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THE EFFECT OF ORAL PHENAZOPYRIDINE ON POSTOPERATIVE VOIDING AFTER MID-URETHRAL SLINGS (EPIPHANY STUDY)

Hypothesis / Aims of study

Recent studies (1-2), have suggested that the preoperative administration of phenazopyridine reduces short-term postoperative voiding dysfunction (VD) in patients undergoing a retropubic midurethral sling (RMUS). None of these studies were specifically designed to prospectively assess phenazopyridine for voiding function, but all demonstrated a significant reduction in the rate of postoperative VD. We performed a prospective randomized clinical trial assessing the effect of phenazopyridine on postoperative VD in women undergoing RMUS.

Study design, materials and methods

A single-institution randomized controlled trial was performed comparing 200 mg oral preoperative phenazopyridine to no phenazopyridine in patients undergoing a RMUS. Sample size calculations indicated that 41 subjects per arm would provide a 20% difference with an α-error rate of 0.05 and a power (1- β) of 0.80. Assuming a 10% dropout rate, we recruited 46 subjects per arm.

Patients with stress urinary incontinence or stress-predominant mixed urinary incontinence undergoing a RMUS under general anesthesia with no concomitant procedures were offered the opportunity to participate. Subjects in the intervention group received 200 mg of oral phenazopyridine. Because phenazopyridine stains urine orange, we could not blind surgeons, patients or staff to this effect and no placebo was used. Randomisation was blinded by computer allocation and carried out using sequential, sealed opaque envelopes. Subjects underwent a RMUS by either top-down (suprapubic) vs bottom-up (transvaginal) approach, per surgeon preference.

Preoperative demographics, intraoperative medications, blood loss and complications were recorded. A standardized postoperative voiding trial was performed prior to discharge. A successful voiding trial was defined as a post void residual volume of less than one-half of the voided volume. Subjects failing the voiding trial had a Foley catheter re-inserted and returned to our clinic 1 to 4 days later to repeat the voiding trial. Pain scores were obtained through a validated visual analogue score (VAS) administered 2-3 hours after the surgery. Patient characteristics and surgical data were compared between groups using Chi Square, Fisher's exact test, or Wilcoxon rank sum test.

Results

We enrolled 92 subjects. Three subjects cancelled their surgery and one subject did not have an immediate postoperative voiding trial secondary to intraoperative urethral injury. Eighty-eight subjects were included in the final analysis, 44 per arm.

Patient demographics did not show any differences between the two groups, as shown in Table 1. Notably, the approach for RMUS was also balanced, with 47 suprapubic and 41 transvaginal routes (p=.205).

Intent-to-treat analysis showed no difference in the distribution of failed void trials between the randomized groups. Twenty-seven percent of the subjects who received preoperative phenazopyridine and 21% of the control group failed the void trial (p=0.453). An adjusted logistic regression model controlling for potential confounders including sling approach (suprapubic vs transvaginal), perforation, and intraoperative fentanyl dose, showed no significant effect on void trial results. As-treated analysis showed similar results.

While preoperative pain VAS between both groups was similar (p=0.606), postoperative pain VAS was significantly higher in those that did not receive phenazopyridine, with a mean of 1.76 vs. 1.21 (p=0.046). However, the change between pre- and postoperative pain VAS between the groups did not show a significant difference, p=0.087.

Interpretation of results

Our study suggests that preoperative phenazopyridine has no effect on short-term postoperative bladder emptying in women undergoing RMUS. This result is in marked contrast to prior retrospective studies. There may be a decrease in postoperative pain in those who receive preoperative phenazopyridine, although the clinical significance of the small difference seen in our study is minimal. Previous research suggests that neither postoperative VAS nor pain medicine usage is affected by phenazopyridine (3).

Concluding message

Although previous retrospective studies showed a reduction in VD, our prospective trial showed no such decrease in VD with phenazopyridine. Short-term postoperative VD appears to be multifactorial and further research identifying risk factors and interventions are needed.

	Total (N=92)		Intervention				
			No Phenyzopyridine (N=46)		Phenyzopyridine (N=46)		
	N	%	N	%	N	%	P-value
Age (mean, SD)	48.7	11.1	47.7	9.4	49.7	12.6	0.561
BMI (mean, SD)	31.7	7.9	32.8	8.0	30.7	7.6	0.264
Duration of surgery (min) (mean, SD)	33.7	8.7	34.6	7.6	32.9	9.7	0.227
EBL (mean, SD)	103.8	76.1	102.4	85.2	105.2	66.5	0.533

Prior urinary incontinence surgery	10	11.4%	5	11.6%	5	11.1%	0.999
Sling Approach							
Transvaginal	41	46.6%	18	40.0%	23	53.5%	0.205
Suprapubic	47	53.4%	27	60.0%	20	46.5%	
1 or more bladder perforations	17	19.1%	11	24.4%	6	13.6%	0.195
Intra-op fentanyl							
<100	8	9.0%	6	13.3%	2	4.5%	0.391
100-<200	61	68.5%	30	66.7%	31	70.5%	
200+	20	22.5%	9	20.0%	11	25.0%	

Table 1. Demographics and surgical characteristics in both groups

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Disclosures

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