

PEDIATRIC UROLOGY

Augmentation Cystoplasty Rates at Children's Hospitals in the United States: A Pediatric Health Information System Database Study

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J Urol. 2006; 176 (4 Pt 2): 1716-20

Purpose: We identified augmentation cystoplasty rates in children with spina bifida at children's hospitals enrolled in the Pediatric Health Information System database.

Materials and Methods: The Pediatric Health Information System database tabulates demographic and diagnostic patient data from 35 children's hospital centers in the United States. Between October 1999 and September 2004 we extracted data on 0 to 19-year-old patients with International Classification of Diseases-9 diagnosis codes for spina bifida. The International Classification of Diseases-9 procedure code for augmentation cystoplasty was cross-referenced with these patients to determine the total number of patients with augmentation, total population augmentation rates and individual institution rates of bladder augmentation.

Results: Staff at enrolled pediatric medical centers submitted inpatient data accounting for 9,059 beds servicing an aggregate metropolitan population of 82 million individuals. In the 5-year period 12,925 unique spina bifida patient encounters were identified, including 665 patients who underwent augmentation cystoplasty. The mean 5-year institutional number of augmentations performed in children with spina bifida was 20 (range 1 to 121) and the mean annual number of augmentations performed per institution was 4. The overall augmentation rate at 33 hospitals contributing data for the full years 2000 to 2003 was 5.4% (range 0.5% to 16.3%, $p < 0.0001$). The male-to-female ratio of those who underwent augmentation was 1:1.2. Median length of stay in children with augmentation was 7 days (mean 9). The median age of children with augmentation was 10.4 years, that is 11.3 years in boys and 9.8 years in girls. The difference in mean age was statistically significant ($p < 0.003$). At institutions where 10 or more augmentations were performed in 5 years (mean 27) mean patient age at operation was 10.1 years. This was significantly younger than the mean patient age of 12.3 years at hospitals where fewer than 10 augmentations (mean 5) were done in 5 years ($p < 0.05$). **Conclusions:** Clinical management for neurogenic bladder conditions has evolved to emphasize nonoperative management. Several studies suggest that aggressive early intervention improves bladder compliance and may protect renal function. However, results from the Pediatric Health Information System database demonstrate no change in augmentation rates during this time and they demonstrate significant interinstitutional variability. To our knowledge this represents the largest series of augmentation cystoplasty in children with spina bifida to date.

Editorial Comment

The authors review the PHIS database, which is a data set that includes 33 children's hospitals, about 70% of all free standing children's hospitals in the United States. They looked specifically at all children admitted to a hospital in their database with the diagnosis for spina bifida, between 10/1999 and 9/2004. There were 12,925 admissions for the diagnosis of spina bifida and of these, 534 were for augmentation cystoplasty. They examined information about this procedure in particular. Some findings were pretty standard. The length of stay was around 7 days and the mean age of the patients undergoing augmentation was 11.3 for boys and 9.8 for girls. Interestingly, the rate of augmentation remained stable throughout the study period, but there were marked variations between hospitals. Also of note, the rate of augmentation in an individual hospital had little to do with the overall number of hospitalizations for spina bifida in that hospital.

These large data sets have the advantage of looking at actual practice patterns and allow for comparisons of different institutions. In these respects, studies like this are extremely useful. The finding of no change in the rate of augmentation over time is a bit disappointing in that the advent of aggressive neonatal medical management has been thought to reduce the need for augmentation. Moreover, as the life-long risks of augmentation become increasingly clear, one would guess that ever more caution would be exercised in the use of the procedure. Interestingly, this was not seen.

Also striking is the enormous variation between hospitals. One hospital did approximately 105 augmentations (of about 600 admissions) whereas during the same time period another did only about 7 (of about 550 admissions). Both are clearly high volume centers with significant interest in the care of these patients, yet with extreme variability in their urological management.

One major weakness of the data set is the lack of outcome information. What a terrific opportunity exists to look at patient reported outcomes in these two centers! Unfortunately, in this data set, the centers are de-identified. Maybe in the future someone will take this on. Until then, we await more information from striking studies like this.

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Nocturnal Enuresis in Adolescents and Adults Is Associated With Childhood Elimination Symptoms

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J Urol. 2006; 176 (4 Pt 2): 1771-5

Purpose: Since nocturnal enuresis in adults and adolescents is rarely monosymptomatic, we identified the prevalence of childhood bladder and bowel dysfunction, and compared findings to those in a normative cohort. **Materials and Methods:** Childhood and current bladder and bowel dysfunction were investigated in 56 consecutive adolescents and adults attending a public nocturnal enuresis service and in 293 normative adults using a self-administered questionnaire. Analysis involved descriptive statistics, the chi-square and Kruskal-Wallis tests, and regression analysis with $p < 0.05$ considered significant.

Results: Adolescents and adults attending a public nocturnal enuresis service had significantly higher childhood scores than normative adults, and significantly more childhood urgency, frequency, urge incontinence, infrequent voiding and small volume, high urge voids. Infrequent bowel action and fecal soiling in childhood were also significantly more common in those with nocturnal enuresis than in controls. Adult symptoms of urge incontinence, general bowel symptoms and nocturnal enuresis were significantly more common in adults and adolescents with nocturnal enuresis. Significant associations were found between childhood symptoms and adult overactive bladder, and childhood emptying dysfunction and adult voiding dysfunction. Higher childhood scores in adults and adolescents with nocturnal enuresis correlated significantly with current adult symptoms of urge, urge leakage, stress incontinence, hesitancy, incomplete emptying and UTI within the last year.

Conclusions: Significant childhood bladder and bowel symptoms along with more adult urge and bowel dysfunction were found in adults and adolescents with nocturnal enuresis. The association with adult urgency and urinary tract infection supports the likelihood of underlying bladder and or voiding dysfunction in unremitting nocturnal enuresis.

Editorial Comment

The authors report the results of two prospective questionnaire surveys, comparing adolescents and adults with nocturnal enuresis to those with a non-urological (ENT) problem. They find that older patients with nocturnal enuresis frequently have urge incontinence (45% vs. 8%) and may have bowel symptoms (16.4% vs. 12.6%). In addition, the adult patients with enuresis had markedly higher recollection of childhood problems like urgency, frequency and urge incontinence, as well as constipation and fecal soiling.

This study is another in a growing literature suggesting that adults with voiding problems, often have a history of childhood voiding and bowel problems. Although we do not know the number of children who outgrow their childhood issues and never recur as adults, it is clear that a large number of adults with problems had childhood symptoms. This emphasizes the critical need for new innovative and effective treatment modalities for children with voiding problems.

Also interesting is the finding that adults with continued nocturnal enuresis have a large likelihood of reporting symptoms of overactive bladder, despite often being labeled “monosymptomatic nocturnal enuresis.” This has several implications. First, it suggests that clinicians should look harder for an urge component in children with this condition. It is probably underlying in many, but may not be symptomatic as children can control their voids and fluid intake during the day. Second, it suggests a mechanism by which the clinician can approach adults with this condition. Both anticholinergic and alpha-adrenergic blockers can reduce overactive bladder symptoms and should be considered as adjuncts in behavioral management.

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