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CASE REPORT

Chylous ascites as a complication of laparoscopic donor nephrectomy

Yves Caumartin, Frédéric Pouliot, Robert Sabbagh and Thierry Dujardin

Service d'Urologie, Centre Hospitalier Universitaire de Québec, pavillon Hôtel-Dieu de Québec, Université Laval, Québec, Canada

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Correspondence
Dr Thierry Dujardin, CHUQ, Hôtel-Dieu de Québec, 11, Côte du Palais, Québec, QC, Canada G1R 2J6. Tel.: 1-418-691-5068; fax: 1-418-691-5020; e-mail: th.dujardin@videotron.ca

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Summary

Laparoscopic living donor nephrectomy (LLDN) is a minimally invasive technique for kidney procurement and was developed with the hope of reducing the disincentives associated with live renal donation. Compared with open donor nephrectomy (ODN), this alternative has many advantages including less postoperative pain and earlier return to work. Unfortunately, these benefits are sometimes negated by postoperative complications. Among these, chylous ascites (CA) is a rare but serious problem that is usually managed conservatively. We report the case of a living donor who developed CA refractory to initial conservative management and surgical treatment. We also discuss the role of surgery in the treatment of CA following LLDN.

Introduction

Living donor renal transplantation offers many significant advantages over deceased donor transplantation [1]. Laparoscopic living donor nephrectomy (LLDN) was developed to promote living donation and is increasingly becoming an accepted standard for living renal donation since its introduction in 1995 [2]. LLDN is a safe technique, which offers many advantages compared with open donor nephrectomy (ODN) including decreased postoperative pain and length of hospital stay as well as convalescence with better cosmetic results, quality of life and overall satisfaction [3,4].

The overriding concern must always be the safety and welfare of the donor. To this end, the surgeon must be aware of all potential complications inherent to LLDN. We report a rare postoperative complication of LLDN, CA, which has been described mostly in association with abdominal aortic surgery [5,6]. From a urological standpoint, CA is usually associated with retroperitoneal lymphadenectomy for testis [7,8] and renal cancer [9,10]. CA represents a difficult problem to treat and can have serious metabolic consequences. Constant loss of protein and lymphocytes may cause nutritional and immunological disturbances [11].

The proposed treatment for this condition is based on conservative modalities such as dietary intervention [high-medium chain triglyceride (MCT) diet with low-fat and high-protein content] and treatment with diuretics [11,12]. Total parenteral nutrition (TPN) and somatostatin analogue are used as a second line if dietary interventions fail [11,12]. The resolution rate of chyloperitoneum by conservative management is about 50–60% [7,11,12]. Surgery is usually considered after failure of conservative treatment. The role and timing for surgical repair, however, remains controversial.

We report a case of CA refractory to initial conservative and surgical management as a rare complication resulting from LLDN. Based on a review of the literature, the management approach that should be adopted for living donors are discussed.

Case report

A 48-year-old woman underwent transperitoneal left LLDN. Operative time was 120 min, blood loss was 75 cc

Figure 1 CT-scan of the abdomen of the patient on postoperative day 10 showing significant ascites.

and the duration of hospital stay was 3 days. There were no intraoperative or immediate postoperative complications. Ten days after discharge, the patient presented with abdominal distention, discomfort and dyspnea. A CT scan revealed significant ascites (Fig. 1). An ultrasound-guided paracentesis aspirated whitish nonhemorragic fluid with a biochemical analysis compatible with chyle (triglycerides at 6.3 mmol/l, high nonpolynuclear nucleated cells content and sterile culture). Bipedal lymphangiogram showed a lymphatic leak along the left paralumbar chain at the level of L2 (Fig. 2). Conservative management with TPN and subcutaneous somatostatin was immediately initiated.

TPN was stopped 3 weeks later as lymphoscintigraphy demonstrated no evidence of recurrent leak. The patient was discharged with an MCT diet with high-protein and low-fat content. Unfortunately, persistence of ascites in addition to digestive symptoms forced percutaneous puncture to evacuate 6 l of ascites. Because of the rapid symptomatic re-accumulation of abdominal fluid and denutrition, re-intervention was planned 10 weeks following LLDN.

