

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
Basement, 135 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, 56 Kitchener Parade, Bankstown

LIVERPOOL

Liverpool Urodynamic Centre
Suite 12, Goulburn Street Medical Centre
41-43 Goulburn Street, Liverpool

PENRITH

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

For all appointments call (02) 9790 6969

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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 FROG FRANZCOG CU

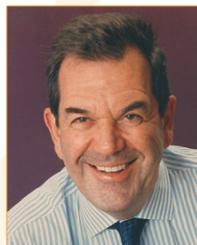
Following graduation from Sydney University, Associate Professor Benness did his specialty and sub-specialty training in both Sydney and London. An accredited sub-specialist in urogynaecology with the RANZCOG, he is a trainer and examiner in this field. He is a senior specialist in gynaecology at the 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

MA MHL MB FRCOG FRANZCOG CU
FACLM

Following graduation from the University of Sydney, Dr Korda did his speciality 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.



Pelvic floor trauma in childbirth: myth or reality?

The continuing trend towards elective Caesarean section is partly due to a growing awareness of the potential negative effects of vaginal childbirth, whether attempted or successful. Patients and their doctors increasingly opt for elective delivery to prevent urinary and faecal incontinence or prolapse, all of which have been associated with parity in epidemiological studies.

The issue of elective Caesarean section is often fiercely debated. Proponents claim there is overwhelming evidence pointing to the adverse effects of vaginal childbirth and that obstetricians ought to obtain informed consent prior to delivery. In contrast to this, opponents feel that pelvic floor trauma in childbirth is merely a myth.

So, is delivery-related pelvic floor damage myth or reality? If it is real, does it matter?

Adverse effects on nerve structure and function

Allen et al. used concentric needle electromyography (CN-EMG) to investigate the effect of childbirth. Denervation was observed in the levator ani of 80% of women after vaginal delivery and those who endured longer second stage labour and higher birth weights were more prone to nerve damage. Caesarean section was found to be protective however only in women who opted for surgery prior to labour.

Snooks et al. also focussed on the effect of childbirth on the external anal sphincter using pudendal nerve terminal motor latencies (PNTML).

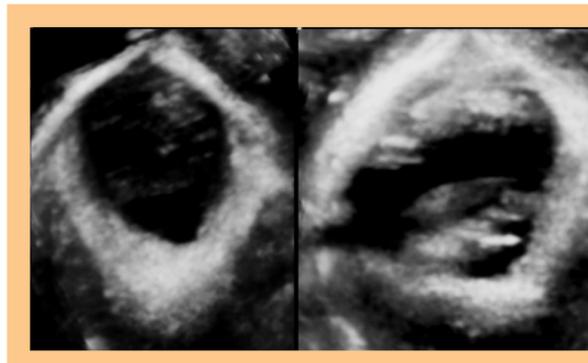


Figure 1: Rendered volume of the puborectalis (axial plane) at 38-weeks (left) and three months post-partum (right), with a right-sided avulsion injury clearly visible three months after a normal vaginal delivery. Such defects are generally palpable on vaginal examination. This particular patient complained of significant de novo stress incontinence post-partum.

This study showed that PNTML increased after childbirth, indicating pudendal nerve damage. Forceps deliveries, length of second stage labour and birth weight were the main predictors of such changes.

Given these two studies, there seems little doubt that vaginal childbirth can have negative effects on the pudendal nerve and its branches. These are mainly associated with the length of second stage labour rather than the mode of delivery. This implies that even an attempted vaginal delivery that ends in an emergency Caesarean section after full dilatation can do damage.

Adverse effects on pelvic floor muscle structure and function

Hoyle et al. have shown a significant decrease in levator muscle volume and an increase in levator hiatus width on MRI between normal and stress incontinent women, as well as women with prolapse. Furthermore, other authors have blamed abnormalities in MR density and structure of the levator ani on childbirth.

3D ultrasound has also revealed that childbirth clearly has an effect on both the dimensions and function of the hiatus. In addition, up to one third of women suffer a detachment of the levator muscle from the arcus tendineus [see Figure 1], which appears to be more likely in older women. These observations may have significant public health implications in that the age of primiparae has risen in Western societies by about 10 years over the last two generations.

Findings on clinical examination support the results of imaging studies. Overall, a 25-35% reduction in levator function postpartum is to be expected.

Adverse effects on pelvic organ support

A number of authors have demonstrated increased pelvic organ mobility in parous women, whilst others have observed the effect of labour and delivery. Pre-labour Caesarean section and Caesarean section in first stage labour result in very little change in pelvic organ support as opposed to all forms of vaginal delivery. Risk factors are operative vaginal delivery, prolonged second stage labour and high birth weight.

Any delivery-related changes occur against the background of marked variations in pelvic organ support in young nulliparous women. As the most significant changes are observed in those with the stiffest structures antenatally, the effect of childbirth may be a partial equalisation of those individual differences. A woman presenting with

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... continued from page 1

a second degree cystocele at 55 years of age may have had this cystocele all her life, or she may have acquired it due to a traumatic delivery. We are currently unable to distinguish one from the other.

