

URETERAL INJURY IN LAPAROSCOPIC PELVIC SURGERY

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Abstract

Ureteral injury during pelvic laparoscopic surgery is a known complication and it had morbidity depending on the time of their recognition. The incidence of these injuries are 0.5-2 % and most of these complications happened with gynaecology , endourology and general surgery operations. The risk factors precipitating more injuries. Diagnosis of these injuries determine the out come, if diagnosed intraoperative repair should be done immediately. Late detection had bad morbidity and loss of some of renal functions. Ureteral injury can be prevented and reduced by more training and learning for surgeons and meticulous laparoscopic techniques. Laparoscopic ureteric injuries repair became popular by experience laparoscopy surgeon. Remote ureteral injury due to over cooking with the diathermy close to the ureter should be avoided.

Objective

The objective of this study was to review the literature in reference to determine ureteral injury during laparoscopic surgery in pelvic operation to determine

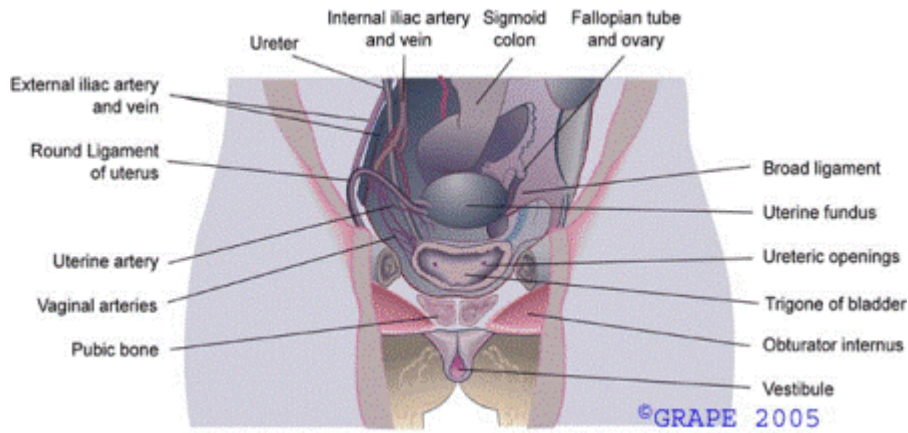
1. Rate of incidence
2. Type of injury "thermal, tie ligation , transection"
3. Location of the injury site
4. Time of recognition "intraoperative, post operative"
5. Mode of repair done

Material and methods

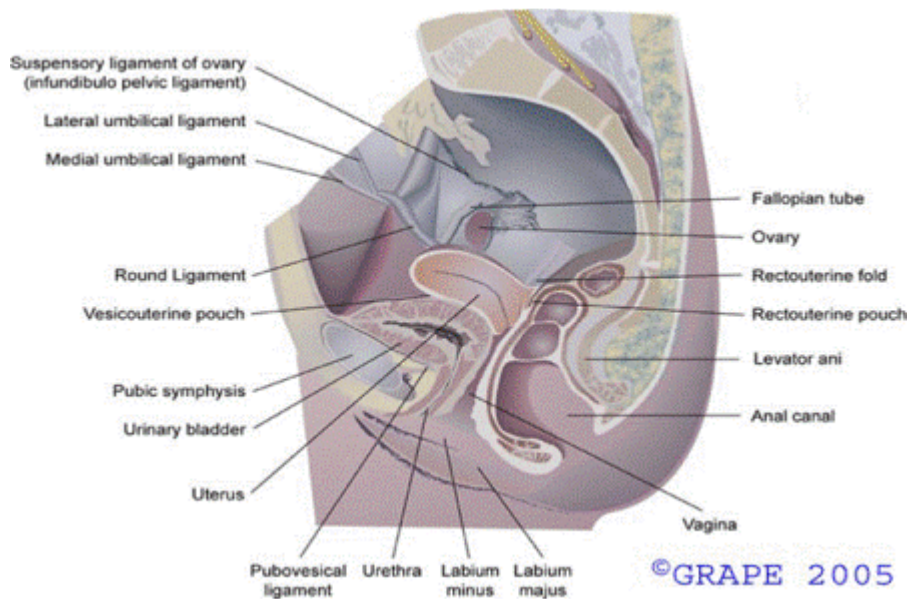
A literature search was performed using search engine Google and library facility available at Laparoscopic hospital in New Delhi and Springlink search. The following term were used in the reach ureteral injury, laparoscopic ureteral injuries, and laparoscopic pelvic surgery ureteral injury. Selected papers were screened for further references. Criteria for selection of the

literature were number of cases less than twenty was excluded. Methods of analysis "statistical and non statistical". Operative procedure only universally accepted procedures and institution where the study was done specialized for laparoscopic surgeon.

