

CASE REPORTS

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Conservative management of chylous leak after open radical nephrectomy in an adult patient: a case report and literature review

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Abstract

Background: Chylous ascites is rare but still a recognized complication of retroperitoneal surgeries caused mostly by inadvertent trauma to lymphatic channels. In this article, we present a case report and literature review of adult patient, with malignant tumor of upper urinary tract, who developed chylous leak after open nephrectomy.

Case presentation: We present a case of chylous leak for a 67-year-old female patient, presented to urology clinic with complaining of left loin pain and gross hematuria, found to have upper urinary tract tumor, she underwent open radical nephrectomy with lymph nodes dissection, and postoperatively she had chylous leak that is treated conservatively using octreotide and spironolactone without the need for total parenteral nutrition.

Conclusion: Conservative management should always be the first choice of management of chylous leak and chylous ascites. Careful anatomical identification and securing of the periaortic lymphatics are needed to decrease the risk of postoperative chylous leak and ascites.

Keywords: Chylous ascites, Chylous leak, Nephrectomy, Octreotide, Total parenteral nutrition

1 Background

Chylous ascites defined as the accumulation of lipid-rich lymph in the peritoneal cavity is an uncommon complication after open radical nephrectomy. It carries significant morbidity and increases both the cost and hospital stay [1].

The postoperative chylous ascites is related to inadvertent disruption of lymphatic channels during the surgery [2]. Because the incidence of postoperative chylous ascites is low, no level-one evidence can be made on the treatment of chylous ascites though most specialists start conservative management first and reserve surgical management for refractory cases [1, 2].

Most reported urological cases in English literature are those after laparoscopic nephrectomy and donor nephrectomy. There are only few reported cases of

chylous ascites after open radical nephrectomy/nephroureterectomy, only one of them was performed for upper urinary tract urothelial carcinoma. To our knowledge, we present here the first case of chylous leak after open radical nephrectomy with lymphadenectomy for upper urinary tract urothelial carcinoma that was treated conservatively without the need for total parenteral nutrition (TPN).

2 Case presentation

A 67-year-old female patient presented to our clinic with history of left loin pain and gross hematuria. She had also loss of appetite and significant weight loss over the last 3 months. She is a heavy smoker with history of ischemic heart disease. She had no previous surgeries. Physical examination revealed a large palpable left upper quadrant mass. Her preoperative complete blood count, kidney function tests, electrolytes and liver function tests were within normal limits. Computed tomography (CT) scan revealed a large soft tissue mass arising from the

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Fig. 1 A preoperative coronal CT section showing the mass

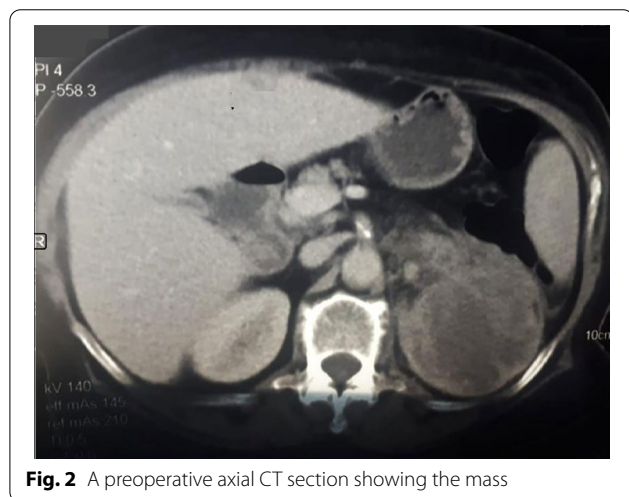


Fig. 2 A preoperative axial CT section showing the mass

left kidney ($8 \times 7 \times 13$ cm) with few hilar necrotic lymph nodes (Figs. 1, 2). There was an ill-defined necrotic nodule of about (3.5) cm on the left adrenal gland. There were no other distant metastatic lesions, and the right kidney was looking normal.