Clinical significance

In terms of providing an answer to the question of whether changes to the pelvic floor structure and function matter, epidemiological studies are often equivocal as the aetiology of prolapse and incontinence is clearly multifactorial. Further to this, the importance of a given aetiological factor is also likely to shift over a woman's lifetime. Incidence and prevalence of pelvic floor trauma may also vary markedly from country to country and between age cohorts.

The situation regarding prolapse seems least controversial as vaginal childbirth is consistently found to be a strong risk factor. In terms of stress incontinence, several epidemiological studies have shown that Caesarean section provides only partial protection and even this seems to fade with time. Congenital factors and changes related to ageing may increasingly outweigh the effects of traumatic childbirth as

women grow older. It is irrelevant whether an 86-year-old nursing home inpatient with senile dementia has had her levator or endopelvic fascia disrupted in labour. Her risk of urinary incontinence will be rather high regardless and currently there is next to nothing we can do about that.

Conclusion

Delivery-related pelvic floor trauma is a reality, not a myth. It is a different question however, as to whether such trauma is common and/or severe enough to require a change in clinical practice. Currently, we cannot be sure whether avoidance of pelvic floor trauma is worth the risk, cost and effort of performing an elective Caesarean section. In order to make prevention feasible, we may have to learn to identify those most at risk of trauma. Only randomised controlled trials will eventually provide meaningful information to women and their healthcare providers.

* References are available upon request from the author, Associate Professor Hans Peter Dietz.

Sex and the urinary tract

An association between sexual intercourse and recurrent urinary tract infection (UTI) has been well known for some time. This is reflected in the term 'honeymoon cystitis'. Both men and women can develop cystitis after coitus however in women, the incidence is significantly greater. The following highlights reasons for this.

Distinguishing UTIs from other infections

Cystitis needs to be distinguished from other lower urinary tract dysfunctions such as urethritis, 'urethral syndrome' and interstitial cystitis. This is sometimes difficult as cystitis can only be confirmed when a pure growth of an organism is detected in a concentration of greater than 100,000 per millilitres in a midstream urine specimen.

In clinical practice, women with cystitis present with dysuria and urinary frequency. In more severe cases there is fever, haematuria and lower abdominal pain. Loin pain and tenderness might indicate pyelonephritis.

Primary causes of UTIs

There are several factors associated with an increased risk of UTI. These are as follows:

- High frequency of vaginal intercourse
- Partner change is important in two ways, intercourse may be more frequent during the 'honeymoon' period and there is exposure to new genital pathogens
- Birth control methods such as diaphragm and condoms, especially with the addition of spermicidal agents
- Previous UTI
- Black race in USA.

Escherichia coli, which cause UTIs in women, originate usually from the bowel flora. A crucial first step is for the bacteria to colonise the vagina, particularly the periurethral area. During subsequent vaginal intercourse, trauma and mechanical distortion of the urethra assist in the ascent of the organisms into the bladder.

Abnormal vaginal colonisation may be due to several factors such as:

- Virulence of the pathogens
- Host susceptibility

- Quality of the endogenous lactobacillus flora
- Disturbance to the vaginal flora.

Virulence factors such as possession of adherence mechanisms are well recognised for E coli. Host susceptibility increases with ABO blood group and non-secretor status. Furthermore, the control of vaginal microflora is dependent on pH levels, hormonal status and the adherence of enterobacteria to the epithelium. Lactobacilli help to maintain the vaginal pH below 4.5.

Other factors that disturb normal flora include broad spectrum antibiotics, sexual intercourse and the use of spermicides. These create conditions in the vagina that favour colonisation with pathogens. Additionally, increased levels of oestrogens during the menstrual cycle favour the adherence of E coli to the vaginal epithelium. Incidence of this rises with increasing pH however cranberry juice is able to reduce the adherence of E coli by 80%. This is partly explained by the presence of fructose but also a specific polymer in cranberry juice interferes with binding.

Diagnosis

A urine test such as Nephur shows the presence of leucocyte esterase (LE), indicating the presence of polymorphonuclear cells. This is sensitive but not specific for bacteruria, as it is often positive in women with urethritis. The presence of nitrite is sensitive and specific for detecting E coli bacteriuria.

If the symptoms are suggestive of a UTI and either the LE or nitrite tests are positive, treatment should be prescribed for presumptive UTI, whilst microscopy and culture are awaited. The choice of antibiotics depends on local resistance patterns and previous exposure of the patient. In general, a three-day course of an antibiotic which does not inhibit lactobacilli is preferable. This includes trimethoprim, nitrofurantoin and quinolones.

Management

Post-menopausal women are more vulnerable to UTI, which affects more than 10% of women over the age of 60. This is due to atrophic

changes in the vaginal fluid and the rise in pH, decreased lactobacillus concentration and increased colonisation with faecal flora. Oestrogen therapy can reverse these changes.

