British Journal of Urology (1979), 51, 419-426

Abstracts of the Proceedings of the Urological Society of Australasia 32nd Annual General Meeting, Melbourne, Australia, 1979

Bladder Instability: Urology's Largest Problem

By J. C. Smith

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More extensive use of the cystometrogram has confirmed that the phenonomen of bladder instability is responsible for most cases of urgency and urge incontinence of urine. Over the past 7 years the development in Oxford of the technique of prolonged bladder distension under epidural anaesthesia has proved an effective way of controlling the symptoms and of producing objective change in the cystometrogram.

The major complication has been bladder rupture which occurred in about 5% of those patients for whom prolonged bladder distension was performed for instability. Bladder rupture was confirmed by cystometrogram and treated by catheter drainage and antibiotics. Surgical exploration was not necessary for this complication in any case.

Results in those patients who sustained bladder rupture compare favourably with those in whom no rupture occurred.

The Hydrodynamics of Obstruction

By F. Brantley Scott

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In basic hydrodynamic terms the flow rate along a tube is a product of the velocity by area. Since the velocity of the urinary stream depends upon pressure, an increase in pressure will increase flow, but also an increase in area of the conduit will increase flow. Increasing the area is far more effective in improving flow than by increasing pressure. For example, a 50% increase in the diameter of a circular meatus results in a 100% increase in flow with a constant pressure, but with a constant diameter a 500% increase in pressure is required to bring about a 100% increase in flow. This becomes more significant with the realisation that the detrusor is usually incapable of producing more than a 50% increase in pressure in response to obstruction.

Flow Study Evaluation of Urethral Obstruction

By I. N. Nunn

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The use of the mictiograph as an objective measurement in the assessment of urethral obstruction was discussed.

In addition to a maximum voiding rate an assessment of the whole curve, including the rate of rise and fall, the time taken to reach a maximum voiding time, curve shape and voided volume, is most important.

Fifty consecutive patients with and without obstruction were reviewed. Twenty-five had pre-treatment and post-treatment curves; 16 had treatment deferred and in 9 no post-operative curves were possible.

Of the 23 treated for obstruction, 21 had a slow rise greater than 5 s, 23 had a slow variable fall and excessive bulbocavernosus squirts. All had a maximum flow rate of less than 15 ml/s (average 5 ml/s) and 22 had a voiding time greater than 30 s (average 79 s).

In the post-operative curves those with a good clinical result (21) had a flow rate greater than 15 ml/s (average 21), 2 had poor results and because of a urethral stricture the other still had symptoms although the curve had reverted to normal.

In all but 3 patients the voiding time reverted to less than 30 s (average 20 s).

Assuming an adequate voided volume (greater than 100 ml), a flow rate of less than 15 ml/s is indicative of obstruction and a voiding time of more than 30 s is abnormal.

This simple non-invasive test can be most helpful in deciding on management in the difficult borderline case.

An Experimental Comparison Between the Actions of Propantheline and Imipramine

By A. G. S. Tulloch and K. E. Creed

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Adult female dogs were used as the experimental model, The pelvic nerve was stimulated electrically while the rise in bladder pressure was recorded by a catheter in the bladder. The submandibular duct was cannulated

and the chorda tympani was stimulated electrically where the fibres ran with the lingual nerve. The number of drops of saliva was recorded, while the chorda tympani was stimulated supramaximally for 10 s. Propantheline was given intravenously in increasing doses from one microgram to 300 micrograms per kilogram of body weight. After each injection of propantheline the pelvic and chorda tympani nerves were stimulated electrically for 10 s and the rise of bladder pressure and number of drops of saliva produced were recorded. On different dogs imipramine was given in doses varying from 1 to 3000 micrograms per kg. Following electrical stimulation the rise of bladder pressure and the amount of saliva secreted were recorded.

Propantheline almost completely blocked the salivary gland secretion when given at 10 micrograms per kg but produced only a 25% reduction of the intravesical pressure rise with pelvic nerve stimulation. At low doses of imipramine—up to 100 micrograms per kg—there was little change in the salivary production but a 15% fall in intravesical pressure rise. With increasing doses of imipramine there was a marked reduction in intravesical pressure response to pelvic nerve stimulation with very little further fall in salivary gland secretion.

The experimental data suggest that the action of imipramine is not anticholinergic and that imipramine is the more promising drug to use in bladder instability. Possibly better clinical results might be obtained if both drugs were used simultaneously as the pharmacological action of each drug seems different.