An open left radical nephrectomy was performed through an intercostal incision in which the mass (involving the kidney and adrenal gland) and the hilar lymph nodes were removed en bloc. The peritoneum was opened and part of it excised with the mass. No lymphatic leak was noted intraoperatively, and a drainage tube was inserted. Histopathology revealed high-grade

urothelial carcinoma with sarcomatoid features, central necrosis, and perinephric fat invasion, two out of eleven perihilar and three out of nine perinephric lymph nodes were positive for malignancy.

The patient was doing well and resumed oral diet on the second postoperative day (POD), on the next day, she started to have whitish milky output drainage through the abdominal drain (250 ml/day), at this point we had two main differential diagnoses; chylous leak and pancreatic fistula, but the biochemical analysis was consistent with chyle. On POD 4, the patient was started on low salt, low fat and high protein diet which resulted in a drop in the chylous output to about (100 ml/day). On the POD 6, the patient was started on octreotide injection (0.1 mcg three times a day) and spironolactone. The chylous leak resolved so the drainage tube was removed on the POD 10 and the patient received a long acting somatostatin analogue (20 mg given as a depot muscular injection). She was discharged and advised to stay on low fat diet for further 3 weeks. Upon follow-up for 3 months, the patient was doing well with no abdominal distension nor leak from the drain site.

To the best of our knowledge, only few cases of chylous ascites after open nephrectomy/nephroureterectomy for adult patient with malignant pathology are reported in the English literature. A summary of our literature review is provided in (Table 1).

3 Discussion

Chylous ascites is the accumulation of triglyceride-rich lymph in the peritoneal cavity, which can be classified into primary and secondary, the primary is caused by congenital lymphatic system dysfunction while the secondary chylous ascites can be caused by malignant process, infection, trauma, and postsurgeries [10, 11].

The incidence of chylous ascites after open donor nephrectomy is (0.6%) and (2%) after laparoscopic donor nephrectomy [12]. Some experts hypothesized that the use of bipolar and other energy devices rather than clipping in laparoscopic surgery has contributed to the higher incidence of chylous ascites in laparoscopic surgery compared to open renal surgery [13].

The lymphatic drainage of the abdomen, pelvis and lower limb goes into paralumbar trunks which joins the intestinal trunks to form the cisterna chyle [14]. So para-aortic dissection of renal artery may result in injury to paralumbar lymphatic trunks resulting in chylous leak and chylous ascites. Because of the anatomical proximity of left renal artery, aorta, and paralumbar lymphatic trunks, chylous ascites is more common after left nephrectomy compared with right nephrectomy comprising (75%) to (99%) of all cases of chylous ascites [14, 15].

Table 1 Summary of literature review of chylous ascites after open nephrectomy/nephroureterectomy for adult patient with malignancy

Author	Ciftci et al. [2]	Hsiao et al. [3]	Kobayashi et al. [4]	Shah et al. [5]	Leibovitch et al. [6]	Ferrandière et al. [7]	Ferrigni et al. [8]	Herz et al. [9]
Number of cases	1	1	1	1 ^a	1	1	1	1
Age	65	62	35	60	35	65	62	45
Gender	Male	Female	Male	Male	Female	Male	Male	Female
Side	Right	Left	Left	Right	Left	Left	Left	Right
Approach	Radical nephrectomy	Radical nephroureterectomy	Partial nephrectomy	Radical nephrectomy	Radical nephrectomy and inferior vena cava thrombectomy.	Radical nephrectomy	Radical nephrectomy inferior vena cava thrombectomy and en bloc partial left colectomy	Thoraco-abdominal nephrectomy
Lymphadenectomy	Yes	Yes	No information	Yes	Yes	No information	Yes	Yes
Pathology	RCC	UUTUC	RCC	RCC	RCC	RCC	RCC	RCC
Presentation	POD 4	POD 7	POD 2	POD 21	POD 8	POD 0	POD 6	POD 24
Diagnostic tool	Biochemical fluid analysis	CT scan and biochemical fluid analysis	CT scan and biochemical fluid analysis	CT scan and biochemical fluid analysis	CT scan and biochemical fluid analysis	Ultrasonography and biochemical fluid analysis	Biochemical fluid analysis	Paracentesis and biochemical fluid analysis
Management	Surgical after failure of conservative management	TPN	TPN + octreotide	Paracentesis + TPN + diuretics	Paracentesis, TPN, peritoneal drain, octreotide	TPN + octreotide	Diet modification	Paracentesis
Outcome	Resolved	Resolved	Resolved	Resolved	Resolved	Resolved	Resolved	Resolved

