



SOGC

CLINICAL PRACTICE GUIDELINES

POLICY STATEMENT*

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URETERIC INJURIES IN GYNAECOLOGICAL SURGERY

This Policy Statement has been reviewed and approved by the Clinical Practice Gynaecology Committee and the Sub-Committee on Urogynaecology, and was approved by the SOGC Council in June 1999.

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URETERIC INJURIES IN GYNAECOLOGICAL SURGERY

Ureteric injuries at the time of gynaecological surgery occur infrequently, with reported rates of 0.24 to 0.4 percent.¹⁻⁷ Gynaecological disease often involves one or both ureters. Complex pelvic surgery and laparoscopic surgery may be associated with an even higher incidence. The reported incidence may be low, as many ureteric injuries are not recognized or reported. Ureteric injuries are the most common complication of gynaecological surgery leading to litigation, accounting for 17 percent of non-obstetrical legal actions initiated against obstetricians and gynaecologists.⁸

Ureteric injuries may occur at the pelvic brim, near the infundibulopelvic ligament, the pelvic sidewall, where the ureter passes beneath the uterine artery and at the vaginal fornix.⁴ Mechanisms of injury include inadvertent ligation, distortion or kinking, crushing, devascularization and compression from haematomas. Ureteric injury may also occur at the time of vaginal and abdominal procedures (open or laparoscopic) to correct stress urinary incontinence and pelvic floor prolapse.

Although identification of the ureter at the time of surgery will reduce the incidence of ureteric injury, it will not entirely eliminate it. Such occurrences should not imply negligence.⁸ The ureter is particularly at risk in the presence of endometriosis, previous retroperitoneal dissection and adhesions, pelvic masses or procidentia. Some gynaecological surgeons routinely expose the ureter by retroperitoneal dissection during abdominal operations where adnexal surgery or hysterectomy is planned. There has been no prospective study of this method. A retrospective analysis by Neumann *et al.*⁵ showed a statistically significant reduction in ureteric injury following routine retroperitoneal dissection of the ureter. Others also make this observation.¹⁻⁷ During pelvic surgery the surgeon must be conscious of the location of the ureters during every step of the procedure. During abdominal surgery, when the normal pelvic anatomy is distorted by disease, the surgeon should identify and trace the course of the ureter. During laparoscopic surgery, the same level of caution is recommended, with particular attention to the risks of cautery and stapling devices (Grade B and C recommendations).

Intra-operative verification of ureteric patency and function using a suprapubic cystostomy or transurethral

cytoscopy is indicated where concern about possible injury exists. Indigo carmine or methylene blue may be injected intravenously to identify the ureteric orifices and determine ureteric patency.

The placement of ureteric stents pre-operatively has not been shown to decrease the risk of ureteric injuries. Although their use remains unproven in gynaecological surgery, the placement of stents may be considered in situations of high clinical concern (Grade C recommendation).

A high index of suspicion should be maintained post-operatively in patients complaining of flank pain or tenderness, especially in combination with fever or an ileus. Early investigation by ultrasonography and intravenous pyelography is encouraged. Stanhope *et al.*² observed a mean rise in serum creatinine of 71 micromoles/litre (range 27 to 124 micromoles/litre) at 36 to 48 hours postoperatively from pre-operative levels in patients with unilateral ureteric obstruction; so measuring pre- and postoperative creatinine levels may be useful. A rise in creatinine levels should then be evaluated further with imaging. At this time, it is not recommended that routine pre-operative creatinine levels be obtained from all surgical patients (Grade C recommendation).

Where obstruction or damage is suspected intra-operatively, a surgeon with appropriate skills should assess and manage accordingly. Postoperative identification may require referral to a surgeon who is knowledgeable in all the management options and surgery necessary for the treatment of ureteric injury.

SUMMARY OF RECOMMENDATIONS

- 1. Prevention:** routine identification and tracing the course of the ureter is recommended during gynaecological surgery, including laparoscopic surgery involving the use of electrosurgery, laser and stapling devices. This may be performed through transperitoneal visualization, palpation or retroperitoneal dissection.
- 2. Intra-operative management:** verification of ureteric patency is recommended when concern of possible injury exists.
- 3. Repair:** immediate repair by a surgeon with appropriate skills is recommended when obstruction or damage is found intra-operatively.
- 4. High index of suspicion:** maintenance of high clinical suspicion for ureteric injury following gynaecological