The use of intravaginal lactobacilli results in reduction of the incidence of UTIs. Women with recurrent symptoms should be encouraged to void soon after intercourse. The rationale is to flush out the urethra and empty the bladder. Women should also be encouraged to wipe from 'front to back' after defaecation to reduce the exposure of the vagina to faecal flora. Furthermore, regular drinking of cranberry juice is associated with a reduced risk of UTI.

Antibiotic therapy

Although many broad spectrum antibiotics are effective against E coli, those that have low activity against lactobacilli are favoured as they are

least likely to disturb the vaginal microflora. Three-day courses of co-trimoxazole, nalidixic acid or nitrofurantoin or trimethoprim-sulphamethoxazole have been found to be useful for symptomatic infections.

For those women who have recurrent UTIs, daily low-dose antibiotic therapy or post-coital low-dose antibiotic therapy are equally effective. If intercourse is relatively infrequent, post-coital treatment may be preferred. If coitus occurs more than four times per week, daily treatment may be simpler. The duration of such treatment is not known but it is reasonable to prescribe treatment for six months in the first instance.

1. Hay P "Sex and recurrent urinary tract infection" in Stanton SL Dwyer PL (eds) Urinary Tract Infection in the Female (Martin Dunitz: London: 2000) 184-195.

Workshop highlights: Minimally invasive surgery for urinary incontinence

Overview

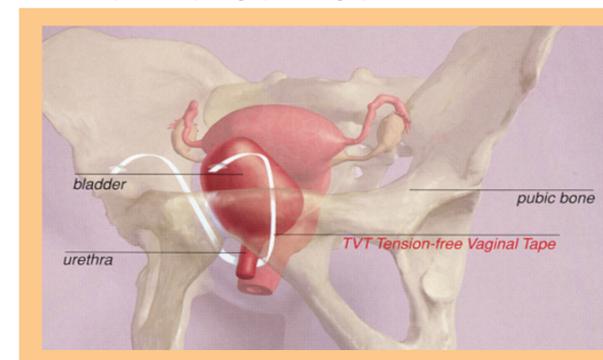
A workshop was recently held at Royal Prince Alfred Hospital to train gynaecologists in the new minimally invasive techniques for treating female urinary stress incontinence. Attended by specialists from all over Australia and New Zealand, the workshop looked at the many surgical options for managing stress incontinence before concentrating on the minimally invasive mid-urethral sling procedures which are now the new 'gold standard'.

Developed in Scandinavia and introduced to Australia less than 10 years ago, the mid-urethral sling procedures are rapidly becoming the most frequently performed operations for urinary stress incontinence around the world. This is because of their proven efficacy, short hospitalisation, low morbidity and rapid return to work.

Prevalence of urinary stress incontinence in Australia

Professor Gil Burton reminded workshop participants of the high prevalence of urinary stress incontinence in women, with most studies indicating 10% of women suffer from significant urinary incontinence, which affects their quality of life. There are a number of different causes of female urinary incontinence and not all require surgical management but may be significantly helped by physiotherapy or medication.

Urodynamic studies may be required to elucidate the cause in individual women however urodynamic stress incontinence is the most common cause of urinary incontinence in pre-menopausal women and is often only cured by surgery. The high prevalence of this condition



Schematic diagram of TVT sling in position

translates to over 150,000 women in Australia having urinary stress incontinence severe enough to consider surgical management. Therefore, the advent of effective surgery which allows rapid return to normal activities is a major advance in gynaecology and of great benefit for the many women with this demoralising problem.

Effectiveness of minimally invasive sling procedures

These procedures for urinary incontinence involve the placement of a polypropylene mesh sling under the mid urethra with minimal tension. The mesh is self-retaining and has been demonstrated to be of equal efficacy to the more major colposuspension procedure (the previous gold standard operation). Around an 85-90% cure rate is expected when performed as a primary procedure. Only a short hospital stay is required and sometimes day stay surgery is possible.

During the workshop, Professors Benness and Burton spoke on two of the commonly used slings. One is the TVT (Gynecare) procedure, which traverses the retropubic space from a vaginal approach, while the other is the SPARC sling (AMS), which has the alternative suprapubic approach. Efficacy appears similar at this stage for both procedures and the learning curves are short for both.

Complications

Dr Andrew Korda addressed the issue of complications following the minimally invasive sling procedures. Serious complications are very infrequent but include vascular or bowel injuries. Mild voiding dysfunction occurs in 7% of women which is less than after procedures such as the Burch Colposuspension. Bladder perforation is not infrequent but is of little concern if noted at the time and the trocar resited. Tape erosion may occur, however it is uncommon with the modern macroporous, monofilament meshes used today. As vascular and bowel complications can be serious (though rare), the trans-obturator approach is being assessed by many units. This technique completely avoids the retropubic space and should be safer without hopefully decreasing efficacy.

Conclusion

The workshop was successful in training new gynaecologists to provide these very patient-friendly procedures for curing urinary stress incontinence. Ongoing preceptorships are being arranged to consolidate these doctors' skills.