A laparoscopic approach was chosen. The patient received 45% high-fat gavage 7 h before the surgery to increase chyle flow and help localize the leakage site. On entering the abdomen, 8.5 l of chyle was aspirated. The left renal bed was explored. Multiple prominent lymphatic channels were visible around the aorta at the level of the left renal hilum. A large tributary and many of the smaller branching channels were clipped and sutured laparoscopically because of persistent diffuse chylous oozing. After a complete lymphostasis, fibrin glue was applied to the area.

Postoperatively, the patient received TPN and subcutaneous sandostatin and CA still recurred. A second ultrasound-guided paracentesis was performed to alleviate

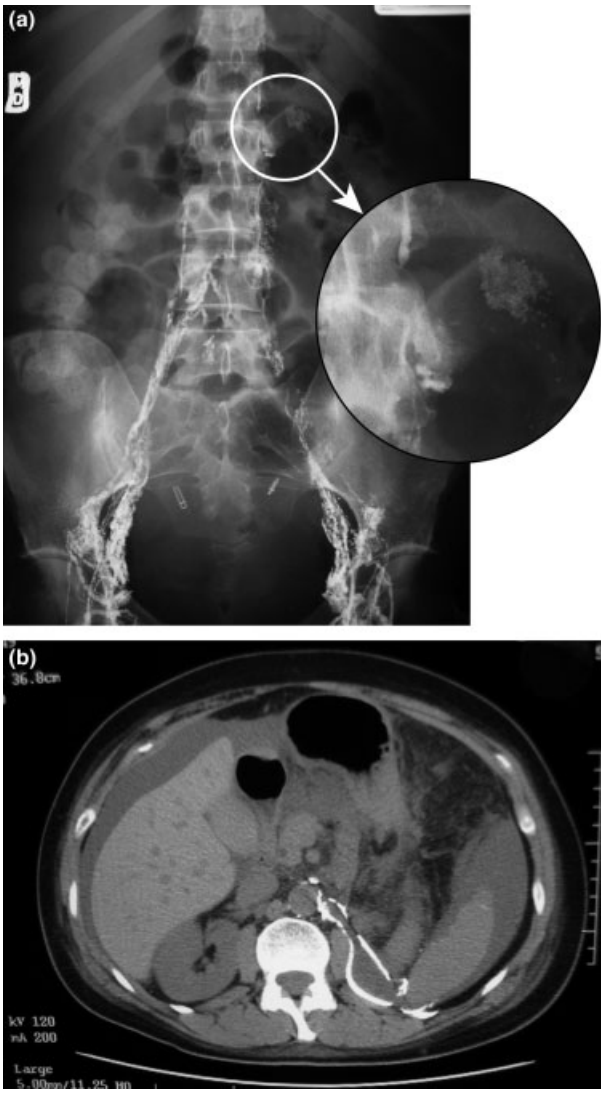

Figure 2 Chylous fistula is located at the level of the second lumbar vertebra. (a) Standard bipedal lymphangiogram localizes the iatrogenic chylous fistula at the left paravertebral region, at the level of L2 (medalion). (b) CT-lymphangiogram performed after bipedal lymphangiogram shows extravasation of contrast media from the left paravertebral lymphatic chain, at the level of L2. Contrast fuses around a hypodense postoperative collection.

symptoms. She was put on an MCT diet and was discharged from hospital on day 34 postreintervention. The patient was symptom-free during her 2-month follow up. At that time, a second bipedal lymphangiogram did not show any leakage and regular diet was resumed. Overall, a convalescence period of up to six months was needed before she resumed her work. Moreover, it was noteworthy that she developed an adjustment disorder with mixed anxiety and depressed mood during the course of her long hospitalization.

Discussion

To our knowledge, this is the seventh case reported of CA associated with LLDN. As shown in Table 1, two previously reported cases of CA resolved within 2 weeks of the elemental diet and diuretic treatment [13,14]. Two other cases failed initial conservative therapy but were successfully managed with early laparoscopic re-intervention (at 4 and 5 weeks following LLDN, respectively) [15,16]. Recently, two cases were reported by Leventhal *et al.* [17] in a retrospective review of LLDN but no details about the treatment management were provided.

