

# Vesica



Sydney Urodynamic Centres newsletter for medical practitioners

## PRACTICE POINT – Female Urinary Incontinence Devices



Following our last edition *Vesica* (Volume 13, October 2006), featuring an article on vaginal and urethral devices for female urinary incontinence, *Vesica* is pleased to advise that the 'Contiform' vaginal device has now been approved by the Therapeutic Goods Administration.

This device is available in four sizes, and is available to order online – [www.contiform.com](http://www.contiform.com). In order to determine the correct size, a New User Pack is available complete with three sizes, storage compact, instructions and DVD tutorial.

It must of course be remembered, that correct diagnosis of the cause of urinary incontinence is imperative in order to identify the appropriate treatment. Devices such as 'Contiform' are generally only useful in assisting the problems of wetness and leakage in females resulting from Urodynamic Stress Incontinence. This can only be determined after a urodynamic study has been performed.

## Conference Season 2006: IUGA, Athens, Sept 4- 9 & ICS, Christchurch Nov 27- Dec 1

by HP Dietz

### HP Dietz

With the ICS meeting so late and so far away from Europe and North America, the IUGA in Athens was bound to be an interesting event. Meetings of the International Urogynecological Association have become much more attractive in recent years, definitely for Urogynaecologists and Physiotherapists, but even to Urologists. The IUGA in 2006 was another confirmation of this trend, and the setting in one of the most attractive European cities, rejuvenated for the 2004 Olympics, didn't hurt either. The ICS in Christchurch, in contrast, was dominated by the increasingly bitter internal conflict that has dominated the Society over the last year. At both meetings true innovations were few and far between this year, but some developments are of direct clinical relevance:

### Basic Science

As usual, the ICS in Christchurch was much stronger on basic science, although most of it was irrelevant to daily clinical practice. In an interesting paper from Pittsburgh, Neil Resnick's group showed abnormal function of cortical control pathways in patients with detrusor overactivity, pointing towards a central rather than a peripheral abnormality. This may have consequences for treatment, since the focus of pharmacological therapy currently is firmly on the bladder rather than the CNS.

### Diagnostics

Imaging continues to be the focus of new diagnostic developments, with magnetic resonance papers from Ann Arbor and Prague, and ultrasound papers from Norway, Sweden, Australia, the Czech republic and the US. The author's group contributed several presentations, showing that trauma to the pelvic floor muscle is common in parous women and associated with age at first delivery and vaginal operative delivery. Avulsion of muscle from the pelvic sidewall occurs during crowning and seems to be almost exclusively due to the first vaginal delivery. Vaginal operative delivery virtually doubles the risk, and every year of delayed childbearing adds over 10% in risk, leading to a tripling of the risk of avulsion injury over a woman's reproductive lifespan. This has significant public health implications, as the age at first vaginal delivery has risen by about 6-8 years over the last generation. The relevance of these findings was confirmed by a paper from John DeLancey's group, showing that levator avulsion is associated with a relative risk of prolapse of over 6. The width and depth of such defects can be determined by tomographic ultrasound, and both parameters are associated not just with objective bladder and uterine prolapse, but even more so with symptomatic prolapse.

As regards obstetric anal sphincter injury, the most important question remains as to how women after sphincter injury should be counselled regarding future deliveries. In a very interesting series from Abdul

Sultan's unit, 31 women were reviewed 3 months after a second vaginal delivery, with only one new defect detected. The authors concluded that, provided sphincter function is not greatly abnormal after repair, there is no contraindication to future vaginal delivery.

## Pharmacological treatment

Not surprisingly, the industry-driven push to popularise the pharmacological treatment of stress urinary incontinence was very much in evidence in Athens. An entire session consisted of nothing much except industry-controlled Duloxetine trials, and of course such trials find that the drug is safe and effective. We should try and assess a new drug by looking at studies that were funded independently, and three such papers given in Athens showed that the total impact of Duloxetine on the problem of stress incontinence is likely to be less than 1% for a condition for which we have simple, easy and effective surgical treatments available.

As regards newer anticholinergics- there was the usual show of 'my drug is better than your drug' papers given by people in the pay of the respective manufacturer. Solifenacin may be a reasonable alternative to Oxybutynin and Tolterodine, in case one is prepared to risk side effects that haven't yet surfaced in industry-sponsored trials, such as happened in the case of Vioxx. If one can afford the cost of non-PBS drugs, oral Tolterodine or transdermal Oxybutynin are probably the options least likely to cause anticholinergic side effects at present. The data on Darifenacin doesn't look much different, but is of less concern here in Australia since it is not yet available locally.

