

## **CRANBERRY JUICE FOR THE PREVENTION OF PEDIATRIC URINARY TRACT INFECTION: A QUADRUPLE BLIND RANDOMIZED CONTROLLED TRIAL**

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(Presentation to be made by Dr. Afshar)

**Objectives:** Proanthocyanidins (PAC) found in cranberry have been reported to have in vitro and in vivo antibacterial activity. The primary goal of this study was to determine the effectiveness of cranberry juice for the prevention of non febrile urinary tract infections (UTI) in children.

**Methods:** 40 children were randomized to receive daily cranberry juice with high concentrations of PAC vs cranberry juice with minimal PAC for a one year period. The study was powered to detect a 30% decrease in the rate of UTI with Type I and II error of 0.05 and 0.2 respectively. Toilet trained children up to age 18 were eligible if they had at least 2 culture documented non-febrile UTIs in the calendar year prior to enrollment. Patients with anatomical abnormalities (except for primary vesico-ureteral reflux) were excluded. Subjects were followed for 12 months with alternating clinic visits and phone calls every 3 months. Compliance with study protocol was monitored via periodic measurement of urinary PAC concentrations. Participants, clinicians, outcome assessor and statistician were all blinded to the treatment allocation. Intention to treat analysis was used.

**Results:** 39 girls and 1 boy were recruited. Mean age was 9.5 years (range 5-18). 20 patients with comparable baseline characteristics were randomized to each group. After 12 months of follow up the average incidence of UTI in the treatment group was 0.4 per patient per year and 1.15 in the placebo group ( $p=0.045$ ). E.coli constituted the majority of isolated organisms.

**Conclusions:** Cranberry juice with high concentrations of PAC appears to be effective in the prevention of pediatric non febrile UTIs. Further studies are required to determine the cost effectiveness of this approach.

# LONG TERM FOLLOW UP AFTER ENDOSCOPIC TREATMENT OF VESICoureTERAL REFLUX WITH DEXTANOMER/HYALURONIC ACID COPOLYMER IN PATIENTS WITH NEUROGENIC BLADDER

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(Presentation will be given by Dr. Polackwich)

**Purpose:** The treatment of vesicoureteral reflux with subureteric injection (SUI) of bulking agents may avoid more invasive procedures. Its use in patients with neurogenic bladder dysfunction has been less thoroughly investigated. We report our experience with SUI of Dextranomer/Hyaluronic Acid copolymer (Dx/HA) in the treatment of secondary vesicoureteral reflux in patients with neurogenic bladders or severe voiding dysfunction (Hinman's syndrome).

**Materials and methods:** A retrospective chart review of all SUI procedures done at our institution over the last 10 years was performed, identifying patients who had either neurogenic bladder dysfunction or Hinman's Syndrome. Data was collected on demographics, urodynamic studies, renal ultrasound findings, pre and post procedure VCUG's, and the need for subsequent procedures related to bladder dysfunction or reflux. Short term success for curing reflux was reported for patients and ureters after the first postoperative cystogram (generally 3 months post SUI). Long-term cure rate was reported for those patients with a durable cure and no recurrence of their reflux during extended follow up.

**Results:** There was a total of 242 procedures and from those 12 patients (17 ureters) were identified, 10 with neurogenic bladder and 2 with Hinman's syndrome. There were 6 males and 6 females. Clean intermittent catheterization was performed preoperatively in 33%, 33% had a vesicostomy, and the remainder voided. 58% of patients had a documented history of febrile UTIs. 61% of patients were on anticholinergic medications. All patients underwent cystoscopy with SUI Dx/HA, with 3 patients having their vesicostomies closed during the same procedure. Post operatively, 75% were managed with intermittent catheterization. No ureters were obstructed. Pt demographics and results are shown in table 1. Additional procedures were needed in 41% of patients at a median of 4 years after SUI (range 1.5-5). Most required bladder augmentation with ureteral reimplantation (3), followed by nephrectomy (1) and bladder augmentation (1). Only 1 patient who had a bladder augmentation did not require ureteral reimplantation due to a successful SUI of Dx/HA.

**Conclusion:** The treatment of secondary reflux in patients with neurogenic bladder dysfunction has a poor long term success rate and significant recurrence rate. Treatment of reflux with SUI of Dx/HA should not be considered optimal treatment for patients with neurogenic bladders. Patients and their families need to be counseled regarding the high likelihood for additional treatment and low long-term cure rate.

