Case Reports

An Unusual Complication of a Common Gynaecological Procedure

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Abstract
A case of bilateral, but more of massive right sided transudative pleural effusion associated with bilateral ureteric trauma following laparoscopy for endometriosis is reported. The diagnosis of urinothorax was confirmed by demonstrating a pleural fluid to serum creatinine ratio of greater than one. Management of ureteric injury by insertion of Double J (DJ) stents on both sides resulted in resolution of the pleural effusion.

Introduction
Urinothorax is a very rare cause of pleural effusion and denotes the presence of urine in the pleural space. It is usually a consequence of urinary tract obstruction or trauma, including iatrogenic injury from percutaneous or ureteroscopic manipulations and extracorporeal shockwave lithotripsy. This results in leakage of urine and subsequent accumulation in the pleural space. To our knowledge there is no publication describing an association of a gynecological laparoscopic surgery and urinothorax. We hereby present a case of massive right sided pleural effusion (Urinothorax) due to bilateral ureteric injury sustained during laparoscopic surgery.

Case Report
A 30 yr old lady with recurrent massive right sided pleural effusion was referred to our centre for evaluation and management. She was on treatment for primary infertility since 4yrs and diagnosed to have pelvic endometriosis. She had undergone laparoscopic cauterization of the endometriosis a week back in another medical facility. She had been prescribed a course of LH-FSH three months prior to the procedure. On the third post-operative day, she developed abdominal pain and distension. She got readmitted in the same hospital and was treated symptomatically. There was no significant improvement, and 3 days later, she developed oliguria and progressively worsening dyspnoea. A chest radiograph posteroanterior view revealed the presence of a massive right sided pleural effusion. An emergency thoracocentesis was done to relieve the dyspnoea, and patient was empirically started on anti tubercular medication. But there was rapid accumulation of pleural fluid which was refractory to repeated thoracocentesis. She was referred to our centre, as there was no improvement in her condition.

At admission in our hospital, she was intensely dyspnoeic with a respiratory rate of 30/minute, heart rate of 120/min, and blood pressure of 120/70mmHg. She had an oxygen saturation of 99% on oxygen 4L/min with face mask. Respiratory system examination revealed stony dullness on percussion and decreased intensity of breath sounds in the whole right hemithorax, suggestive of massive right sided pleural effusion. Gastrointestinal system revealed a soft abdomen, without any tenderness. There was no organomegaly, but free fluid was present. Bowel sounds were normal. CNS and CVS were within normal limits.

Investigations revealed hemoglobin of 15gm/dL, total white cell count of 21400/mm³, with polymorphs of 88%, and lymphocytes 8%, elevated C-reactive protein-40.88 mg/L. The liver functions were normal. Total protein was 7.6g/dL and S.Albumin 4.1g/dL. The blood urea was 23mg% and serum creatinine was 2.7mg%. A chest radiograph, postero-anterior view revealed presence of a massive right sided pleural effusion (Figure 1). An ultrasonogram of the abdomen showed the presence of moderate ascites and minimal pleural effusion on the left side as well. There was no hepatosplenomegaly or hydronephrosis. Serum estrogen levels and beta-HCG levels were normal. A transvaginal sonogram was done which did not show any evidence of ovarian hyper stimulation syndrome and sizes of the ovaries were normal. An echocardiogram did not show any cardiac abnormality.

Pleural fluid analysis was suggestive of a transudative effusion with a protein level of 0.6g/dL, glucose 188mg%, LDH 49U/L, total cell count of 62, with lymphocyte count of 60% and polymorphs 2%. In view of the ongoing fluid re accumulation in the backdrop of a recent surgical procedure, urinothorax was considered to be a possibility and a computed tomography of the abdomen was suggested, but the relatives were not willing for the same. The pleural fluid urea level was found to be 50.3 and pleural fluid creatinine-5.5. The serum creatinine/pleural fluid creatinine ratio was more than 1, which is very significant in the diagnosis of urinothorax. In view of the fact that the patient was continuing to have oliguria, renal imaging was mandatory to confirm the diagnosis and so a retrograde bulbo-ureterogram was done, which on image intensifier revealed contrast leak from both the lower ureters 5-6cms from the vesicoureteric junction (Figures 2 and 3). A final diagnosis of urinothorax secondary to injury to lower part of ureters on both sides during laparoscopic procedure was made.