Unfortunately, there was little new data on the efficacy of Botox for OAB symptoms, and a systematic review concluded that, as most data has been obtained in neuropathic bladders, the generalisability of these results to women with idiopathic detrusor overactivity is still uncertain.

## Physiotherapy and other conservative treatment options

From Bob Freeman's unit in Plymouth we heard a rather depressing long term follow-up of an RCT of antenatal pelvic floor muscle exercises, suggesting that after 8 years there is no benefit of intervention versus Placebo. The 'painful bladder syndrome', another creature of the ICS Standardisation Committee, was the subject of several papers, the most

interesting showing a link between this 'syndrome' and hypersensitivity to a number of environmental chemicals.

## Surgery

Unfortunately, the urgently awaited data on short- and medium- term outcomes of mesh- augmented prolapse surgery with transobturator and pararectal anchoring is still very thin on the ground. Michel Cosson from France presented a series of 89 total Prolift patients, showing about 20% recurrence to stage 2 or 3, and 10% erosion. Hysterectomy seems to be a risk factor. In fact, erosion rates are so high when mesh surgery is combined with hysterectomy, probably due to devascularization of the vault, that some experts suggest avoiding mesh at the time of hysterectomy.

Our own group contributed a small paper on 4D US follow-up of almost 50 Perigee cases, demonstrating that the mesh is easily identified by ultrasound (see Figure 1), and that imaging may at times document unexpected causes of surgical failure, such as dislodgment of the cranial mesh anchoring arms.

At both IUGA and ICS, several authors presented work confirming the safety and efficacy of transobturator slings, with reassuring safety data from a large French registry containing almost 1000 patients. In general, cystoscopy is omitted with transobturator surgery, making the technique faster than transretzius slings. The only potential issue seems to be groin pain after TVT-O which was found to be rather common at 16% in a Finnish study. Three multicentre RCTs from Italy and France showed no major differences between transretzius and transobturator tapes except for less urgency and a less voiding dysfunction in the transobturator groups. A similar RCT comparing TVT and Monarc, performed in Queensland and presented by Chris Barry, now of Adelaide, showed comparable results. It is likely that transobturator slings are less obstructive than transretzius slings, resulting in less voiding problems but a slightly higher rate of failure in patients with low- pressure urethras. In comparison, the 5 year data on the Ward/ Hilton RCT of TVT versus Burch from Newcastle, UK, with the TVT still faring very well against the (now virtually obsolete) colposuspension procedure, felt like a blast from the past...

# URETHRAL PRESSURE MEASUREMENTS

by Andrew Korda

## Introduction

Urethral pressure measurements have been used for many years to assess the closure function of the urethra.

It is well understood that as long as the intra-urethral pressure exceeds the proximal fluid pressure, urine cannot leak and this is an important mechanism for the control of continence.

## Types of urethral pressure measurements

Urethral pressure may be measured with the subject at rest or during coughing or straining and during the process of voiding.

Measurements can be made at one point in the urethra over a period of time or as a urethral pressure profile.

Urethral pressure profilometry is the measurement of the intraluminal pressure along the length of the urethra. A mechanical puller which records it on a chart or a digital recorder allows measurement of the anatomical distances in the profile.

The simultaneous recording of both intra-urethral and intra-vesical pressure enables the calculation of the urethral closure pressure.

There are three methods of urethral pressure profile measurements. The first is using a perfused catheter with side holes, the second is using

a catheter-tip transducer and the third is using a balloon catheter.

Reliability of measurements depends on the accuracy and reproducibility of the test results. Unfortunately urethral pressure measurements are subject to a certain amount of inter and intra individual variation. This variation is due to both methodological and biological factors.

The variation due to instrumental factors is generally low, of the order of a few percent. Measurements in vivo, however, are subject to significant variation because of the various types of catheters used, the rate of perfusion, the rate of pulling and the posture of the patient.

Additionally, urethral pressure at a given point in the urethra is not constant. It is subject to significant physiological changes due to changes in the activity of the urethral musculature. Moreover, the reliability of measurements depends on the quality of the urodynamic practice, the routine used and the expertise of the person involved.

