

IN THE PATH OF THE GIANTS

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.

Prof. Michael Swash, MD FRCP FRCPath

Interviewers: Jacob Bornstein, Darren M. Gold, Pelviperineology



Figure 1. Prof. Dr. Michael Swash, writing at home

• What, would you say, is your main achievement, with an emphasis on the field of pelviperineology?

The demonstration that in women's pelvic floor disorders, a term we introduced in our book, *Coloproctology and the Pelvic Floor; Ed MM Henry & M Swash (1987 and subsequent editions, including a Russian edition for the USSR)*, were associated with laxity of the pelvic floor, so that its tone was insufficient during straining and coughing, leading to faecal and urinary incontinence. We showed that this was also a factor in certain types of constipation and difficulty in defaecation. Using anal manometry, defaecating proctography and EMG and nerve conduction studies, we showed that this incontinence was due to muscle weakness, secondary at least in part to nerve damage sustained in childbirth, and that it was often also associated with anal sphincter injury. We also showed that this was a progressive

disorder, especially associated with menopause and aging. We derived a unifying algorithm indicating the inter-relationship of the various causative factors. Later, with Peter Petros, we integrated pelvic ligamentous stretch and loss of elasticity into the causative hypothesis, a concept that generated a logical approach to clinical management. The conventional ideas were thus overturned, or modified, although general recognition was slow in developing.

I have also worked in other areas, especially in Motor Neuron Disease/ALS, in neuromuscular diseases and in general neurology

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

I was educated at the London Hospital Medical College at the Royal London Hospital. The Dean sent me as an exchange

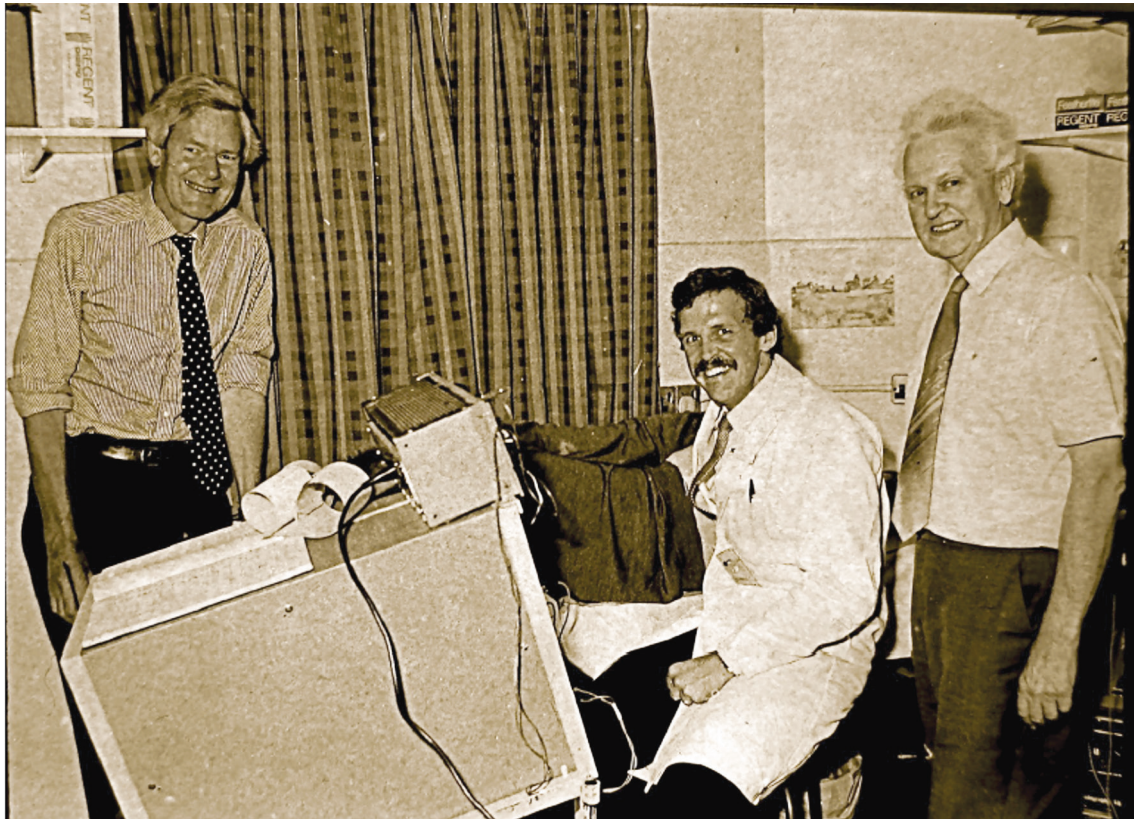


Figure 2. The first measurement of motor conduction velocity in the spinal cord in man
 Prof. Pat Merton (subject on couch): Dr. Steven Snooks, research fellow in physiology lab at St. Mark's Hospital, London. Mr. Bert Morton, Engineer at Queen Square; Michael Swash (standing)

student to the Medical College of the University of Virginia in Charlottesville, Virginia, where I was suddenly briefly free of a fixed curriculum. After qualifying I was for 6 months on the House in Neurosurgery at the London Hospital, before working for 2 years in a busy general hospital in Bath in Medicine – and dabbling in General Practice. I was then sent by Dr Christopher Earl, Neurologist at the London Hospital to Case-Western Reserve University, in Cleveland, Ohio to study Neurology with the Harvard team who had moved to Cleveland from Boston on the retirement from Harvard of Prof Derek Denny-Brown. After 3 years, I moved to the Neurology Department in Washington University at St Louis, Missouri, to study Neurophysiology, before returning to London. This diverse, unconventional experience provided a unique multiskilled background and supported my natural inclination to test polemical beliefs put forward by others, whether by a literature search or by my own observations.

