

A Review Study of Bladder Injury in Laparoscopy Assisted Vaginal Hysterectomy

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Abstract

Purpose of this study was to find incidence, prevention, management of bladder injury .we analyzed multi centre study of bladder injury in laparoscopy assisted vaginal hysterectomy

Material and methods

A literature search was performed using Google, yahoo, Springer link and high wire press.

Introduction

Bladder injury is very serious complication of lap assisted vaginal hysterectomy
Method of analysis retrospective analysis

Type of operative procedure laparoscopic assisted vaginal hysterectomy laparoscopic assisted vaginal hysterectomy performed using three port sign symptom of bladder injury During surgery balloon like distention of bladder catheter bag with gas or co2 discharge of clear fluid into the operative field haematuria management of bladder injury during surgery cause of bladder injury primary and secondary trocar perforation .hasson technique for open laparoscopy may reduce three type of injury .2nd and 3rd trocar should be inserted under vision previous surgery increase the risk of inadvertent cystostomy by placing the bladder on traction close to umbilicus or because adhesion place it in the path of secondary trocar .in addition previous surgery can result in adhesion formation which obliterate the position of the bladder adhesion can for in the area of cervico-vaginal junction as result of previous cesarean section and extend the attachment of the bladder beyond lower uterine segment .other cause of mechanical injury .sharp scissors or blunt dissection of adhesion or seen near the dome of bladder may be adhesion from previous infection surgery relating to the bowel ,appendix or peritonitis .

Thermal injury

Excessive coagulation may be responsible for thermal bladder necrosis .use of unipolar cautery in proximity to the bladder surface should be avoided.

Vesico vaginal fistula can occur following operative laparoscopy .it uterus is detached from bladder using unipolar or bipolar cautery excessive thermal coagulation may be responsible for thermal bladder necrosis .thermal necrosis may be some apparent only in post operative period when a vesico-vaginal fistula occurs –fistula can also occur if bladder is taken up when vagina is sutured from below .

Diagnosis

Injection of methylene blue via a bladder catheter will confirm the diagnosis of vesico-vaginal fistula .I.V. P. Retrograde Cystography should also be done for through reevaluation

Presentation of Bladder injury

To minimize bladder injury in patient with previous cesarean section Tran's vaginal lateral intervention should be used to enter the anterior cul-de-sac during laparoscopic interfacial hysterectomy lateral window of vesico vaginal space aware opened first. Management of trocar veress needle injury .may be managed with folly catheter for one week with no subsequent complication .injury to bladder during laparoscopy assisted vaginal hysterectomy is small and loaded some distance away from trigone of bladder it can be retired laparoscopically two layer closer with delayed absorbable suture material and check that the bladder is water tight by injection 300 ml of methylene blue via the bladder catheter.

Incident of Bladder Injury 4-7 out of 1000

Sign to recognize bladder injury intraoperative including following

1. CO2 catheter bag during insufflations
2. Bladder appears to be pushed by the accessory trocar as it is advanced through the abdominal well
3. Blood in Urine
4. Urine drainage from accessory trocar incision
5. Post operative urinary retention
6. Post operative signs of peritonitis
7. Leakage of Indigo carmine from the injured site

Prevention of Bladder Injury Insert is secondary Trocar under direct vision.

1. Separate bladder from lower uterine segment by using sharp dissection never dissect the bladder bluntly
2. Make sure the bladder is not inside the gain of laparoscopic stapling device before firing it.
3. Avoid excessive electro surgery around the bladder

Treatment

1. Repair is dependent upon whether injury is thermal or Mechanical
2. Whether injury is at the base of dome of bladder
3. Proximity of injury to trigone and ureteric opening

Treatment

If diagnosed at the time of surgery. Bladder injury at the dome can be repaired in a straight forward manner in two layer C PDS. Is layer should be continuous containing Muscular is Mucosal layers. Instillation of Indigo carmine dye assist identification of bladder boundaries laparoscopic repair of vesico vaginal fistula if presented after surgery is done after about 12 weeks. Vesico-vaginal space was developed both bladder vaginal were closed separately bladder

with vicryl vagina with PDS. A peritoneal flash was used to separate vesico vaginal space and sutured with vicryl. Abdominal approach should be used for following indications.

1. Inadequate exposure because of high or retracted fistula in a narrow vagina.
2. Proximity of fistula to the ureter
3. Multiple fistula
4. Associated pelvic pathology bladder should be emptied prior to surgery