Testicular Vein Venography in the Infertile Male

By G. Reisner and K. W. Bell

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Patients in this study were the male partners of an infertile couple. They had either a low sperm count or low sperm motility. Patients with a clinically detectable varicocele were excluded, as were other patients with an obvious cause of male infertility. The aim of the study was to determine the incidence of reflux from the left renal vein into the left pampiniform plexus.

Forty-five patients were studied by left testicular or left renal vein catheterisation. Twenty-five patients had venous reflux demonstrated radiologically. One study was unsatisfactory because of abnormal venous anatomy. Nineteen patients had functioning valves in the left testicular vein(s) which prevented reflux. Collateral circulation between both sides of the scrotum was demonstrated in 2 instances. Communication between pelvic veins and the pampiniform plexus was observed in one case.

Of the twenty-five patients with venous reflux, 14 were subjected to high ligation of the left testicular vein(s). Follow-up of 3 months or more was available in 10 patients. In this group, 5 patients had improved either sperm count or motility or both. In 3 patients semen quality deteriorated, and in 2 cases no semen was obtainable in follow-up.

Two pregnancies were noted. Significant tubal or ovarian factors were noted in 9 of 14 wives of the patients who had undergone surgery.

In this study we sought to determine the presence of venous reflux which is not to be equated to the presence of a clinical varicocele. The results of surgery in patients with reflux are encouraging thus far and it may be that the results will be equivalent to those obtained after ligation of clinical varicocele.

In addition, it would seem that venography is a valuable method of confirming the clinical suspicion of a varicocele. It has the additional advantage of defining the venous anatomy for the surgeon, thus hopefully reducing the incidence of persistent post-operative varicocele or operative damage to the testicular artery.

A Cost Analysis Study of the Management of Lower Ureteric Calculi

By R. B. Brown

Alfred Hospital, Melbourne, Victoria

Two hundred and sixteen non-consecutive patients presenting with low ureteric calculi measuring between 0.1 and 0.7 cm were assessed to determine the natural history and complications of spontaneous expulsion, the results and complications of attempted endoscopic extraction, and the financial costs to the community of the different methods of management.

The survey was restricted to those patients with a solitary low ureteric calculus and an otherwise normal, although obstructed, system.

The average age was 46 years. The right ureter was involved in 117 and the left in 99 cases. Males presented 2.3 times more commonly than females.

Of the 100 patients with stones measuring 0.5 cm or less, followed for up to 12 months, the majority passed their stones spontaneously, without any detectable complications, within 3 months of presentation. However, of 16 patients with calculi measuring between 0.6 and 0.7 cm, also followed for up to 12 months, only 7 passed their calculus.

Of the 100 attempted endoscopic calculus extractions the operative success rate averaged 62% for those calculi measuring 0.5 cm or less but only 22% for calculi measuring 0.6 to 0.7 cm. The only 2 complications in the series came from the attempted extraction of large calculi.

The financial costs to the community of non-surgical management, successful endoscopic extraction, failed endoscopic extraction and subsequent spontaneous passage or open ureterolithotomy, were detailed. Spontaneous non-hospital expulsion provided the lowest cost, while failed endoscopic extraction of the larger calculus provided the highest cost.

These results and costs suggest that hospitalisation is best avoided in the case of smaller calculi, whilst larger calculi are best treated by immediate open ureterolithotomy.

Non-Seminomatous Testicular Tumours: Justification for an Aggressive Regime

By G. Hirst

Brisbane, Queensland

For the purpose of treatment, non-seminomatous testicular tumours are considered as early or advanced disease, early being Stage I and Stage II (non-bulky) and advanced Stage II (bulky) and Stage III.

In early stage disease, management is based on the total ablation of all involved retroperitoneal lymph nodes. This is best achieved by bilateral retroperitoneal lymph node dissection. However, a comparison of the results of surgery and radiotherapy showed no statistically significant difference between the 2 modalities, with 80% of patients being cured by either.

In advanced disease Einhorn, using a combination of Platinum, Bleomycin and Vinblastine, has reported the best results with 60% of patients having no evidence of disease at 2 years. A preliminary report of 43 patients from 3 Australian centres using an Einhorn-type regime shows a 77% complete remission rate and 56% of patients with no evidence of disease at 3 to 14 months. The overall drug-related death rate was 14%, although only 7% for the 29 patients who had no non-surgical treatment prior to chemotherapy. Fourteen patients previously treated by radiotherapy or other chemotherapeutic regimes had a 35% drug-related death rate.