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

As a student on the Gynaecology rotation in medical school, I noted that there was evident weakness of the perineal muscles

in prolapse associated with urinary incontinence but that a coherent understanding of this was lacking. Further, surgical management was directed to the uterus, which seemed to me peculiar, since the prolapse was itself symptomatic rather than causative. However, one could not usefully comment from such a junior position!

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

With my distinguished senior colorectal surgical colleague, Sir Alan Parks, I started by examining muscle biopsies of pelvic floor muscles. We showed that there was chronic partial denervation, sometimes with associated direct injury to the external anal sphincter. Fortunately, at the time of Alan's sudden death, I had established an anorectal physiology lab, also equipped for neurophysiological studies, in a modified corridor by a little-used back door at St Mark's Hospital, with the enthusiastic support of the surgical staff. Almost immediately, a stream of gifted Research Fellows appeared, many directed to my lab by my colleagues at St Marks. Some of these Research Fellows arrived with funding from their own countries and, consequently, I was largely spared the drudgery of repeatedly applying for research



Figure 3. At Stratford on Avon before the theatre performance

funds, although we were particularly grateful for funding from the Royal College of Surgeons, and from St Mark's itself. We provided an anorectal manometric service as well as conducting our new electrophysiological measurements, that included EMG and soon also pudendal nerve terminal motor latencies, using a unique technique.

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

We had the appropriate investigative tools. No-one had previously applied neurophysiological techniques in association with manometry and radiology to the problem. Furthermore, we started with pathological information from our biopsy studies. The results were pleasingly consistent, on a scale of severity linked to different functional states, suggesting an underlying unitary process.

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

Yes: I would have sought much earlier to expand the work more widely into stress urinary incontinence. However, we found that the world of urology was, to an outsider, somewhat inward-looking and that it was entirely understandably firmly linked to its established investigative and surgical procedures, in which there were major financial and training investments. Change associated with our new and unconventional ideas was therefore difficult to integrate with conventional practice.

•Can you quote the main publications that reflect your achievements?

Injury to innervation of pelvic floor sphincter musculature in childbirth. Snooks SJ, Swash M, Setchell M and Henry MM. *Lancet* 1984; 2: 546-50.

Damage to the innervation of the voluntary anal and periurethral sphincter musculature in incontinence. Snooks SJ, Barnes PRH and Swash M. *J Neurol Neurosurg Psychiatr* 1984; 47: 1269-73.

Perineal nerve damage in genuine stress urinary incontinence: an electrophysiological study. Snooks SJ, Badenoch D, Tiptaft R and Swash M. *Br J Urol* 1985; 57: 422-426.

Faecal incontinence due to external anal sphincter division in childbirth is associated with damage to the innervation of the pelvic floor musculature: a double pathology. Snooks SJ, Henry MM and Swash M. *Br J Obstet Gynaecol* 1985; 92: 824-8.

A unifying concept of pelvic floor disorders and incontinence. Swash M, Snooks SJ, Henry MM. *J R Soc Med* 1985; 78: 906-11.

Effects of aging on the anorectal sphincters and their innervation. Laurberg S, Swash M. *Dis Colon Rectum* 1989; 32: 737-42.

Effect of vaginal delivery on the pelvic floor: a five-year follow-up. Snooks SJ, Swash M, Mathers SE, Henry MM. *Br J Surg* 1990; 77: 1358-60.

Fowler's syndrome: what it is and what it's not. Swash M, Petros P. *Pelviperineology* 2020; 39: 105-12.

The Integral Theory: a musculo-elastic theory of pelvic floor function and dysfunction. Papa Petros, P and Swash M. In GA Santoro, P Wiczerek, C Bartram (Eds). Pelvic Floor Disorders: imaging and a multidisciplinary approach to management. London, Springer-Verlag 2010; 17-24 (and 2nd edition 2020).

And other chapters in many books on pelvic floor disorders. There are many other papers on neurological topics, especially ALS and neuromuscular diseases.

- **Comments for new physicians interested in the field**

First, do not imagine that research in this area of medicine is complete. There is much yet to do.

Second, do not be discouraged by the sheer number of previous papers! Many of these simply repeat earlier research – they are “me too” papers.

Third, start with a blank mind: try to develop a concept of your own, however minor. Test it and see where it leads.

Fourth, then consider how your idea fits into what is known or accepted as known, in the literature. Sometimes, established ideas turn out to be incorrect.

Fifth, be very careful to do no harm in your studies.