Urological injuries in gynecology

Operative injuries to the urinary tract is common during the course of gynecological surgery due to close development and proximity of the urogenital organ systems. Injury to the urinary tract involves injury to the ureters, bladder and urethra. This has resulted in phobia for gynaecologist. It has been observed that urological injuries are less common during vaginal than abdominal surgeries. Whenever possible vaginal route of surgery should be preferred.

Ureteric injury has an incidence of 0.2-1 % during abdominal and pelvic surgery 1. Obstetric and gynecological surgeries account for approximately 50% of ureteric injuries 2. It is interesting to know that the incidence of all major complications associated with laparoscopy have declined but ureteric injuries have stayed constant at approximately 1 %. In 1998, Harkki-Siren P et al reported the risk of ureteral injury is higher after laparoscopic hysterectomy compared to traditional hysterectomies 4. In 2002, Carley M E et al reported the incidence of bladder and ureter injuries, respectively, were 0.58% and 0.36% for abdominal hysterectomy, 1.86% and 0% for vaginal hysterectomy and 5.13% and 1.71% for obstetric hysterectomy 5. Women with injury during abdominal hysterectomy were found to have greater blood loss, longer operative time, longer post operative stay, more febrile morbidity and more frequent transfusions. In 1998, Klutke J J et al reported the incidence of lower urinary tract injury was low with retropubic urethropexy 6.

Urological injuries in gynecological surgeries result due to difficult or careless surgery and/or associated with active infection, endometriosis, enlarged uterus, previous pelvic surgery, pelvic adhesions, ovarian neoplasms, distorted pelvic anatomy, cervical fibroids, broad ligament fibroids, To mass, advanced malignancies, previous radiation 7. Wertheim reported 10% ureteral fistulae in 500 cases and Meig reported 7.2% ureteral fistulae in 85 cases during debulking surgeries for ovarian malignancy 7.

Ureteral injury occurs most frequently in the lower third of the ureter (51 %), followed by the upper third (30%) and middle third (19%) 8. The most common sites of ureteral injury are lateral to the ureterine vessels, in the tunnel of the cardinal ligament, base of the infundibulo-pelvic ligament as the ureters cross the pelvic brim at the ovarian fossa and on the lateral pelvic wall just above the uterosacral ligament.

Intra-operatively ureter may be injured by ligation or kinking by a ligature, crushing by clamp, division, complete or partial transection, devascularisation or diathermy. In 2002, Berkman F et al reported the incidence to ureter in the form of complete transection was 61 %, excision 29%, ligation 7% and partial transection 3% 9. Post-operative injury to the urinary tract can occur due to avascular necrosis and by the kinking and subsequent obstruction over a hematoma or lymphocele. Bladder injuries occur most commonly during vaginal hysterectomy, anterior colporrhaphy, sling procedures. Urethral injuries occur in association with urethral diverticulae, congenital anomalies during vaginoplasty operations.

Hence, appropriate pre-operative evaluation and intra-operative care are necessary to reduce the risk of urological injuries during gynecological surgeries. Pre-operative investigations include ultrasonography, IVP when uterus size is equal to or more than 12 weeks and adnexal masses equal to or more than 4cm and prophylactic ureteric catheterization in suspected cases of difficult dissection has been advocated by some surgeons.

Intra-operative measures include appropriate operative approach, adequate exposure, full examination of the disease in the pelvis, early urological assistance when required, avoid blind clamping of blood vessels, operate close to the pathology, identification of the ureter in its course before dissection, careful mobilization from the operative site and short diathermy application. Prevention of urological injury during vaginal hysterectomy can be achieved by adequate development of vesico-vaginal space, by taking small bites of paracervical and parametrial tissue, by avoiding double clamping of uterosacral ligaments and by doing vaginal oopherectomy cautiously. If opening the pouch is difficult, then, release the vagina from the cervix, push the bladder after sharp dissection over the scar, cut close to the uterus at the scar area and then operate laterally, the pouch will open automatically when you reach the level. Prevention of urological injuries during laparoscopy can be achieved by moving the fallopian tubes away from pelvic side walls before coagulation, the bleeding points at uterosacral ligaments should be secured with sutures or clips instead of electrocoagulation, in LAVH place stapler or suture across ureterine vessels and cardinal ligaments instead of electrocoagulation.

Diagnosis of urological injuries can be made intraoperatively or postoperatively. Mann W J et al reported approximately that 70% of ureteric injuries are diagnosed postoperatively 9. Majority of bladder injuries are diagnosed intraoperatively. Intraoperative identification of urological injuries enables prompt repair and is associated with decreased morbidity and fewer legal risks 10. The use of intraoperative cystoscopy during urogynecological operations have shown the incidence of urological injury as 2.6-8 % 11, whereas its use in major benign gynecological operations found otherwise undetected injury in 0.4% cases 12. However, cystoscopy is cost-effective, hence, should be considered in complex cases.

Postoperative symptoms of urologic injury tend to be variable. Flank pain and fever are the most common symptoms. Haematuria, a reliable indicator of renal trauma, is absent in approximately 50% of ureteric injuries 13. Women may occasionally present with a retroperitoneal urinoma, 14 which can be confirmed by an ultrasound scan. Postoperative anuria, though uncommon, should prompt urgent evaluation. Urine leakage, other than from
Conclusion: Urological injuries in gynaecological surgeries occur commonly which have serious implications in terms of both morbidity and litigation. Gynecologist has to be conscious of the possibility of urological injuries and take preventive steps but should not be frightened and pushed to inaction.

References

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