Furthermore, the introduction of the urethral pressure-measuring device can result in a systematic artefact due to urethral muscle spasm. Consequently the accuracy of urethral pressure is difficult to establish.

### Clinical measurements and parameters

The Standardisation Committee of the International Continence Society (ICS) has defined the parameters in common use. The static parameters relate to the permanently acting closure forces along the urethra.

Since the results of urethral pressure measurements are so highly dependent on the technique used, and the circumstances of measurement, it is recommended that each laboratory should draw up its own references.

Maximum urethral pressure and maximum urethral closure pressure<sup>1</sup> declines as a function of age and are reduced in women with stress incontinence. Unfortunately the overlap between the values in continent and incontinent women is great and it is impossible to define a cut off level that allows differentiation between women with or without stress incontinence.

Standard static profile parameters correlate poorly with the severity of urodynamic stress incontinence.

Successful surgical treatment of urodynamic stress incontinence is not associated with significant changes in the resting urethral closure parameters.

A maximum urethral closure pressure value of less than 20 cm of water (low pressure urethra) has been considered predictive of poor outcome in conventional bladder suspension operations and has been the most popular single predictor of what is called intrinsic sphincter deficiency (ISD). With the use of mid urethral tape operations, low maximum urethral closure pressures are usually corrected.

### Measurements during coughing and voluntary contraction of the pelvic floor

Stress incontinence normally occurs in relation to an increase in abdominal pressure such as during coughing. Consequently it seems relevant to test the urethral closure function during coughing. Some researchers when measuring cough profiles claim it to be highly predictive of the diagnosis of urodynamic stress incontinence. The consensus however is that the reliability of these tests is poor.

Another concept, the pressure transmission ratio, has also been studied. This investigates the increased increment of urethral pressure during coughing as a percentage of the simultaneously recorded increment in bladder pressure. Studies have shown that this is also subject to marked variation and that the overlap between normal and stress incontinence values is so great that pressure transmission ratio is of limited value in predicting whether the urethral mechanism is competent or incompetent.

Leak point pressures, or the measurements of urethral pressure during valsalva or cough has been introduced as a quantifiable measure of urethral sphincter function. At the moment this test is not standardised. The test result depends on the size of the catheter and the volume of urine in the bladder. Although leak point pressures may be useful in quantifying urethral sphincter competence, the test cannot disclose the underlying pathophysiology and cannot differentiate between stress incontinence due to excessive mobility of the urethra and that due to ISD.

Urethral pressure measurements have also been used to assess the effect of pelvic floor contraction. Significant differences have been found between stress incontinent and healthy women. In women with urodynamic stress incontinence, the mean power generation during such contraction is reduced by approximately 50% along the urethra but the mean power generation during coughing is reduced by 25% in the mid urethra. Urethral pressure measurements during contraction may have potential in the investigation of pelvic floor function and in the assessment of therapy.

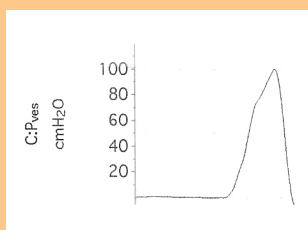


Figure A

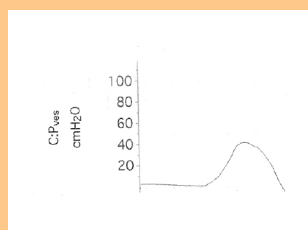


Figure B

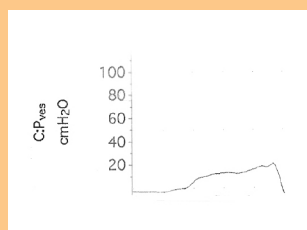


Figure C

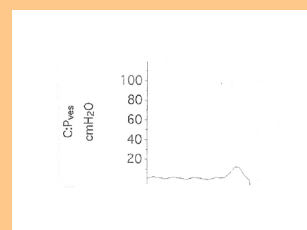


Figure D

Urethral pressure profilometry demonstrating urethral quality. The four curves show the degree of variation encountered. A and B are normal (although urodynamic stress incontinence may still be demonstrated in B), C is poor at 24 cm H<sub>2</sub>O, and D is very poor at 13 cm H<sub>2</sub>O, signifying intrinsic sphincter deficiency.