Twenty per cent of patients treated for early stage disease will relapse and require chemotherapy. In order to minimise the drug-related death rate in this relapsing group, radiotherapy should not be used in early stage disease. The results also suggest that there is no place for adjuvant or sub-optimal chemotherapy.

Testicular Injury—Diagnosis and Management

By John S. Jose

Royal Adelaide Hospital, Adelaide, South Australia

Rupture of the testis is an uncommon occurrence, but is probably more common than recognised because of inaccurate diagnosis. The mobility of the testis within the scrotum and the strength of the tunica albuginea tend to protect it from rupture, but injury will occur if sufficient force presses the testis against the pubic bones.

Testicular injury may follow sporting and road accidents, direct blows and kicks and falls astride. Three types of injury may occur.

1. Rupture of the testis, with which is always associated a traumatic haematoma. The common lesion is a transverse rupture of the body of the testis, sparing the epididymis, and through this parenchyma is extruded.

   Surgical repair is frequently possible with conservation of the testis and its spermatogenic function, although following a gross injury and delayed surgical exploration (greater than 3 days after injury) orchiectomy is more likely.
2. Haematoma of the testis. A subcapsular or parenchymal haematoma forms beneath the intact tunica albuginea which may lead to pressure necrosis or testicular atrophy. Haematoma of the testis is not associated with significant haematocele, the testis remaining palpable and discrete, hard and acutely tender. At exploration it appears swollen, tense and blue in colour. Operative decompression will preserve function. Minor contusions of the testis, however, resolve without surgical intervention.
3. Traumatic haematocele is most commonly associated with an underlying rupture. The diagnosis of rupture cannot be made absolutely without surgical exploration, although ultrasound examination of an injured testis can demonstrate a concealed rupture, confirming the need for intervention.

Early operative exploration in all cases of major testicular injury and traumatic haematocele is recommended.

Transurethral Resection—Water and Safety

By David Gunter

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In a personal series of 1022 consecutive unselected prostatectomies, including all retentions, the mortality was 0.4%. A transurethral resection was used in 944 cases and a retropubic operation in 78 cases. There was no mortality in the open cases but a 0.54% mortality in the transurethral resection groups. No patient who died suffered from oliguria or septicaemia.

In an attempt to assess the safety of water as an irrigating fluid 136 transurethral resections were subject to a prospective study. The age of the patients ranged from 50 to 92 (average 66.4), while the weight of gland resected varied from 10 to 150 g (average 48.6 g); 10.7% of the resected glands were malignant.

In an attempt to minimise the volume of water entering the bloodstream, a stand holding the reservoir of irrigating fluid was attached to the table. The base of the reservoir was invariably 20 cm or less above the symphysis pubis. A drip chamber was incorporated in the tubing and constantly observed by the scrub nurse, who notified the surgeon if the water flow faltered, and the bladder was emptied immediately. An intravenous infusion of sodium chloride 3% 300 ml was given in all cases and a further 200 ml if the operation took longer than 60 min. Intravenous frusemide 10 to 20 mg was given at the end of operation in most cases.

Post-operatively, if urine output was less than 100 ml/h in any 2-h period, intravenous frusemide 10 mg was administered.

Urea, electrolytes and serum bilirubin were estimated pre-operatively, at the end of operation and on the first day post-operatively. At the end of operation the serum urea had risen by more than 3 mmol/l in 2.3%. On the day after operation the serum urea had risen by more than 3 mmol/l in 3%. The 2 highest estimations noted post-operatively a day later were 15.5 mmol/l and 24.6 mmol/l. However, the pre-operative levels were 10.8 mmol/l and 15.5 mmol/l respectively, serum electrolytes showed no significant change. The serum bilirubin pre-operatively averaged 15 mmol/l, at the end of the operation averaged 17.3 mmol/l, and 24 h later averaged 16.4 mmol/l. In no cases were any serious sequelae encountered from these changes. It is considered that water is a safe irrigating agent provided that the pressure used during resection is kept constant and below 20 cm, no undue bladder pressure is allowed to develop and an adequate diuresis is established post-operatively.