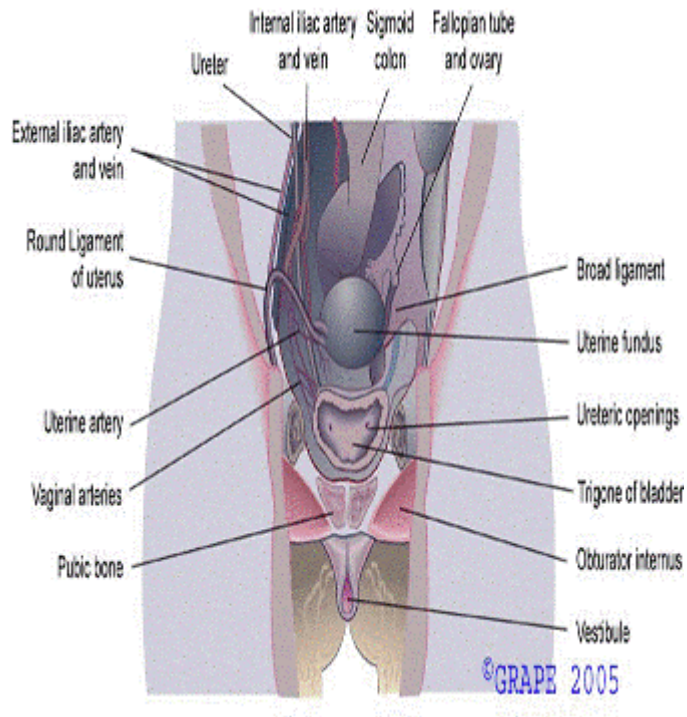
Pelvic Anatomy



Schematic illustration of pelvic organs - anterior view



Schematic illustration of pelvic organs - lateral view



Risk Factors for Ureteric injury

- Limited experience of laparoscopic surgeon
- Intraoperative difficulties "bleeding"
- Past history of pelvic operation "adhesion"
- Excessive use of diathermy close to Ureter

Common site of Ureteric injury is the lower third during

- Ligation of the uterine artery
- Lateral wall of the cervix dissection
- Utrosacral ligament dissection
- Dissection Close to iliac vessel bifurcation
- Abdomino perineum resection

Diagnosis of Ureteric injury

Immediate and early diagnosis determines the outcome following the injury.

Intra operative diagnosis

- Urinary leakage
- Intraoperative cystoscopy, retrograde
- Urteroscopy
- Intravenous urography

Delay diagnosis

- Clinically fever, flank pain, haematuria
- Ultrasound abdomen for collection, Hydronephrosis
- IVU- for extra vacation or complete obstruction\ C T- abdomen

Cystoscopy and retrograde help in diagnosis by detection of extravasation. While Urteroscopy visualized perforations. IVU Visualized any extravasation or obstruction due to suture tie. Ultrasound and CT abdomen detect any intra abdominal collection or hydronephrosis.