Table 1. Demographics and Results.

Median Age at SUI	5.5 yr (range 2-18)
Median Follow after SUI	4.5 yr (range 1-9)
Median Grade VUR	3 (range 1-5)
% VUR Cured- Early	50% patients (41% ureters)
% VUR Cured- Long-Term	33% patients (29% ureters)
% Patients needing Additional Procedures	41% patients

**Source of funding:** None

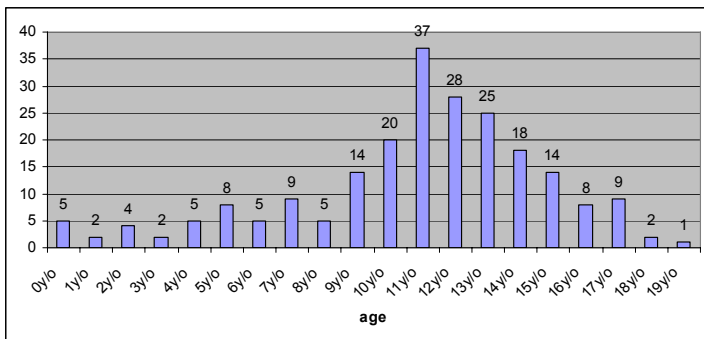
## EPIDIDYMITIS IN CHILDREN; NEW INSIGHTS ON AN OLD PROBLEM

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**Purpose:** Unlike in adults, epididymitis (EP) in children is commonly considered to be related to anatomical abnormalities. Few studies review the epidemiology of the disease in relation with the etiology in children. Our study describes the presenting characteristics of epididymitis over 18 years in pediatric population at in Salt Lake City, Utah, USA.

**Methods:** Charts were reviewed for all patients with the diagnosis of epididymitis between 1992 and 2010. 220 charts of were reviewed to record epidemiologic and clinical features, UA and urine culture results, US presentation, and management. Data pertaining to recurrent episodes were also documented.

**Results:** Mean age at first presentation was 10.66 (range from 29 days to 19 years) with peak at 11 years old. 11 patients had bilateral EP. Laterality was equally distributed in 209 unilateral EP, with 104 on the left and 105 on the right. Because patients were referred from primary care, not all urine culture results were available. Of 35 patients had culture results available, only 10 (29%) grew bacteria. Most patients (142) had US done and most (129 -91%) were consistent with epididymitis. Of 28 VCUGs done for proven bacterial infection, only 6 (21%) were discovered to have a structural defect. 61 patients had at least one recurrent episode of whom 51% had 1 recurrent and 16 (26%) had more than 5 episodes. The most common precipitating factor (identified in 35 cases) physical activity requiring the valsalva maneuver, including weight lifting, sports, and dysfunctional voiding.



**Conclusion:** Our study demonstrated a bell shape distribution of age at first episode of EP with peak in early puberty at 11 years old. Physical exercise that causes increased abdominal pressure is one of the most common precipitating factors and was discovered after practitioners began requesting the information.

# APPLICATION OF CONTINUOUS INFUSION OF LOCAL ANESTHETIC AFTER MAJOR PEDIATRIC UROLOGICAL SURGERY

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(Presentation to be made by Dr Hidas)

**Introduction and Objective:** ON-Q pain relief system (Kimberly-Clarke) is an elastomeric pump that delivers 0.25% bupivacaine at the incision site via small flexible catheters that are tunneled subcutaneously at the completion of a patient's surgery. Infusion rate is fixed and predetermined according to the patient's weight (range: 1-4 ml/hour). The aims of this study are to determine the efficacy of this system in controlling postoperative pain, reduction in narcotic requirement and shortening the recovery time after pediatric urological surgery.

**Methods:** After Institutional Review Board approval, we performed a retrospective case control analysis comparing patients treated postoperatively with the ON-Q system with patients treated with the standard of care intravenous and oral medications. All patients in both groups received 0.25% bupivacaine infiltration of the incision site at the end of the procedure. The urological surgeries were performed via dorsallumbotomy, Pfannenstiel and genital incisions. Pain scores were measured by the staff nurses every 2-4 hours or during painful episodes. Scores were measured using the VAS or FLACC scale depending on the child age. Information regarding narcotic and analgesics consumption together with recovery parameters like fever, start of oral nutrition and length of hospitalization (LOH) were collected and compared.