## Who are 'Sydney Urodynamic Centres'?

Sydney Urodynamic Centres has been providing the women of New South Wales and their doctors with a comprehensive urodynamic service for the past 20 years. They are able to scientifically assess female urinary incontinence and lower urinary tract dysfunction, provide an accurate diagnosis to the referring doctor and advise on clinical management.

The service is run by three urogynaecologists, trained and accredited in this sub-specialty by the Royal Australian and New Zealand College of Obstetricians and Gynaecologist (RANZCOG). These partners are assisted by a group of highly trained nurses who are adept at making the experience more pleasant for the women. There are seven centres around Sydney where studies can be performed in order to facilitate easy access to the service for most women.

### These locations are:

#### SYDNEY

Sydney Urodynamic Centre  
Level 3, 139 Macquarie Street, Sydney

#### CHATSWOOD

North Shore Urodynamic Centre  
Suite 70, Chatswood Village  
47 Neridah Street, Chatswood

#### CAMPERDOWN

Camperdown Urodynamic Centre  
Suite 404, RPAH Medical Centre  
100 Carillon Avenue, Newtown

#### CONCORD

Concord Urodynamic Centre  
Level 2, Concord Hospital Medical Centre  
209 Hospital Road, Concord West

#### BANKSTOWN

Bankstown Urodynamic Centre  
Suite 2, Level 1, 56 Kitchener Parade, Bankstown

#### LIVERPOOL

Liverpool Urodynamic Centre  
Suite 20, 2nd Floor, 17 Moore Street, Liverpool

#### PENRITH

Penrith Urodynamic Centre  
Nepean Private Specialist Centre  
Suite 1, 1A Barber Avenue, Penrith

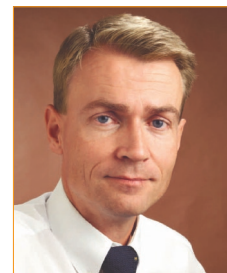
**For all appointments call (02) 9790 6969**

### Associate Professor

#### Hans Peter Dietz

MD PhD FRANZCOG DDU CU

Associate Professor Dietz graduated from Heidelberg University, Germany, in 1988. After first emigrating to New Zealand, he arrived in Australia in 1997 and completed his FRANZCOG training in 1998. Between 1999 and 2002, Associate Professor Dietz undertook urogynaecology subspecialty training in Sydney, in addition to presenting a PhD thesis at the University of NSW. His major research interests include the interaction between pelvic floor biomechanics and childbirth, pelvic floor imaging, as well as the effects of anti-incontinence surgery on anatomy and voiding function. Today, he is employed as Associate Professor of the Obstetrics and Gynaecology Unit at the Nepean Campus of the University of Sydney, as well as a specialist in urogynaecology at the Sydney Urodynamic Centres.



### Associate Professor

#### Christopher Benness

MBBS MD FRCOG FRANZCOG CU

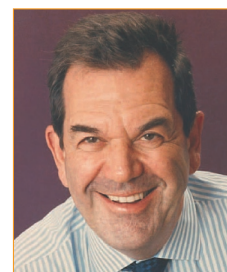
Following graduation from Sydney University, Associate Professor Benness did his specialty and sub-specialty training in both Sydney and London. An accredited sub-specialist in urogynaecology with the RANZCOG, he is a trainer and examiner in this field. He is a senior specialist in gynaecology at the Royal Prince Alfred Hospital, where he is also Head of the Department of Urogynaecology and Chairman of the Medical Board. He is active in both teaching and research, and is a Clinical Associate Professor at the University of Sydney. His main research interests are improving surgical procedures for stress incontinence and prolapse. Married to a GP, he has three young sons.



### Dr Andrew Korda

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Following graduation from the University of Sydney, Dr Korda did his specialty training at the Royal Prince Alfred Hospital in Sydney, with further training in Oxford and New York. He is an accredited sub-specialist in urogynaecology, pelvic floor disorders, and reconstructive pelvic surgery. Dr Korda is also a senior specialist in gynaecology at the Royal Prince Alfred Hospital, where he is Chairman of the Pelvic Floor Unit. He is a clinical lecturer in gynaecology at the University of Sydney, and is involved in both teaching and research. Dr Korda was Chief Examiner in Urogynaecology and past Chairman of the Urogynaecology Sub-specialty Committee of the RANZCOG. He is also trustee of the Australian Bladder Foundation.



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