

THE INCIDENCE OF URETERAL OBSTRUCTION AND THE VALUE OF INTRAOPERATIVE CYSTOSCOPY DURING VAGINAL SURGERY FOR PELVIC ORGAN PROLAPSE (POP)

Hypothesis / aims of study

To determine the incidence of ureteral obstruction during vaginal surgery for POP and to determine the accuracy and efficacy of intraoperative cystoscopy to prevent upper urinary tract sequelae.

Study design, materials and methods

Subjects in this study included all patients who underwent vaginal surgery for anterior and/or apical prolapse from January 1, 2001 through December 31, 2004. Each underwent intraoperative cystoscopy with intravenous (IV) indigo carmine to evaluate ureteral patency. Subjects undergoing vaginal hysterectomy alone, surgery for isolated posterior POP, and/or isolated anti-incontinence procedures did not routinely undergo cystoscopy for ureteral patency and were not included in this analysis. Relevant data was abstracted from a hospital-wide electronic record to determine procedure-specific incidence of ureteral obstruction, the accuracy of intraoperative cystoscopy to detect ureteral patency, potential predictors of obstruction, and the long-term sequelae of obstruction in these patients.

Results

Seven hundred subjects had vaginal surgery for anterior and/or apical POP during the study period. Thirty-seven subjects (5.3%) had no spillage of dye from one or both ureters intraoperatively. Of these, absent spill was caused by unidentified preexisting renal pathology in three patients (8.1%). Of those who had normal cystoscopy, two were later found to have ureteral obstruction for a false negative rate of intraoperative cystoscopy for detecting ureteral obstruction of 0.3% (95% CI: 0.01 to 1.2). Therefore, the true incidence of intraoperative ureteral obstruction was 5.1% (CI: 3.7 to 7.0). The incidence of intraoperative ureteral obstruction from uterosacral vaginal vault suspension was 5.9% (CI: 3.9 to 8.9), proximal McCall's culdeplasty 4.4% (CI 4.4 to 8.2), distal McCall's culdeplasty 0.5% (CI: 0.1 to 3.0), colpocleisis 4.2% (CI: 1.2 to 14) and anterior colporrhaphy 0.4% (CI: 0.1 to 1.3). The accuracy of cystoscopy with IV indigo carmine for the detection of intraoperative ureteral obstruction was 99.3% with a sensitivity of 94.4%, specificity 99.5%, PPV 91.9%, and NPV 99.7%. Ureteral obstruction was relieved by intraoperative suture removal with no consequence, and was therefore temporary, in 83% (CI: 68 to 93) of subjects. Six subjects required subsequent intervention for ureteral injury including: percutaneous nephrostomy (3), ureteral reanastomosis (1), and reoperation for suture removal (2), for a true ureteral injury rate of 0.9% (CI: 0.4 to 2.0). After controlling for potential risk factors including demographic, historical, and surgical variables, we were unable to identify independent predictors of ureteral injury.

Interpretation of results

The incidence of intraoperative ureteral obstruction from vaginal surgery for anterior and/or apical POP range from 0.4% to 5.9%. Uterosacral vaginal vault suspension, proximal McCall's culdeplasty and colpocleisis carry the greatest risk. Cystoscopy with IV indigo carmine dye accurately detects intraoperative ureteral obstruction and allows relief of obstruction in the majority of cases, reducing the true ureteral injury rate to 0.9%.

Concluding message

Vaginal surgery for anterior and/or apical POP is associated with an overall intraoperative ureteral obstruction rate of 5.1%. The routine use of intraoperative cystoscopy with IV indigo carmine dye allows for accurate identification and resolution of intraoperative ureteral obstruction, thus preventing upper urinary tract sequelae.