A Staged Incision for the "Difficult Kidney"

By Bruce S. Pearson

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The use of a staged incision allows excellent exposure of the kidney which is expected to present operative difficulty, *e.g.* carcinoma of the kidney or when difficulties are encountered during renal operations.

Stage I: is to excise the eleventh rib.
Stage II: is the forward and upward extension of the incision around the costal margin and towards the xiphisternum. This increases the access in the region of the renal pedicle and is preferable to extending the incision downwards away from the pedicle in the usual incision.
Stage III: is the backward and upward extension, excising a 3 cm length of the tenth rib. The diaphragm and pleura are freed and pushed upwards. This produces a "U"-shaped incision, increasing the access without entering the pleural cavity. An eleventh rib incision provides about 120 mm of transverse exposure. This "U" flap produces 220 mm exposure together with better exposure at the 2 ends of the incision.
Stage IV: the pleura and diaphragm may be incised to produce a thoraco-abdominal incision with wider exposure than the usual linear thoraco-abdominal incision. If Stage IV is not needed, post-operative morbidity is reduced by remaining extrapleural.

Post-operative progress and morbidity do not differ from the classical renal incisions.

Sir Douglas Shields' Vice-Regal Ureterolithotomy and its Sequelae

By Leonard J. T. Murphy

Melbourne, Victoria

The distinguished career of Sir Douglas Shields deserves mention at a urological meeting, not because he was a urologist, but because the cornerstone of his career was the remarkable operation of ureterolithotomy performed by him in 1910 upon the Countess of Dudley.

Shields graduated in 1898 and, after serving briefly in the South African War, he commenced practice in Seymour, 60 miles from Melbourne, where he built up a reputation as a surgeon. In 1905 he was appointed to the surgical staff of St Vincent's Hospital, where he became senior surgeon in 1908 and in the same year he was appointed consultant surgeon to the Governor-General.

In 1910 the Countess of Dudley, the Governor-General's Lady, required a ureterolithotomy, a recent operation for ureteric calculus by Hurry Fenwick of London having failed to relieve her symptoms. With the help of Hugh Devine and Thomas Dunhill, Shields successfully carried out a transperitoneal operation to remove the stone from under the broad ligament.

Two years later, on the advice of the grateful Countess, who thought his talents were wasted in Australia, he went to London and with the help of a gift of £30,000 he built his own hospital in Park Lane. He developed a very successful practice among the aristocracy and landed gentry, largely due to the influence of the Countess. His war service gained him a knighthood and other honours. Amongst his distinguished patients were Queen Mary and Sir Donald Bradman. The remarkable career of this former Victorian country practitioner ended in 1952.

Occupational Aspects of Bladder Cancer

By G. Gibson

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A man of 58 years had haematuria whilst on holiday in England. He was found to have a bladder tumour and underwent total cystectomy and ileal loop urinary diversion. As he gave a history of exposure to dyestuffs in the course of 16 years' employment in the textile industry, he was referred for the opinion of a urologist as to the relevance of his former occupation in the cause of the bladder tumour.

After Rehn recognised the first cases of bladder cancer of industrial origin in the German dyestuff industry in 1895, the principal carcinogenic agents were identified as Benzidine, 4 Amido-Di-Phenyl, and 1 and 2 Naphthylamine, all aromatic amines derived from coal tar. Case found an increased risk in dyestuff

manufacturing workers, which extended to users of the products in the rubber industry. Since then, other users of dyestuffs, including textile workers, have been identified as being exposed to carcinogenic amines. Although the manufacture of the carcinogenic amines was discontinued in England in 1950, 1 Naphthylamine and Benzidine have been used in textile printing, and related compounds, which are carcinogenic in animals, are used as intermediates in dye manufacture.

It was not possible to establish that any of the dyes or chemicals used by the patient were known carcinogens, and therefore it cannot be established with certainty that his bladder tumour was due to his occupation. Nevertheless, there is circumstantial evidence of carcinogeneity of related substances in animals.

Update on the AMS Inflatable Sphincter

By F. Brantley Scott

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Ideally on artificial sphincter should cause no periurethral fibrosis or pressure necrosis. It should have its occlusive pressure automatically controlled by the device itself and prevent stress incontinence. While being suitable for both male and female patients it should not interfere with sexual function and require minimal surgery and yet allow the release of a bladder pressure that is unphysiological. Voiding must be free and unobstructive and continence restored to a high percentage of patients, while at the same time catheterisation must present no difficulties.

Experience with the AMS inflatable sphincter models 721, 742 and 742 B and C was reviewed. The artificial sphincter AMS 742 B and C appear most suitable in satisfying all of the above requirements.

Implantation of a Penile Prosthesis in the Treatment of Impotence

By F. Brantley Scott,

Baylor College of Medicine and St Luke's Episcopal Hospital, Houston, Texas, USA

Three hundred and two patients with erectile impotence received implantation of an inflatable penile prosthesis between February 1973 and December 1978. Causes of the impotence included diabetes mellitus, peripheral vascular disease, radical surgery, trauma, Peyronie's disease and psychogenic factors.

The inflatable penile prosthesis, which can be implanted through an incision in the median raphe at the penoscrotal angle, has the advantages of providing flaccidity as well as rigidity, a normal or greater than normal rigidity with a normal or greater than normal girth. Subsequent cystoscopic procedures are not prevented and normal micturition occurs without post-operative urinary retention. Pressure necrosis was not encountered and the prothesis resulted in sexual satisfaction to both partners in over 95% of cases.

Nocturnal Penile Tumescence (N.P.T.) Monitoring in Penile Surgery

By Donald Moss

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All potent males have a number of penile erections during each night's sleep, in the absence of sleep disturbance or drug effects. These nocturnal erections can be documented using mercury-filled strain gauges so that changes in penile circumference are shown as upward deflections on a strip recorder. They are associated with REM cerebral activity and normal ranges for various age groups are now known. The majority of males have 3 to 4 erections each night with 20 to 30% of the total sleep time being accompanied by penile tumescence.

N.P.T. tracings in patients with organic impotence will show absent or reduced tumescence activity, with reduced total tumescence time and also a smaller increase in penile circumference. In contrast, patients with psychogenic impotence will have normal nocturnal erections even in the complete absence of daytime erections—this makes the investigation most helpful in assessing those impotent patients where completely normal erections are absent in any situation, *e.g.* with masturbation, different sexual partner, early morning erections. Needless and unhelpful hormonal or psychiatric treatment can then be avoided in those patients with organic impotence, and such documentation is essential before considering insertion of artificial erectile prostheses.

The technique is also valuable in the documentation of penile erectile function, such as for medicolegal assessment after ruptured urethra, and before certain penile operations. For example, Peyronie's disease is now known to be associated with impotence in some patients, making N.P.T. monitoring wise before embarking on surgery for this condition, especially considering the incidence of post-operative impotence in some cases.

The ability to monitor nocturnal erections also opens up a number of new areas for research into the characteristics of penile erections, in particular the incidence of impotence with various drugs.

Transuretero-Ureterostomy

By J. C. Smith

Department of Urology and Nuffield Institute of Medical Research, Oxford, England

Transuretero-ureterostomy is probably performed less often than it should be. It is a safe and simple method

of dealing with problems of the lower ureter particularly damaged by previous surgery. Fears that the opposite side may be affected by the operation have proved groundless, both in personal experience and in a questionnaire of British urological surgeons.

In a personal series of 16 cases there was one death in a patient with advanced carcinoma, the other results all being satisfactory. In 4 cases the operation was performed in a solitary kidney (or an effectively solitary kidney) and in these cases the result was particularly gratifying. In one case a ureter which had been defunctioned following nephrectomy for over 60 years provided a satisfactory result when the opposite ureter had to be removed for a neoplasm.

Place of the Free Full Thickness Skin Graft and Reconstructive Penile Surgery

By K. J. Neerhut

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The use of full thickness free skin grafting in penile reconstructive surgery, as described by Devine and Horton, was discussed.

In hypospadias, one-stage correction was achieved using preputial skin for a neo-urethra. The importance of careful tissue handling, avoidance of post-operative meatal crusting, the danger of apposing suture lines and the necessity of urinary diversion and urethral splinting were all stressed.

After outlining the indications for incision, excision, patch or tube grafts in the treatment of urethral stricture, the following features in technique were stressed as being important—adequate exposure of the normal urethra, correct size of the patch, the use of Methylene Blue to define any false passages and the value of voiding post-operative urethrography. The avoidance of surgery sooner than 6 weeks following urethral instrumentation was considered important.

The application of the tube graft to a case of carcinoma of the urethra associated with urethral stricture was described. Dermal grafting in selected cases of Peyronie's disease was also briefly mentioned.