**Results:** 20 consecutive patients received the ON-Q system and were matched with 20 consecutive patients treated with the standard pain medications. Age, gender and incision type were similar in the two groups. Patients in the ON-Q group experienced lower ratings of maximal pain on the first postoperative day compare to the control group (3 vs. 5.2 respectively,  $p=0.03$ ) and a trend toward lower pain score on day two (1.8 vs. 3.5 respectively,  $p=0.055$ ). Systemic intravenous and oral narcotic and analgesic were significantly lower in the first 36 hours postoperatively for the ON-Q group compare to the control group (1.01 vs. 2.68 mean Morphine equivalent doses respectively,  $p=0.02$ ). No differences in rate of fever, start oral nutrition and LOH were found between the groups.

**Conclusion:** Continuous incisional infusion of local anesthetic with the ON-Q system is a viable option for postoperative pain management in children undergoing major urological surgeries. This technology significantly decreases the need for systemic narcotic and analgesic consumption.

## **THE USE OF A NOVEL VIDEO TELESCOPIC OPERATING MICROSCOPE (VITOM) IN HYPOSPADIAS SURGERY: A FEASIBILITY TRIAL**

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(Presentation to be made by Dr. Freedman)

**Background:** Pediatric hypospadias surgery has benefited from the use of optical magnification. However the prolonged use of high-powered surgical loupes or a traditional operating microscopic can result in surgeon neck and back strain and discomfort.

**Objective:** To evaluate the use of a full HD TV camera attached to a special tele-optical system as an alternative method of optical magnification and to assess its feasibility and the effect on surgeon comfort.

**Results:** The video telescopic operating microscope (VITOM) system was used in 12 pediatric hypospadias procedures. The device was able to be successfully used in all cases without conversion to exclusive conventional viewing. Image quality, illumination and magnification were found to be excellent and exceeded that of conventional viewing. Even with limited experience, assembly and repositioning/refocusing was of minimal disruption. Surgeon neck and back discomfort was greatly ameliorated during and following the procedure. Surgeon satisfaction with the system was regarded as high.

**Conclusion:** The VITOM system is a feasible alternative to high power loupes or a traditional operating microscope. It provides excellent images in an improved working condition with less surgeon discomfort. It can be a valuable tool to surgeons performing complex reconstructive procedures in children.

## CORRELATION OF END PRESSURE MEASURED BY A SIMPLE RULER MANOMETRY AND BY CYSTOMETROGRAM

Shawn Beck, MD, Guy Hidas\*, MD, Hak J. Lee, MD, Allison Ashby\* and Antoine E. Khoury, MD: Orange, CA  
(Presentation to be made by Dr. Beck)

**Objective:** For years we have had CIC dependant patients use a simple ruler-based manometer to measure their intravesical pressures prior to leakage or prior to scheduled drainage, to ensure that they are catheterizing at safe pressures and to provide a guide regarding the frequency of CIC. The purpose of this study is to determine the accuracy of this simple technique by comparing end pressures measured during urodynamic studies by cystometrogram, to measurement of the height of the column of water within the urodynamics catheter (in cms) using a ruler.

**Methods:** 50 children with spina bifida with an average age of 9.4 years [range 1-20] were evaluated with cystometrogram during urodynamics using the Aquarius TT system from Laborie®. Vesical (pves) and detrusor pressures (pdet) were extracted from these studies when the patient was at cystometric capacity. At these pressures and volumes, with the patient in the exact same position, the urodynamic catheter was disconnected and held straight up. A ruler was used to measure the height of the column of water within the urodynamics catheter. Measurements were taken with the zero at the urethral meatus in females, and at the penoscrotal angle in males. These data points were then correlated using a linear regression curve to determine consistency of the two measured methods. Sensitivity and specificity of the test were calculated.

**Results:** We found good correlation of the ruler measurements with pves and pdet ( $R^2$  of 0.8 and 0.68 respectively). By using a ruler measurement of 40 cm of water as a threshold, we achieved a sensitivity of 100% and specificity was 79% with 100% negative predictive value.

**Conclusion:** Ruler manometry measurements of bladder pressure correlate well with urodynamic bladder pressure measurements. This accurate technique is easy to perform, has no additional cost, and can be used to monitor and screen bladder pressures of spina bifida patients already performing CIC at home with no additional morbidity.