UUTUC upper urinary tract urothelial carcinoma; RCC renal cell carcinoma; POD postoperative day; CT computed tomography; TPN total parenteral nutrition

^a Shah et al. mentioned other nine cases of chylous ascites after open nephrectomy without providing details [4]

Lymphadenectomy increases the risk of postoperative chylous ascites [13]; a retrospective study done by Kim et al. concluded that the incidence of chylous ascites is three times more common if lymphadenectomy is done [15].

Patient with chylous leak usually present on POD 4 [16], but can present as early as POD 0 [7], and can be as late as few weeks or months postoperatively [16]. The clinical presentation of chylous ascites and chylous leak differs whether there is a drain or not, patients with drain are usually presented with persistent drainage of milky fluid, while those without drain or those whose drain removed early are presented with abdominal distention, pain, nausea, or less commonly presented with chylous discharge from the wound [15].

The diagnosis of chylous ascites is not difficult but needs high index of suspicion, to confirm the diagnosis many experts use biochemical analysis of the draining fluid and abdominal imaging such as ultrasonography and CT scan, and more invasive imaging modality such

as lymphangiography and lymphoscintigraphy is used sometimes when surgical intervention is planned to localize the site of lymphatic disruption [1].

Because of limited number of reported cases of chylous leak after open nephrectomy for adult patients with malignant renal tumors, management of this complication has been guided by reports from other specialties [16]. In general, most patients with chylous ascites after abdominal surgery are successfully treated conservatively [16], and that is consistent with our literature review [3–8]. The conservative management consists mainly of diet modification (high protein, low fat, medium-chain triglyceride diet), keep NPO and TPN, paracentesis especially helpful in patient without drain [5, 6, 9], some medications may be helpful such as octreotide and diuretics, the exact mechanism of octreotide is not completely understood, but it has been shown to decrease the intestinal absorption of fats and decrease the lymphatic flow and thus improves the chylous ascites [16–18].

There is no definite agreement on the exact timing of surgical intervention, but some authors suggest that conservative management should be tried for 6 to 12 weeks before proceeding to the surgical management [13]. Some authors suggest the use of fibrin glue to minimize the risk of postoperative chylous leak and ascites [19].

4 Conclusions

Chylous ascites should always be considered as a differential diagnosis of abdominal distention after radical nephrectomy. Conservative management should always be the first choice, and octreotide may play a vital role. Meticulous dissection of perihilar fatty tissue and ligation of major lymphatics during surgery (especially on the left side and in cases with lymphadenectomy) are highly recommended.

Abbreviations

POD: postoperative day; CT: computed tomography; RCC: renal cell carcinoma; UUTUC: upper urinary tract urothelial carcinoma; TPN: total parenteral nutrition; NPO: nil per Os.

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Authors' contributions

AA contributed to concept, initiation of the idea, critical analysis, revision of the text and preparation of the final text. MI contributed to concept, preparation of the manuscript draft, computer work and literature review. SA was involved in critical analysis and preparation of the final text. All authors have read and approved the final manuscript.

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Availability of data and materials

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Ethics approval and consent to participate

Our institution does not require ethical approval for this case report. The study complies with the guidelines for human studies and was conducted in accordance with the world medical association Declaration of Helsinki.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Competing interests

The authors declare that they have no competing interests.

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