It was concluded that the techniques of free grafting described by Devine and Horton were a significant advance in urethral and penile surgery.

The Treatment of Short Urethral Strictures

By J. C. Smith

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Excision urethroplasty in a series of 42 cases from Oxford and Sheffield has proved a satisfactory method of treatment. However, in 2 of the Oxford cases strictures recurred, 7 and 5 years after operation, and in the author's view endoscopic urethrotomy is now the preferred treatment for these short strictures.

Attention is drawn to strictures occurring in the widest part of the bulb about 1 cm distal to the external sphincter where occasionally a congenital diaphragmatic stricture may be present. Strictures at this site commonly occur after transurethral resection and are often misnamed membranous strictures. It seems probable that a minimal congenital narrowing at this point is accentuated by transurethral resection and becomes obstructive. These strictures may be difficult to visualise on the urethrogram as the stricture is so short but respond well to endoscopic division.

Chordee Deformity Without Hypospadias

By E. Durham Smith

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Chordee deformity without hypospadias is more common than generally recognised. Some deformities are very mild and represent a degree of penoscrotal skin fusion only; others are severe, with all layers of tissue being affected—urethral shortening, fibrous contraction of Buck's fascia and gross skin deficiency on the ventral side.

In the belief that urethral shortening ("congenital short urethra") was the main factor, previous surgical correction was based on division of the urethra in midshaft, with separation of the 2 ends, followed subsequently by penile repair of the urethral gap. Work by Devine and Horton, however, has shown that there is usually a considerable degree of elasticity or buckling in the urethra, and correction of the chordee can be achieved without dividing the urethra. The shortened deep tissues are excised and the preputial skin mobilised from the dorsum to make up the ventral skin deficiency.

A short film was shown to demonstrate the technique.

Mechanism of Anal Sphincter Stretch in the Reflex Bladder

By W. H. Donovan and A. I. Low

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Anal sphincter stretch voiding is a technique useful in some patients with reflex bladder lesions. It involves digital stretching of the anal sphincter followed by abdominal straining to produce voiding. It is carried out by the patient sitting on a commode, inserting one or two gloved fingers just through the external anal sphincter and stretching this muscle until it is felt to relax. Once this occurs, abdominal straining is used to produce voiding and is continued until the bladder is felt to be empty. It is most effective in patients whose spinal cord lesion is below the mid-thoracic level because it requires good power in the intrinsic muscles of the hand as well as adequate intra-abdominal musculature.

Kiviat and Donovan in both of their previous papers

showed that after initial increase in electrical activity, anal sphincter stretch sometimes produced definite relaxation in both sphincters. It was originally thought that this was accompanied by stimulation of the detrusor contraction but later studies by these workers (subsequently confirmed by ourselves) have shown that far from stimulating the detrusor, anal stretch abolishes its activity, thereby producing a simultaneous relaxation of not only the external urethral sphincter but also the detrusor. Micturition is then achieved by raising the intra-abdominal pressure while the outflow resistance is thus lowered. This technique is currently used by 6 of our patients, 2 of whom discovered the technique for themselves during routine manual removal of faeces. All but one are mid or low thoracic spinal cord lesions and 5 of the 6 are almost completely continent, only 1 requiring to wear a urinary collecting device.

Many paraplegics with upper motor neurone lesions of their bladder have detrusor-sphincteric dyssynergia and in a number of them this produces sufficient outflow obstruction to require division of their external urethral sphincter. The use of anal stretch overcomes the necessity for this operation, and often allows virtually complete continence, a situation which is particularly important in the female in whom no satisfactory collecting device is available; 3 of our 6 patients are females.

It is a technique which we believe should be tried in all patients with spinal lesions below the mid-thoracic level as it often enables very good urinary control, along with adequate emptying, and frequently obviates the need for sphincterotomy.

Closure of the Bladder Neck for Neurogenic Incontinence

By R. R. A. Syme

Austin Hospital, Melbourne, Victoria

Female patients with spinal cord injury are usually treated by means of an indwelling urethral catheter. In the long-term this commonly leads to marked urethral dilatation, so that despite larger catheters with bigger balloons, voiding around the catheter, incontinence, catheter expulsion and bed sores occur with distressing frequency.