New Technique

A new technique for dissecting the bladder laparoscopically was detected by James Cook University Hospital during laparoscopic assisted vaginal hysterectomy in department of minimal access surgery. 130 lavh were reviewed bladder was dissected laparoscopically a metal catheter was used to stretch Identification of bladder edge and a sponge forceps was inserted virginally to mark the site for anterior Colpotomy monopolar scissor were used to open virginal there was one bladder trauma 0.7% Which was recognized immediately and repaired with laparoscopy intra corporeal knot mean operating time was 198.7 minute recorded mean hospital stay was 2.7 days with range of 2 to 5 days dissection of bladder laparoscopically adds 5 to 10 minutes to operative time but significantly facilitated identifying Appropriate plane it is an easy technique to learn and teach it is associated with minimal complication With no increase in incidence of bladder injury or dysfunction injury to bladder with laparoscopy Is rare said et al reported 1.6% incidence of serious urinary complications after major operative? Laparoscopy majority being bladder perforation or fistula there are four case of bladder injury in a series of 900 laparoscopic hysterectomy three of this for woman had under gone 2 or 3 c sections woman under going vaginal hysterectomy are more likely to sustain bladder injury if they have had previous c section. In this study these reporting 130 consecutive lavh in which bladder were dissected and ureteric vaginal pouch then opened laparoscopically. This technique was initially designed for woman who had previous c section in whom bladder was adherent and difficult to identify and dissect vaginally technique was later adopted in all cases because it appear ed to be easier and safer then vaginal route this technique was used in 130 lavh performed at james cook hospital technique was used in all patient in the same o t high pressure entry technique 25 mm hg using 3 port in addition to 10 mm umbilical port with 5 mm port inserted under direct vision in right and left iliac fosse later to deep epigastric vessels and are one inserted supra pubically. Bipolar diathermy and scissor were used to secure pedicles down to but not including uterine vessels both round ligaments were secured with bipolar diathermy peritoneum was dissected from one round ligament to other side. A metal catheter was then inserted in the bladder catheter was rotated so the tip was pointed up ward to stretch the bladder pillars bladder was dissected with monopolar scissor with catheter in place. A sponge forceps was then pushed in to vagina in to anterior fornix to stretch the vagina and mark the site for colpotomy monopolar scissor were used to open vagina and use of cutting diathermy and firing just prior to contact with vaginal tissue helped to achieve haemostatic without significant coagulation vagina opened in layers until sponge forceps was reached which was pushed in ward and blade opened widely to stretch the colpotomy procedure was completed vaginally. A Wertheim retractor was placed through to protect bladder uterine vessels were first secured with clamps and secured with vicryl followed by cardinal and utero sacral ligament and intra peritoneal drain as well as urinary catheter until following day result out of 130 patients 12 had C sections mean operative time was 98.7 minute.

There was one bladder trauma which was recognized immediately and repair with laparoscopic intra corporeal knots. Cystoscopy was performed to ensure proper bladder repair and to exclude any other injuries. Patients has bladder catheter for 7 days at follow up 6 months post operatively she was well with no residual bladder dysfunction.

Discussion

It is difficult to detect the incidence of bladder injury with laparoscopic surgery in general LAVH specially GILMOUR et al (9) reported that major gynecological surgery the incident of bladder injury varied from 0.2 -19.5/ per one thousand with over all frequency of 2.6 per one thousand based on medlinereach for all reports between 1996 and 1998. The found a higher incidence of bladder injury when routine cystoscopic was perform with range from 0 to 29.2 and over all frequency of 10.4 per one thousand. Author commented that only 51.6% of bladder injury were identify and managed intraoperatively. Ostrzenski et al (10) reported the overall incidence of bladder injury during laparoscopic procedure to range from 0.022% to 8.3 % of cases. These injuries most frequently occurred during LAVH. Sharp electro surgical dissection was leading instruments cause in injury. Intra operatively diagnosis of bladder injury was made in 53.24% of all bladder injuries cases with bladder dome being most commonly injured structure. Less than half 29.87% of bladder injuries were corrected laparoscopically. In this series one bladder trauma occurred when catheter was pushed into bladder wall thus perforated through. The injury was identified immediately and successfully repaired laparoscopically with no residual permanent bladder dysfunction. Uses of metal catheter to stretch the bladder help in identify the boundary to bladder and pillars. Which significantly facilitate recognizing where to dissect and release bladder especially in patients with extensive scarring dissection should be carried out until one is satisfied that bladder has been completely freed of the vagina and use of sponge forceps to stretch the vaginal wall clearly Marks the site for colpotomy. Further largest studies are needed to obtain more accurate estimate of bladder trauma. Cystoscopy was not performed routinely unless bladder injury was suspected indigo carmine was injected intravenously a few minute prior to Cystoscopy. Some Author recommend routine use of Cystoscopy with hysterectomy because of high incidence of undetected bladder injury vakili at al (11) recently reported a 4.8% incident of urinary injury during hysterectomy and therefore concluding that routine Cystoscopy should be considered. Harkki-Siren at al (12) reported complication rate of for per one thousand laparoscopy procedure but a rate of major complication of 10 per one thousand with operative laparoscopy 19% percent major complication in these serious was ureteric injury 46% was intestinal injury. They found that 75% of the major complication were associated with LAVH and commentated that many of these may be due to technique as the uterine vessel were coagulated and cut laparoscopically 86% of the time and attempt to secure uterine vessel with diathermy or staples may result in significantly more ureteric injuries (13). In these series no ureteric injury as laparoscopy dissection stopped above uterine vessel and procedure was then completed vaginally. A recent systemic review and Meta analysis of randomized controlled trial of comparing abdominal vaginal and LAVH was published by Johnson at al (14). They reported a significant increase in urinary tract injury for laparoscopic compared with abdominal hysterectomy odd ratio 2.6; 95% therefore no significant difference when comparing laparoscopic versus vaginal or laparoscopic hysterectomy versus LAVH. In this series opted for LAVH visco et al reported 2.6% of LAVH damage to urinary tract occurred among total 2998 cases. Evaluate study published by Ginny et al (17) reported

2.1% bladder injury in laparoscopic hysterectomy compared to 1% in abdominal Hysterectomy. Comparison of laparoscopic and vaginal hysterectomy bladder injury reported were 0.9% and 1.2% respectively. Incidence of bladder injury in gasser series was lower 0.7% due to ease of identify and dissecting bladder.

Conclusion

If one is careful one can easily avoid bladder injury by obeying the above mentioned principals. This Gasser study describe dissection of bladder laparoscopically adds 5-10 minutes to the operating time. Use of metal catheter help to identify bladder margin and by stretching of bladder pillar plane are easily recognized. Use of sponge forceps vaginally clearly marks the vagina and thus site for colpotomy. It is easy technique to learn and adopt specially in patients with previous c section. Incident of bladder is low main advantage is facilitating bladder dissection when there are significant adhesion. Technique is associated with low incidence of bladder injury.

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