Bilateral Double J (DJ) stenting was done as there was extravasation of urine from the lower ureters on both the sides. After the stenting, urine output improved to 800-1000ml/day, but patient developed spikes of fever and tachypnoea indicative of sepsis. A transvaginal ultrasound revealed a collection in the pelvis. An exploratory laparotomy was done which revealed...
A pelvic abscess and it was drained. She had peritonitis, acute intestinal obstruction due to multiple adhesions. Peritoneal lavage was given and the intestinal adhesions were released. Bilateral flank drains were put to drain the collection.

After 1 week the urine output started improving to about 800ml/day and the collection from the drain started decreasing. She was discharged after 3 days with Foley’s catheter and left sided abdominal drain in situ which were removed after two weeks. The chest radiograph posteroanterior view taken at the time of discharge did not show any evidence of pleural effusion (Figure 4). There was no urinary leak in the further follow up and both the DJ stents were removed after a period of 3 months. The patient continues to do well, with the ureteric fistula having completely healed and without any further urinary leak.

**Discussion**

Urinotherax was first described by Corriere et al in 1968. This is a rare cause of pleural effusion that is due to the presence of urine in the pleural space in the setting of obstructive uropathy. Urinotherax occurs as a result of leakage of urine into the retroperitoneal space and formation of urinoma. The urine then reaches the pleural space by diaphragmatic lymphatics or by passing through defects in the diaphragm. Most of the reported cases of urinotherax are due to urinary tract obstruction, secondary to tumor/metastasis, or trauma of the ureter. There have been other rare reported causes of urinotherax like retroperitoneal fibrosis, Extracorporeal Shock Wave Lithotripsy, renal biopsy and removal or blockage of nephrostomy tubes. Based on etiology there is a recent classification of urinotherax into obstructive and traumatic. Our case comes under the traumatic subgroup, since the patient had documented bilateral ureteric trauma following a laparoscopic procedure.

The effusion is usually ipsilateral to the obstructed kidney. Contra lateral or bilateral cases are rare. In our case the pleural effusion was bilateral, but predominantly in the right hemi thorax, following laparoscopic cautery for pelvic endometriosis.

Diagnosis of urinotherax is similar to any pleural effusion. Chest radiograph, ultrasound of thorax, or in some cases a computed tomography of chest is required and if there is radiographic evidence of fluid, thoracocentesis is indicated. The pleural fluid usually fulfils Light’s criteria for a transudate, except for occasionally elevated LDH levels. The fluid may also have low glucose and pH in most but not higher in all cases. Pleural
fluid creatinine is always higher than the serum creatinine. The diagnosis can be confirmed by finding pleural fluid to serum creatinine ratio that is greater than one.5 Urinothorax should be suspected if the sample is straw coloured or has urine like odour.2 In our patient the pleural fluid creatinine was 5.5mg/dL and serum creatinine was 2.7mg/dL, thus satisfying the criteria(pleural fluid creatinine/serum creatinine >1).

A Medline search and review revealed only about 60 reported cases of urinothorax so far. Our case is unique in that urinothorax is an extremely rare complication of laparoscopic procedures, since it is uncommon that both ureters get injured in the procedure. To our knowledge no such case has been reported in literature and as such this is the first report of this unusual cause of urinothorax following a gynaecological laparoscopic procedure. The diagnosis of urinothorax requires a high index of suspicion by the treating physician especially in the setting of recurring pleural effusion and urinary obstruction or after intervention in the uro-genital tract.6 Hence, we present this case to highlight this unusual complication of a common surgical procedure.

References