Results Unstable contractions were seen in 1/12 (8%) of the male and 3/19 (16%) of the female infants. The detrusor contraction found in the male was strong and isolated looking more like an aborted voiding but without leakage of urine.
Median bladder capacity was 20 ml. in both male and female infants (range 10-49 and 10-120, respectively).
Premature voiding was seen in 3 female infants at low infused volume of 4, 5 and 7 ml. with peak voiding pressures of 70. 80 and 102 cm.water. In these cases filling was continued until another voiding occurred.
Median peak voiding pressure was 127 cm. water (84-211) in male and 72cm.water (42-240) in the female infants. The voiding contraction was bi- or polyphasic in 11/12 males and 18/19 females. The bi- or polyphasic appearance of the voiding contraction was directly related to the intermittency of the EMG activity with increase in detrusor pressure simultaneously with increase in pelvic floor activity.
Conclusion By performing cystometry together with voiding cystourethrography in asymtomatic infants screened for VUR, we have obtained data on the normal urodynamic pattern in infancy. These infants only rarely had unstable contractions and the bladder capacity was lower than expected with predicted value at birth of about 20 ml. The peak voiding pressure was high and significantly higher for males. Most infants showed increased EMG activity during voiding. The urodynamic pattern suggests a physiological dyscoordination probably due to immaturity of the detrusor-sphincter function.

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EFFICACY OF A CHILDHOOD INCONTINENCE CARE PROGRAMME IN IMPROVING THE QUALITY OF LIFE IN CHILDREN WITH INCONTINENCE PROBLEM

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Urinary and/ or faecal incontinence in children are common but often neglected problems in a Chinese community. The aim of this study is to determine the efficacy of a Children Incontinence Care Program in improving the quality of life of children with incontinence problems.
Method: 186 children (117 male, 69 female, mean age 7.8 years) with faecal and/or urinary incontinence were managed each with an intensive and individualized incontinence care programme. Of these, 52 had spina bifida, 79 had enuresis, 27 had anorectal anomaly, 16 had Hirschsprung disease and 12 had intractable constipation. The entire programme consists of specially designed educational programmes; diagnostic laboratories for children; innovative therapeutic programmes; bowel management programme, clean intermittent catheterization programme; parent support group and community network that were supervised by dedicated nurse specialist, paediatric surgeons and urologists. The patients were followed up for an average of 1.5 years (range 0.5 to 3.9 years). The children were divided into 3 groups: Group 1 (85) had urinary incontinence only, group 2 (54) had faecal incontinence only and group 3 (47) had double incontinence. They were all investigated with respect to psychosocial and behavioral problems using self-structured Clinical Incontinence Score (CIS), interviews and Achenbach's Child Behavior Check List (CBCL) before and after the treatment.
Results: Because of the incontinence problem, over 90% of children complained of unhappiness, depression, worries and were dependent and/ or attention seeking before treatment. While 63% of children had problems in peer relationship and fear to go to school, 50% of children had poor school work performance. Based on CBCL, all children had various degree of psychosocial and behavioral problems (86% mild; 13% severe) before treatment. 20% to 33% of group 1 and 2 children have poor pre-treatment CIS. In contrast, 90% of group 3 children have poor pre-treatment CIS. After treatment, 92% of group 1, 85% of group 2 and 77% of group 3 children can keep clean and dry with significant improvement in CIS (Table 1).

	Mean CIS		
	Pre-treatment	Post-treatment	p-value
Group 1	7.35	1.79	<0.001
Group 2	9.22	0.57	<0.001
Group 3	9.52	2.14	<0.001

Table 1

After the completion of treatment, significant improvement in quality of life could be achieved in all children. No patient continued to suffer from severe psychosocial and behavioral problem. The psychosocial aspect of patient were more noticeably improved than their behavioral aspect. Children with double incontinence suffered from more psychosocial and behavioral problems before and after treatment compared to children with single incontinence. The CIS and CBCL had a positive relationship among the children (Pearson correlation = 0.47, $p<0.01$).
Conclusion: Incontinence will lead to significant psychological problems in children. Their quality of life can be remarkably improve by a multidisciplinary Incontinence Care Programme.

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ANALYSIS OF COMMUNICATION BETWEEN MUSCLE BUNDLES USING 3-D IMAGE RECONSTRUCTION OF SERIAL SECTIONS OF HUMAN BLADDER

Aims of study: Bladder emptying requires the synchronous contraction of the detrusor musculature, necessitating communication between adjacent muscle bundles. Potential routes of coordination are through excitable tissues (nerve or muscle), interstitial cells, or direct mechanical stretch. However, current knowledge about spatial relationships of these tissues in the bladder wall is limited. While 2-D sections yield some information about tissue structure, extrapolation of 3-D properties stereologically requires stringent criteria that are not often satisfied in biological tissues. Nevertheless, it is possible to generate a simulated 3-D reconstruction by integrating serial sections. This technique has been applied to macroscopic structures, for example urethra and fetal penis [1], and microscopic features including sebaceous glands [2] and neurons. The aims of the present study were firstly to adapt serial sectioning techniques to study 3-D attributes of the bladder wall in controls and secondly to elaborate possible routes of communication between muscle bundles. The work is part of an ongoing study of the structural effects of outflow obstruction on the bladder wall.
Methods: 1cm cubic bladder specimens were taken from 6 cadaveric organ donors and frozen in O.C.T. compound using liquid nitrogen-cooled isopentane. Serial sections of the full thickness of bladder wall were cut with a cryostat (15μM, -23°C). Sequential sections were stained with Masson trichrome/acetyl-cholinesterase techniques, methods for elastin, or immuno-histochemically for vimentin. Slides were video scanned (JVC KY-F30 on Leica microscope) to a Macintosh computer for image capture (Neotech Imagegrabber 2.04). Tissue preparation, histochemical methods and microscope/condenser focus were kept constant throughout. Binary images were generated (Adobe Photoshop 4.0), aligned with internal referencing and imported to a stereology programme (MacStereology 2.8) for 3-D surface/wireframe modelling.
Results: Serial sectioning established that the musculature of the human bladder consists of contractile units that are structurally independent, except where they affix through connective tissue attachments. Within muscle bundles, a subpopulation of fascicles was identified, which were typically smaller and orientated in a different direction from other fascicles of the bundle. Ten of these fascicles were studied in detail; their course was related to large neurovascular structures in six. Seven fascicles had