

THE ROLE OF PRE-OPERATIVE ORAL VITAMIN B IN THE CYSTOSCOPIC ASSESSMENT OF URETERIC PATENCY

Hypothesis / aims of study

Vaginal and laparoscopic gynaecological surgery place the urinary tract at risk of injury. Ureteric injury rates as a result of gynecological procedures vary; for vaginal hysterectomy, it is about 0.1-0.5% [1], and after vaginal repair of anterior and/or apical pelvic organ prolapse, this rate may be as high as 5.1% [2]. Cystoscopic examination of the lower urinary tract is an important method for the intra-operative identification of potential ureteric injury [3]. Traditionally, intravenous agents like indigo carmine have been used to color the ureteric jets to aid visualization at cystoscopy. However, indigo carmine has several albeit rare disadvantages - severe anaphylaxis and cardiac arrhythmias.

This study aims to determine whether oral Vitamin B, a renally excreted essential vitamin, which is anecdotally known to change the colour of urine to bright yellow, can be used as a marker of ureteric patency at cystoscopy, thereby reducing the need for intra-operative intravenous indigo carmine.

Study design, materials and methods

Institutional ethical approval was obtained and all patients provided written informed consent.

Patients scheduled for cystoscopy, or for an operation likely to require a cystoscopy, were given 3 tablets of vitamin B complex orally 1-4 hours prior to their operation. The time of administration, time of operation and time of cystoscopy were recorded. The time taken for ureteric jets to be visualized was also recorded. The color of the urine was graded by the operator as being clear (negative) or bright yellow (positive), indicating ureteric patency and no indigo carmine was required.

Results

69 women in total were given vitamin B prior to their cystoscopy. One case was cancelled because of presumed but unproven aspiration. Of the remaining 68 cases, the mean time from dose to cystoscopy was 161.6 minutes (SD=69.9). Forty-nine (72.1%) of these trials were rated as positive, with a mean time from dose to cystoscopy of 160.8 minutes (SD=64.2). Nineteen (27.9%) were considered negative with clear but turbulent jets seen with a mean time from dose to cystoscopy of 163.9 minutes (SD=84.8).

Indigo carmine was used in only two cases (2.9%) in 1 case only because of surgeon preference in the presence of clear urine. Age, body mass index or serum creatinine were not associated with a positive or negative result. No cases of ureteric obstruction occurred in this series.

Interpretation of results

The results of this study show that oral vitamin B administration pre-operatively has the potential to be used to reduce the requirement for intravenous indigo carmine administration. This would have advantages in reducing the cost and albeit low toxicity of intravenous indigo carmine administration. The main logistical problem is the timing of the oral dose as many cases of negative jets had bright yellow urine in the catheter bag.

Concluding message

Vitamin B warrants further investigation and refinement as a marker of ureteric patency at cystoscopy and has the potential to reduce the need for indigo carmine.

Table 1: Operations performed prior to cystoscopy

Primary Operation	Number	Percentage
Midurethral sling +Anterior and posterior repair	12	17.4
Vaginal Hysterectomy	14	20.3
Mesh repair	3	4.3
Vault suspension + anterior and posterior repair	2	2.9
Cystoscopy	17	24.6
TVT	6	8.7
TOTAL LAPAROSCOPIC HYSTERECTOMY	4	5.8
Laparoscopic mesh sacrocolpopexy	3	4.3
Anterior and posterior repair	8	11.6
Total	69	100

Table 2: Demographic data

	Number (%)	Age (mean±SD)	BMI (mean±SD)	Creatinine (mean±SD)
Positive trial	49 (72.1%)	56.0±12.9	29.5±5.7	67.7±18.5
Negative trial	19 (27.9%)	58.6±12.3	29.7±5.2	64.8±10.2

Table 3: Time from dose to surgery, cystoscopy and visualization of ureteric jets (including jets clear turbulent jets seen, not including when no jets were seen n =1)

	Time from dose to surgery	Time from dose to cystoscopy	Time from cystoscopy to visualization of one jet (mean)	Time from cystoscopy to visualization of both jets (mean)
Positive	115.5±50.2	160.8±64.2	1.7	2.2
Negative	107.9±64.3	163.9±84.8	1.2	2.2
Overall	113.4±54.1	161.6±69.9	1.9	2.2

References

1. Harris W (1995) Early complications of abdominal and vaginal hysterectomy. *Obstet Gynecol Surv.* 50: 795-805
2. Gustilo-Ashby A, Jelovsek J, Barber M et al. (2005) The incidence of ureteral obstruction and the value of intraoperative cystoscopy during vaginal surgery for pelvic organ prolapse. *AJOG.* 194: 1478-1485
3. Kwon C, Goldberg R, Koduri S et al. (2002) The use of intraoperative cystoscopy in major vaginal and urogynecologic surgeries. *Am J Obstet Gynecol.* 187: 1466-1472.

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Is this a clinical trial?	Yes
Is this study registered in a public clinical trials registry?	No
Is this a Randomised Controlled Trial (RCT)?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Southern Health
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes