# Chylous ascites following laparoscopic living donor nephrectomy Case report



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#### Chylous ascites following laparoscopic living donor nephrectomy. Case report

Kidney transplantation is a therapeutic option of choice for patients with end-stage disease. Laparoscopic living donor nephrectomy (LLDN) is a less invasive alternative to the open procedure to increase the number of renal donors. However, several studies have reported that this technique requires a long learning curve, and that the complication rate varies from 6.4% to 16.5%. Among these, chylous ascites (CA) is a severe and rare complications of LLDN. The treatment option for this condition is primarily conservative. Surgery is considered after failure of conservative treatment and its role, however, remains controversial. We report a case of CA as a complication of laparoscopic donor nephrectomy. A 44 year old woman underwent LLDN of the left kidney. There were no intraoperative or immediate postoperative complications and the patient was discharged home on postoperative day 3. Two weeks after discharge, the patient returned for a routine follow-up visit and presented with abdominal distension, discomfort, and dyspnea. A CT scan of the abdomen with oral and intravenous contrast revealed significant ascites in all four quadrants of abdomen and pelvis. An ultrasound guided paracentesis was performed, and 7 L of chyle was aspirated. Conservative management with medium chain triglyceride and spironolactone was immediately initiated; the symptoms improved after paracentesis, and the CA completely resolved after 3 days of therapy. However, to prevent recurrence, the patient consumed a low -fat medium chain triglyceride diet for 6 months. CA needs to be considered as a potential severe and rare complication of LLDN, and conservative management should be proposed to all patients, reserving the surgical treatment to treatment failure.

KEY WORDS: Chylous ascites, Laparoscopic living donor nephrectomy, Kidney transplantation

## Introduction

Kidney transplantation is the optimal replacement therapy for patients with end-stage renal disease. With the advent of safer harvesting techniques and immunosuppression, both donor and recipient outcomes have markedly improved in recent years. Kidney donation from living donors remains the single most important factor responsible for improving patient and graft survival <sup>1</sup>. Laparoscopic living donor nephrectomy (LLDN) was introduced by Ratner et al. in 1995 as a less invasive alternative to the open procedure to increase the number of renal donors <sup>2</sup>. This technique is now becoming the gold-standard recovering procedure in transplant centers worldwide and has revolutionized renal transplantation, allowing expansion of the donor pool by diminishing surgical morbidity while maintaining equivalent recipient outcome <sup>4</sup>. However, several studies have reported that this technique requires a long learning curve <sup>5</sup>, and that the complication rate varies from 6.4% to 16.5% <sup>6,7</sup>.

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Among these, chylous ascites (CA) may be a severe and rare complications of LLDN 8. Large series reporting postoperative complications suggest that the incidence of chylous ascites ranges between 0% and 1.83% after LLDN, and to date 18 cases has been identified 9-16 (Table I). Chylous ascites (CA) is the accumulation of lymphatic fluid within the peritoneal cavity, due to trauma or obstruction to the lymphatic system. Postoperative chylous ascites is a rare complication of abdominal aor-

tic surgery 8. This is frequently reported after retroperitoneal dissections, and results in high morbidity and mortality due to serious metabolic consequence due to constant loss of protein and lymphocytes that may cause nutritional and immunological disturbance <sup>17-24</sup>. The treatment options for this condition is primarily conservative and include total parenteral nutrition (TPN), somatostatin analogue, elemental diet with medium chain triglycerides (MCT), percutaneus drainage and diuretics.

TABLE I - Cases of chylous ascites secondary to laparoscopic living donor nephrectomy reported in literature

Conservative treatment			Surgical	treatmen	t							
References	Number of case	Age	Gender	LAP versus HA	Side	Time to symptoms after surgery (days)	Modalities er )	Durations (week)	Success	LAP versus HA	Delay from primary surgery	Success
Prresent cas	e 1	44	Female	LAP	Left	14	Percutaneous Drainage and MCT diet SL	24	Yes	_	_	_
Breda <sup>7</sup>	2	NA	NA	LAP	Left	NA	MCT diet	2	yes	-	_	_
Sharma <sup>8</sup>	1	60	Female	LAP	Left	7	MCT, ED	4	Yes	-	_	_
Bachmann <sup>14</sup>	1	NA	NA	LRS	Left	6	Percutaneous Drainage	NA	No	_	-	-
Bachmann <sup>14</sup>	1	NA	NA	LRS	Left	28	Percutaneous Drainage and MCT	NA	No	LAP (Drainage)	30	Yes
Bachmann <sup>15</sup>	1	59	Female	LRS	Left	8	Percutaneous Drainage	1	No	LAP (Drainage)	9	Yes
Aerts <sup>16</sup>	2	NA	NA	LAP	Left	NA	Percutaneous Drainage and MCT	NA	Yes	-	_	_
Aerts <sup>16</sup>	1	50	Male	LAP	Left	26	Percutaneous Drainage	4	No	LAP	24	Yes
Caumartin <sup>17</sup>	1	48	Female	LAP	Left	10	TPN and somatostatin	3	No	LAP	10	No
Wadstrom <sup>18</sup>	1	NA	Female	LAP	Left	16	Drainage	1	Yes	-	_	_
Shafizadeh <sup>19</sup>	1	36	Female	LAP	Left	14	ED and SL	2	Yes	-	_	_
Molina <sup>20</sup>	1	45	Female	LAP	Left	10	MCT diet	NA	No	LAP	5	Yes
$Wu^{21}$	1	NA	NA	NA	NA	3	MCT diet	1	Yes	-	_	_
Geary <sup>22</sup>	1	44	Female	HA	Left	14	MCT TPN and Somatostatin	1	No	HA	4	Yes
Leventhal <sup>23</sup>	2	NA	NA	NA	NA	NA	Yes but no description	NA	NA	_	_	_
Ramani <sup>24</sup>	1	NA	NA	LAP	Left	NA	Yes but no	NA	No	LAP	45	Yes
							description					

Legend: LAP= transperitoneal pure laparoscopic; HA= hand assisted; HARS= hand assisted retroperitoneoscopy; LRS= laparoscopic retroperitoneoscopy; TPN= total parenteral nutrition; MCT= medium chain triglyceride; ED= elementary diet; SL= spironolattone; NA= non available.

Surgery is considered after failure of conservative treatment and its role, however, remains controversial <sup>17-24</sup>. We report a case of chylous ascites as a complication of laparoscopic donor nephrectomy, successfully resolved after a short-term conservative management.

## Case report

A 44 year old woman underwent LLDN of the left kidney. The procedure was performed in the right lateral decubitus, using a three port technique and a Pfannenstiel incision with an EndoCatch bag for kidney recovery. Operative time was 115 min, blood loss was 100 cc and the kidney was successfully transplanted into her son using the standard technique. There were no intraoperative or immediate postoperative complications and the patient was discharged home on postoperative day 3 in stable and satisfactory condition with full retum of bowel function.

The patient presented on postoperative day 16 with a chief complaint of abdominal pain, distention, discomfort, and dyspnea. The patient denied fever, oliguria and dysuria, and on physical examination, the patient presented a massively distended abdomen, with a positive fluid wave, and dullness to abdominal percussion over all four quadrants. Bowel sound were present, and there was no rebound tendemess or peripheral edema. No signs and symptorns of an acute abdomen were noted. Laboratory data included serum blood urea of 26 mg/dl, creatinine of 1,00 mg/dl hematocrit of 36% and white blood cell count of 4.800.

A computed tomography scan of the abdomen revealed significant ascites in all four quadrants of abdomen and pelvis. There was no findings of pneumoperitoneum, abscess, mass or hemorrhagic density in the renal bed. An US-guided paracentesis under local anesthesia was performed, and 7 L of a creamy, turbid and non bloody fluid with a biochemical analysis compatible with chyle was aspirated. This was followed by a percutaneous US-guided left retroperitoneal drain placement. Triglyceride levels of 615 mg/dl were diagnostic for chyle and on gram stain, no organisms were seen. Conservative management with MCT and spironolactone was immediately initiated; the symptoms improved after paracentesis, and the CA completely resolved after 3 days of therapy.

The patient was put on an MCT diet for 20 days and was discharged home 4 days after the procedure. She was symptom free during her 3-month follow up. At that time an ultrasound examination of the abdomen demonstrated no evidence of recurrent ascites.

