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This section in Pelviperineology Journal, aims to interview the outstanding clinicians and scientists that had a special impact on the profession of pelviperineology over the years.

This photo of Professor Peter Petros was taken at a scientific meeting of ISPP in Bucharest Romania, where he demonstrated the TFS tensioned minisling for cure of prolapse, chronic pelvic pain, bladder and bowel dysfunctions

Professor Peter Petros

Interviewers: Jacob Bornstein, Darren M. Gold, Pelviperineology

Professor Peter Petros is well known to the readers of Pelviperineology. He is the "father" of the "Integral theory", the midurethral sling, and author of the book "The Female Pelvic Floor - Function, Dysfunction and Management According to the Integral Theory". He is the author of more than 260 peer-reviewed articles. He is PhD, DS (Doctor of Surgery), MD (Doctor of Medicine), DSc (Doctor of Science). We interviewed him for this section.

The photo with Dr Sidi Muctar, German Urologist, was during their joint development of the first ever minisling operation for cure of post-prostatectomy urinary incontinence

• What, would you say, is your main achievement in the field of pelviperineology?

Undoubtedly it was my first publication, “The Integral Theory of Female Urinary Incontinence”, in Acta Obstetricia et Gynecologica Scandinavica 1990, 79 pages. It is the “mother” of virtually every new direction in pelvic floor science since 1990. On rereading it recently, I was amazed at the depth, breadth and accuracy of the original concepts and predictions, written hardly 4 years after I had commenced my research: the key role of ligaments in stress and urge incontinence; prediction of bladder stretch receptors, not discovered until 20 years later; the reflex role of the pelvic floor muscles in opening and closure of the urethra and how they stretch the vagina to control urge incontinence, nocturia and chronic pelvic pain; in 2012, these concepts led to a method for cure of the 50% of women who continue to leak horribly after successful closure of obstetric fistula; in 2020, to an 86% cure of day/night enuresis in young children. The animal experiments in 1990 led to the midurethral sling, now the gold standard with 10,000,000 operations to date, posterior slings for cure of chronic pelvic pain, urge incontinence and nocturia, obstructed micturition and defecation and the first “mini sling” in 2004. When all the derivatives from the 1990 publication are taken into account, the number of citations number into many thousands.

Professor Peter Petros teaching in China Jiao Tong University Shanghai

• What in your youth and in early and late training years, prepared you to become top-notched in your field?

My mother told me that as a child I was always inquisitive. I grew up in north Queensland on a cane farm and initially went to a "bush school", with three classes taught by one teacher. When I was 13, we moved to Sydney, where I attended Sydney Boy's High, a selective academic high school. As well as science and maths I studied classics, including the ancient Greek language. That was the most profound intellectual influence for my research work, in particular, Plato's dialogues, which apply the Socratic method to examine all possible explanations (hypotheses) and by logical deduction, arrive at a true answer by eliminating logically inconsistent alternatives. A later influence, was my Obstetrics and Gynaecology training at the Royal Hospital for Women in Sydney, a punishing 1:2 rosters, another training in fundamentals: Bruce Dawson, superb anatomist, David Howell, whose intuitive handling of connective tissue was inspirational in developing my day care surgical methods and then there was Bill Garrett, D Phil. Oxon and prime inquisitor. Not surprisingly, I later learned he was also a classics scholar.

• You have changed the understanding that was common in the past. What did you first notice that alerted you to the fact that our current understanding of the subject was incorrect?

So much. Virtually everything being taught at the time made no sense to me. In 1986, everyone accepted that urethral closure was by intrabdominal pressure compressing five layers of urethral wall tissue to close it. Yet it is common knowledge that straining on micturition accelerates urine flow. Then there was "detrusor instability", where an arbitrary 15 cm pressure rise on urodynamics was elevated by an "expert committee" not as a diagnostic aid like X-ray, but as an actual clinical condition. Something without precedent in medicine! Many patients I saw who wet several times per day and did not show "detrusor instability" on urodynamics, were told the cause of the urge incontinence was all in their head and were sent off to psychiatrists.

• How did you proceed to determine what was the scientific truth?

By deduction, testing all the hypotheses, including my own, for truth or falsity. My own "Eureka moment", stopping urine loss with coughing by one-sided mechanical support of the pubourethral ligament invalidated the "pressure equalization" theory. Instant relief of urgency by tensioning the vagina suggested that a lax vagina was the cause of the urge symptom, not some pressure recording from urodynamic testing.

• How did you know you were right with your new approach?

I have always believed that Nature is perfect, that every anatomical structure has a purpose and that the pelvic floor worked holistically. So, the starting point for surgery was to mimic

nature. For pathogenesis, everything is subject to anatomy and basic physiology. A striated muscle contracts efficiently only over a short distance. The original X-ray and ultrasound studies from the 1990 theory indicated that the three directional muscles contracted against ligaments. I developed a series of "simulated operations", applying mechanical support and observing what happened. For example, inserting a speculum to support the apex of the vagina (uterosacral ligaments) relieved both urgency and pain; a large tampon placed in the apex at night helped reduce nocturia and improved bladder emptying. It was not a big step to repair these ligaments using tapes to create new collagen. Evolved from all this were two core tenets of the Integral Theory paradigm for surgery: Structure (prolapse) and function (symptoms) are related. "Repair the structure and you will improve the function." Next came the diagnostic algorithm, which uses symptoms to identify which ligaments needed repair. And later, "It is helpful for the modern pelvic floor surgeon to think firstly as an architect, secondly as an engineer: as an architect, to design the form of the reconstruction; as an engineer, so the construction can withstand the pelvic forces imposed upon it."

• Looking backwards, would you have done anything differently? If yes, what, and how?

I was and remain, naïve. I still believe that our prime purpose as a doctor is to help patients, seek scientific truth, share knowledge, follow the Hippocratic tradition of teaching fellow doctors free of charge. What I found was very different, opposition by vested interests, often vicious and personally targeted. It was difficult to publish anything different from "received wisdom". Statistically validated data was ignored. How could I do anything different? Without truth, there is no science. "Teaching" was most satisfying, for never did I even once "teach" without learning something substantial in return.

• Any advice for a new physician that looks up to you and wishes to make a difference?

Never ignore anomalies found in your scientific experiments. There is always a reason. Look for it. Many discoveries come from pursuing anomalies. Learn to be self-critical. If you form a hypothesis, be the first to challenge it. That is the best way to prove it. Respect our Hippocratic traditions, our craft, our colleagues. Be sincere. Be honest. Do the right thing for the right reason.