intraoperative and early post-operative complications and adverse effects after six months. A standardized questionnaire (UDI-6) to assess quality of life at entry and during follow-up visits was used. Patients were followed-up and evaluated six weeks, three months and six months following surgery. All statistical analyses were performed using the SPSS, software version 22.0. Two-sided p-value of <0.05 was considered significant.

Results: Ten women were enrolled to the study. The mean age of the study population was 63.8±12.0 years. Five had a previous hysterectomy and 2 had stress urinary incontinence symptoms. During surgery six patients had a concurrent colporrhaphy. There was no injury to the bladder, rectum, pudendal nerves, or major pelvic vessels and no febrile morbidity was recorded. At six months no cases of centro-apical recurrence were noted. Patients were found to be satisfied with the procedure and had favorable quality of life scores. Using the UDI-6 questionnaire an improvement, in all domains was seen. Moreover, although the small sample size improvement in urge and overflow incontinence related domains was demonstrated to be statistically significant.

This new NeuGuide™ device allows rapid and safe introduction of a suspending suture through the sacrospinous ligament and makes sacrospinous ligament fixation easy to perform, while avoiding dissection and mesh complications.
Laparoscopic sacrocolpopexy (LSCP) – a personal long-term experience

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We have published a retrospective monocentric single operator series of 80 laparoscopic sacrocolpopexies performed for genital prolapse, according to the double mesh technique at the unit of Gynecology of the University Hospital of Caen between January 1993 and December 2002. The procedures have all been performed by me using the same surgical technique. Laparoscopic Burch colposuspension was almost systematically performed between 1993 and 2000. Later, TVT was used but only in case of objective stress urinary incontinence (SUI). All the patients were directly contacted by and by mail and underwent examination by an independent gynecologist, 11 to 20 years after the operation. Long term results are finally good according to satisfaction index and QoL questionnaires. But 25% of patients had to be re operated average 5 to 8 years after first procedure, mainly for recurrent cystocele. This means that the results published in most series with a follow up between 1 to 3 years are truly overoptimistic. (figure 1). Pre-existing large cystocele is a risk factor for anterior compartment recurrence. In this case, vaginal repair

Development of the midurethral sling

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The discovery of the midurethral sling (also known as the tension-free vaginal tape “TVT”) began in 1986 with two unrelated observations: pressure applied unilaterally at the midurethra controlled urine loss on coughing; implanted Teflon tape caused a collagenous tissue reaction. It was hypothesized that the pathogenesis was collagen deficiency in the pubourethral ligament (PUL) which attaches to the middle part of the urethra. It was also hypothesized that a strip of tape inserted exactly in the position of the PUL would create new collagen to reinforce the PUL.

In 1987, Mersilene tape was implanted retropubically in 13 large dogs, with the aim of creating an artificial collagenous pubourethral neoligament. Extensive testing showed that the operation was safe and effective. In 1988–1989, human testing was carried out (n=30). Mersilene tape cured 100% of stress and mixed incontinence with a sling in situ; however, there was simultaneous recurrence of the two symptoms in 50% on sling removal. X-rays showed no elevation of the bladder neck. In 1990–1993, collaboration with Ulf Ulmsten took place. This led to a permanently implanted tape at PUL. It was found that polypropylene was the ideal material for implantation. In 2003, the neoligament principle was applied as an adjustable “mini sling”, initially to reinforce PUL for cure of stress urinary incontinence, then later to arcus cardinal ligaments for cure of transverse defect cystocele, ATFP for central cystocele, then uterosacral ligaments for cure of uterine prolapse, then perineal body for cure of rectocele and descending perineal syndrome. It was found that symptoms such as urgency, nocturia, chronic pelvic pain, obstructive defecation syndrome (ODS), and fecal incontinence were frequently cured or improved by repair of these ligaments.

Retropubic tissue fixation system tensioned mini-sling carried out under local anesthesia cures stress urinary incontinence and intrinsic sphincter deficiency: 1-year data

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We retrospectively studied a total of 96 intrinsic sphincter deficiency patients treated with the tissue fixation system midurethral sling at Yokohama Motomachi Women’s Clinic from 2006 to 2015. We evaluated intraoperative and 1-year postoperative results. Regarding the cure rate, we divided patients into three groups: (i) patients with maximum urethral closure pressure <20 and Valsalva leak point pressure <65 combined (n = 17); (ii) patients with maximum urethral closure pressure <20 (n = 55); and (iii) patients with Valsalva leak point pressure <65 (n = 47).

The median age was 63 years (range 38–89 years). The median operating time including local anesthesia was 24 min (range 12–55 min) and median blood loss was 5.0 mL (range 3–69 mL). All operations were day surgery under local anesthesia. Postoperative pain was minimal. All patients were discharged the same day. There were no intraoperative complications except one bladder perforation. There were no tape rejections. The 1-year postoperative cure rates were: 88.2% among patients with maximum urethral closure pressure <20 and Valsalva leak point pressure <65, 90.9% for patients with maximum urethral closure pressure <20, and 85.1% among patients with Valsalva leak point pressure <65.

Conclusions: The tissue fixation system midurethral sling operation is a simple, safe and effective operation for older women with intrinsic sphincter deficiency, and it can be carried out under local anesthesia.