## Discussion

CA needs to be considered as a potential severe and rare complication of LLDN owing to skeletonising of the

adjacent lymphatics of the renal artery and vein 8. A recent review by Aerts et al. 16 identified 18 cases of chylous ascites after LLDN. Interestingly, in most of the largest series, including 6754 donors, chylous ascites was never described, suggesting the rarity of this condition 9-14. While chylous ascites complicated more frequently the pure laparoscopic procedure <sup>7,8,17-21</sup> rather than handassisted laparoscopic <sup>21,22</sup> or pure retroperitoneoscopic procedure 14,15, no report of chylous ascites after open donor nephrectomy has been reported, although two cases of chylous ascites after combined open nephroureterectomy and hemipancreatectomy has been recently reported <sup>16</sup>. Most of the cases presented early in the follow up post-donation, with a median time to symptoms of 10 days after an uneventful recovery. Most patients were female <sup>16</sup>, ranging between the ages of 36 and 60, and all reports listed the complication occurring after left LLDN: however, it is not clear if chylous ascites is more commonly after LLDN because the frequency of the left LLDN is higher than right LLDN or if there are anatomical surgical issues that can increase the rate of this complication after left LLDN.

Typically, patients are initially treated by paracentesis, total parenteral nutrition, medium chain triglyceride supplementation, and a low fat diet. Of the 18 patients with chylous ascites, 9(50%) were successfully treated conservatively with LFD/MCT alone 7,8,14,17,18,21, including our patient. Of the remaining 9 patients, five received TPN therapy <sup>14,17,22,23</sup>, one patient went directly to surgery after failed LFD/MCT 14, one refused hyperalimentation <sup>20</sup>, one patient failed conservative management <sup>24</sup> and one patient required a surgical control <sup>16</sup>. Of these nine patients, two resolved their chyle leaks without surgery, so that a total of 12 patients (63.1%) resolved this complication without surgical intervention, while seven patients (56.9%) required surgical re-exploration. Surgery with direct ligation of lymphatic leaks is usually considered after failure of conservative management. The role and timing of the surgical repair is still debated. Theoretically, an early re- intervention may permit direct visualization of the fistula and its ligation, avoiding nutritional and immunological complications, and laparoscopic approach has been recently suggested to resolve postoperative CA <sup>20,23</sup>. By contrast, an early reintervention may increase the rate of complications in malnourished patients who had undergone a major surgical operation with complications <sup>17</sup>.

Based of these points, most authors agree that all patients should be managed conservatively, since 63.1% will resolve without surgical intervention, and surgical approach should be reserved to treatment failures <sup>16,17,19-24</sup>.

## Conclusions

Our clinical experience emphasizes that even a short-term conservative management with fluid drainage and

diet therapy may be successful in patients with chylous ascites after a laparoscopic living donor nephrectomy, avoiding the need for a surgical intervention.

Chylous ascites may be a rare and severe complication of a even well-performed LLDN. Conservative management should be proposed to all patients, reserving the surgical approach to treatment failure.

#### Riassunto

Il trapianto renale rappresenta la migliore terapia sostitutiva per i pazienti in insufficienza renale cronica. La nefrectomia laparoscopica del donatore da vivente rappresenta una alternativa miniinvasiva alla tecnica open per incrementare il numero di donatori. Tuttavia, molti studi hanno riportato che questa tecnica richiede una lunga curva di apprendimento e che il tasso di complicanze varia dal 6.4% al 16.5%. Fra queste, l'ascite chilosa è una rara e temibile complicanza della nefrectomia laparoscopica. La principale opzione terapeutica è il trattamento conservaivo, e il trattamento chirurgico è riservato solo ai fallimenti della terapia conservativa. Di seguito riportiamo un caso di ascite chilosa quale complicanza di una nefrectomia laparoscopica nel donatore da vivente di rene. Una donna di 44 anni è stata sottoposta a nefrectomia laparoscopica. Il decorso postoperatorio è stato privo di complicanze e la paziente fu dimessa in terza giornata postoperatoria. Due settimane dopo la procedura chirurgica, la paziente si presentò alla nostra osservazione con dispnea, distensione addominale e senso di malessere generale. Una TAC addominale dimostrò la presenza di una abbondante quantità di ascite diffusa a tutti i quadranti addominali. Fu eseguita una paracentesi con aspirazione di circa 7 litri di chilo. Fu avviato un trattamento conservativo con dieta a base di grassi e spironolattone, con graduale miglioramento della sintomatologia, e completa risoluzione dell'ascite chilosa tre giorni dopo la paracentesi. Tuttavia, per prevenire la recidiva, la paziente fu sottoposta a dieta a base di grassi a catenia intermedia per sei mesi. L'ascite chilosa deve essere considerata una rara ma temibile complicanza della nefrectomia laparoscopica, e il trattamento conservativo deve essere proposto come prima procedura a tutti i pazienti, riservando il trattamento chirurgico ai fallimenti terapeutici.

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