In our case, laparoscopic management after an aggressive conservative treatment failure was inefficient even when good visualization, adequate ligation and utilization of fibrine glue were achieved intraoperatively. The delay in surgical management (10 weeks post-LLDN), however, may have been responsible for that failure as postprimary surgery inflammation and deterioration of the patient's nutritional status may have interfered with identification and healing of the leak. Moreover, we cannot exclude an exacerbating factor as a thoracic duct obstruction despite absence of previous surgery, which can be linked to CA and chylothorax.

Nowadays, the role and timing for surgical repair of CA remains controversial. The main argument in favour of early re-intervention is that it permits direct visualization of the fistula and its ligation with immediate definitive cessation of the leak, avoiding nutritional and immunological complications. Recently, the laparoscopic approach has been used successfully to resolve postoperative CA [16,18]. It is less invasive than the former conventional surgical technique. The lymphatic leaks can be magnified and efficient treatment is achievable with clips, sutures, coagulation and utilization of biological glue [15,16]. Conversely, opposition to surgery stresses the hazards of reoperation in malnourished and immunocompromised patients who have barely recovered from previous major surgery and complications [19]. Despite the helpful adjunctive measures available, localization and surgical repair of the fistula may be challenging and may lead to morbidity and surgical management failure [5].

Early surgical management of CA is indicated in the LLDN population for many reasons. First, living donors are younger and healthier than most patients with CA described in the literature. According to many authors, the most suitable candidates for early re-intervention are patients with good performance status and with a well-visualized lymphatic fistula [11,12,20]. Finally, they are generally active people and consideration for the amount of time to resume normal activities is very important.

The assessment of the optimal timing for surgery has to consider that small leaks have been shown to rapidly resolve with conservative treatment [13,14]. Consequently, many authors recommend a conservative treatment course of 8–12 weeks duration [11,12]. However, our case report underscores the potential complications associated with a long period of conservative therapy. On the contrary, two case reports of CA associated with LLDN have been successfully managed surgically after 4 and 5 weeks respectively [15,16]. Based on these points, we believe

Table 1. Cases of chylous ascites secondary to laparoscopic living donor nephrectomy in the medical literature.

							Conservative treatment			Surgical treatment		
References	Number of cases	Age	Gender	LAP versus HA	Side	Time to symptoms after surgery (days)	Modalities	Duration (weeks)	Success	LAP versus HA	Delay from primary surgery (weeks)	Success
Our report	1	48	Female	LAP	Left	10	TPN and somatostatin	3	No	LAP	10	No
							MCT diet	2	No			
Shafizadeh *et al.* [13]	1	36	Female	LAP	Left	14	Elemental diet and spironolactone	2	Yes	–	–	–
Molina *et al.* [16]	1	45	Female	LAP	Left	10	MCT diet		No	LAP	5	Yes
Geary *et al.* [15]	1	44	Female	HA	Left	14	MCT diet	1	No	HA	4	Yes
							TPN and somatostatin	1	No			
Leventhal *et al.* [17]	2	NA	NA	NA	NA	NA	Yes, but no description	NA	NA	–	–	–
Wu *et al.* [14]	1	NA	NA	NA	NA	3	MCT diet	1	Yes	–	–	–

LAP, pure laparoscopy; HA, hand-assisted; TPN, total parenteral nutrition; MCT, medium chain triglyceride; NA, non available.

that surgical management of patients with CA post-LLDN should be addressed after 4 weeks of conservative management. This delay will permit small fistula to heal while avoiding physical and psychological consequences associated with the long course of conservative management often needed to resolve high output fistula [5,7]. Moreover, difficulty in monitoring conservative treatment outcomes may extend the duration of conservative therapy unnecessarily. Monitoring multiple paracenteses or continuous drainage are not recommended because of high risk for malnutrition and infection. Also, in our experience, normal lymphoscintigraphy is not associated with successful conservative management as stated in the literature [12] and may further delay definitive surgical therapy.

Finally, as CA is a severe and rare complication of LLDN and the characteristics of patients undergoing LLDN are different when comparison with patients from which the literature's management algorithms [11,12] are based, we think that is important to continue to accumulate reports about the management of this complication in order to decrease associated morbidity.

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Disclosures

None.

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