This problem has been overcome by operation to close the bladder neck and drain the bladder via a suprapubic catheter. It is considered safer and simpler than an intestinal conduit diversion, which is the only alternative if the problem is severe enough.

Two techniques have been evolved. An abdominal technique divides the bladder neck from the urethra and mobilises the trigone from the vagina, allowing closure of the bladder neck in layers without tension. The urethra is invaginated into itself to oppose urethral mucosa to urethral mucosa. The second and preferred technique is perineo-abdominal. This involves mobilisation of the urethra and trigone from the perineum and excision of the urethra. The bladder neck is closed and the dead space obliterated by suturing the anterior vaginal wall to the pubis. Provided there is correct catheter placement and unobstructed drainage, continence is virtually total. Patients with sufficient dexterity have been taught to change their own catheters and catheter problems have been nil.

Nine out of 10 patients healed *per primam*. One developed a small fistula which was readily closed from below.

The Significance of Asymptomatic Microscopic Haematuria

By R. R. A. Syme

Austin Hospital, Melbourne, Victoria

One hundred and forty-six patients with incidentally discovered microscopic haematuria have been investigated. They have had no pyuria, proteinuria or casts and they have had no urological symptoms that needed investigation.

All had intravenous urograms, 78% had endoscopic examination and 17% had urine cytology performed. Of the 34 patients without endoscopy, 15 had a diagnosis made without endoscopy and 4 had negative cytology.

Twenty-six per cent of the patients were under 40; 64% were between 40 and 60 and only 10% were over 60. More than half of the patients between the ages of 40 and 60 were found by multiphasic screening centres.

In 42% of the cases no diagnosis was made. Of the remainder a number of diagnoses were made, but not necessarily considered to be the cause of the haematuria. Twenty-nine per cent had evidence of minor lower tract inflammation. Thirteen per cent had mild bladder neck obstruction, while 8% had small renal calculi. Six per cent had mild non-progressive glomerulonephritis, 3% had renal cysts and 3% had renal papillary abnormalities. Only one case (less than 1%) was found to have a malignancy, a superficial transitional cell carcinoma of the bladder. The cost of discovering this was in the region of $40,000-$45,000.

These results are in sharp contrast with painless macroscopic haematuria, where malignant disease may be found in up to 48% of patients over 40.

It is therefore suggested that investigation should be considered only for persistent microscopic haematuria of more than 20,000 red cells per millilitre; endoscopy is not necessary for patients under 50, particularly if cytology is negative.

Investigation of Microscopic Haematuria in Patients Without Urologic Abnormality

By A. Tynan

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Increasing numbers of patients are presenting with persistent haematuria found at routine medical examina-

tions, in whom all routine urological investigations are negative. Fifty-four patients in this series were referred for nephrological investigations. There were 30 males and 24 females with a mean age of 32 years. Twelve had hypertension and 14 impaired renal function (2 eventually died). Serious nephritis was detected in 12 and 42 had mild non-specific glomerulonephritis detected by renal biopsy. Investigation was found to be worthwhile in terms of establishing a diagnosis which aided decisions regarding subsequent employment, life insurance and superannuation as well as allowing a reasonable prognosis and institution of effective treatment.

An Overview of C.A.T. Scanning in Urological Diagnosis

By Peter T. Bruce

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An attempt was made to evaluate the use of computerised axial tomography as an aid in urological diagnosis. C.A.T. Scan and other methods of body imaging were placed into perspective and a comparison of their cost structure, extent of invasion, possible morbidity, patient inconvenience and relative value was made.

C.A.T. Scanning can be used as a means of differentiating between space-occupying lesions in the kidney where the lesion on an intravenous urogram is more than 1 cm in diameter. Secondly, it can be used to exclude metastatic infiltration of the renal hilar lymph nodes. Thirdly, it can help in the diagnosis of retroperitoneal pathology such as spread from a renal tumour to the retroperitoneal structures, especially the psoas muscle, and also extravasation of urine or blood in suspected renal rupture. Fourthly, where bladder carcinoma is suspected and where major surgery is contemplated, C.A.T. Scan can give valuable information with regard to spread of the tumour outside the bladder. Likewise, staging of prostatic carcinoma can also be assisted by C.A.T. Scan, often showing if the tumour has spread beyond the confines of the prostatic capsule. Finally, C.A.T. Scanning may be the most definitive pre-operative means of diagnosing renal lipoma, liposarcoma and angiolipoma.