Surgical Treatment for Ureteric Injury depends on time of Recognition

A. Intra Operative: Immediate Repair should be done eg;

- Small Perforation - D/J
- Partial injury - Suturing
- Complete transection - Suturing and anastomosis end to end

B. Early detection treatment

- Urteroscopy + D/J insertion or Percutaneous Nephrostomy
- Suture tie Removal by Urteroscopy
- End to End anastomosis, Reimplantation Repair

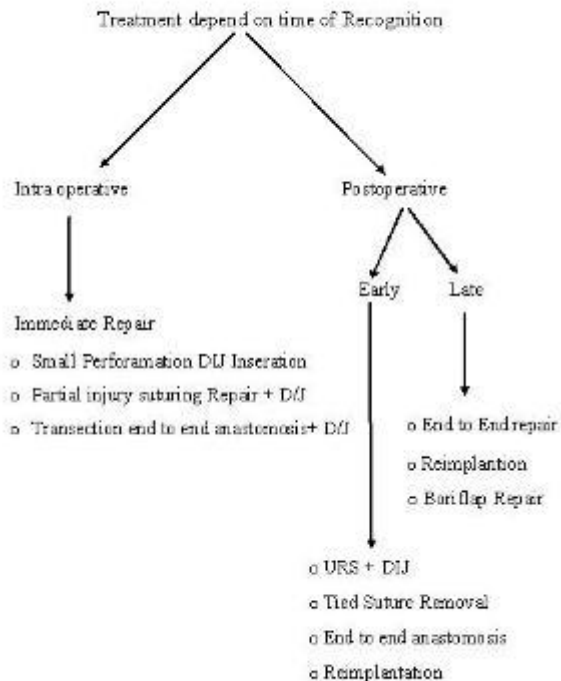
C. Delayed detection treatment

- PCN and Bori flap
- Reimplantation of the Ureter
- Nephrectomy is if No other Choice

1. Surgical repair of Ureteric injuries depend on time of diagnosis and experience of the operating surgeon who repair intraoperative injuries by laparoscopic or laparotomy .

2. Simple injuries like small perforation are treated with D/J insertion. Partial and complete transection need exploration and repair by laparoscopy or laparotomy, suturing and end to end anastomosis .Late diagnosis cases may need end to end anastomosis, reimplantation, boriflap with or without PCN according to the condition.

Treatment Logarithm of Ureteric injuries



Discussion

Revision of literature was done for ureteral injuries during laparoscopy pelvic surgery. The article revised was published by know centers and institute and universities incidence and risks factors and time of Recognition of the ureteral injury and type of repair done was the centre of discussion in all papers. In France Leonard frank study 1300 case post laparoscopic hysterectomy and concluded that rate of ureteral injuries was comparable to open hysterectomy and prevention of these complication by improving the surgeons experience. In another article Charles chaperon revised the laparoscopic complication of 29966 cases of pelvic laparoscopic surgeries for complication of surgery during laparoscopy and he stated awareness and good laparoscopic experience will prevent and reduce the complication and early diagnosis always followed by less morbidity and good out come. Raut.V, from Bombay made retrospective study for 296 case who had pelvic operation with complication injuries of 15 in urinary bladder and 2 in Ureter. Concluded awareness of gynaecology surgeon reduces the incidence of Ureteric injuries. Matani from Jordon revised 42 cases seen in his department with Ureteric injury following pelvic surgery. His research ended with the fact that early Ureteric injury discovered the better outcome. Adhout from France revised Ureteric injuries in his centre in 24 cases Reported during laparoscopy. He mentioned most of the injuries done by gynecology in pelvic surgery and time of detection is essential in the plan of treatment. Serglori from USA made his study in value of intra operative cystoscopy for all case of laparoscopic Hysterectomy and he found all injuries in his series which are 118 cases were detected intra operative and repair done in the same surgery so he recommended intra operative cystoscopy for laparoscopic hysterectomy specially in difficult cases. In all Papers 1/3 of the injuries discover intraoperative.

This risk factor shared in most of the injuries. Recently the usage of fiberoptic Ureteric probe makes the identification of Ureters very easy during surgery specially in difficult cases.

Conclusion

- Awareness of Risk factors and good experience in laparoscopy are the main factors in preventing and reducing the Ureteric injuries.
- Immediate and early diagnosis of ureteral injuries gives excellent out come and minimal morbidity. While delayed diagnosis had prolong morbidity.
- For any suspicious of Ureteric injury investigation should be done to rule out the injury.
- Placement of stent is helpful specially in difficult cases reduce rate of Ureteric injury.
- Intra operative cystoscopy during laparoscopy leads to immediate diagnosis of Ureteric injuries.
- Excessive use of diathermy near the Ureter follow by thermal injury

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