

Lymphatic leakages in Abdomen: Chylous/hepatic lymphatic ascites and Protein Losing Enteropathy

Saebeom Hur, MD, MS

Interventional Radiology Section, Department of Radiology
Seoul National University Hospital, Korea

The central abdominal lymphatic system consists of liver, mesenteric, and retroperitoneal lymphatics. If there is abnormal reflux of lymphatic fluid from the retroperitoneal system, as in the case of idiopathic lymphangiectasia (Figure 1), a radiologic contrast agent may visualize the abnormal hepatic or mesenteric lymphatic system. Without such pathological reflux, the contrast injected via inguinal lymph nodes travels through the retroperitoneal lymphatic system in the abdomen and cannot visualize the leakage sites in the mesentery or hepatoduodenal ligaments (Figure 2, Figure 3). Radiographically negative chylous ascites have a meager chance of cure by any lymphatic intervention [1].

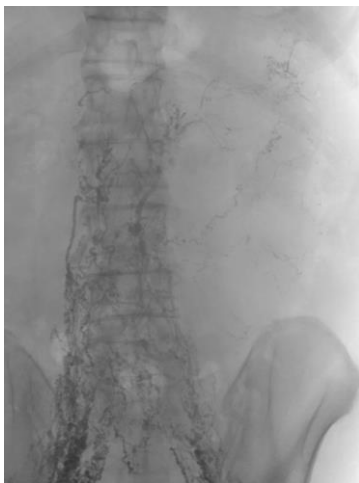


Figure 1

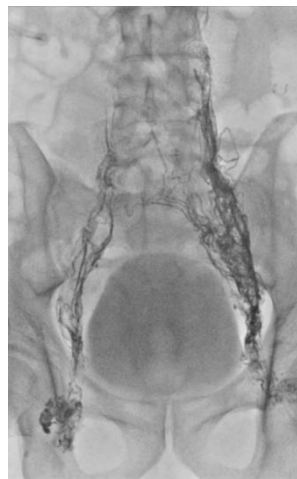


Figure 2

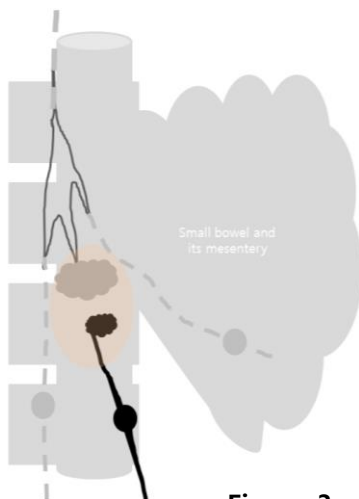


Figure 3

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In some cases of postoperative chylous ascites, we might expect to access the damaged lymphatic vessel through retroperitoneal lymphocele in a reversed direction (Figure 4) [2, 3]. Even though the reversed approach is simple, it can be applied only to selected cases where leaked chylous fluid is confined in retroperitoneal space before it flows out to peritoneal space to form ascites.

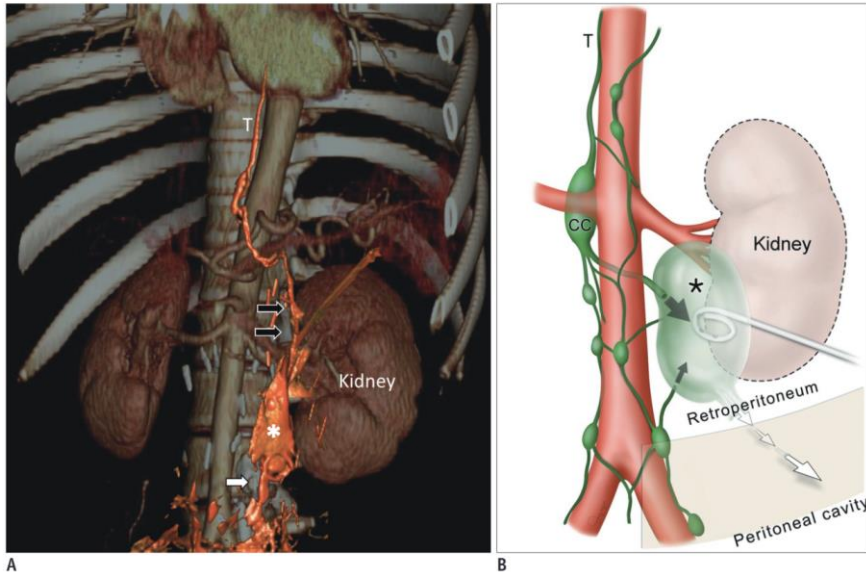


Figure 4

Retrograde thoracic duct access and manipulation of microcatheter/wire in the abdominal lymphatic system sometimes detect lymphatic leakages in the upstream mesenteric or hepatic lymphatics [4]. However, the complexity of lymphatic channels and reversed lymphatic flow often cause failure in identifying the leakage. Temporary balloon occlusion and the use of MR lymphangiography can be helpful in some cases (Figure 5) [5, 6]

Mesenteric or hepatic lymphangiography is a method of accessing the lymphatic system from the upstream [7]. Hepatic lymphangiography can be quickly done under ultrasound guidance (Figure 6). On the other hand, mesenteric lymphangiography often requires exposure to mesentery through an explorative laparotomy (Figure 7). Despite its invasiveness, it often acts as the last resort to devastating chylous ascites untreatable otherwise [8].

Protein-losing enteropathy is even more challenging to manage than chylous ascites partly due to its heterogeneous nature. However, selected cases as a complication from Fontan operation can be controlled by embolizing hepato-duodenal lymphatic connection (Figure 8). This technique requires a hybrid intervention of endoscopy and interventional radiology [9].

Abdominal lymphatic leakages are still an unsolved problem in modern medicine. However, recent advancements in lymphatic intervention are improving its clinical outcome.

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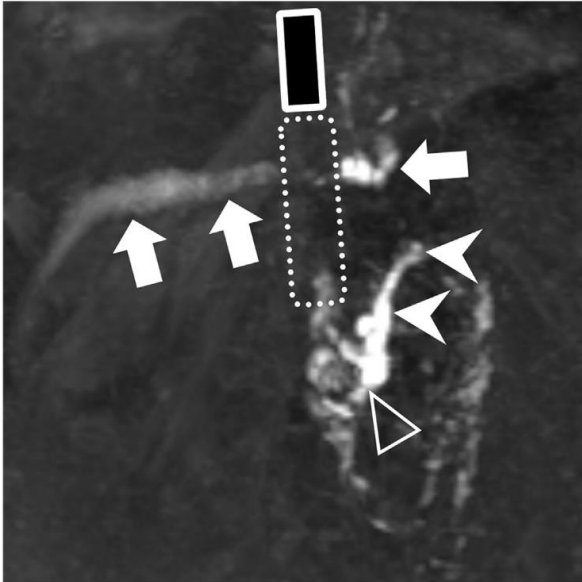


Figure 5

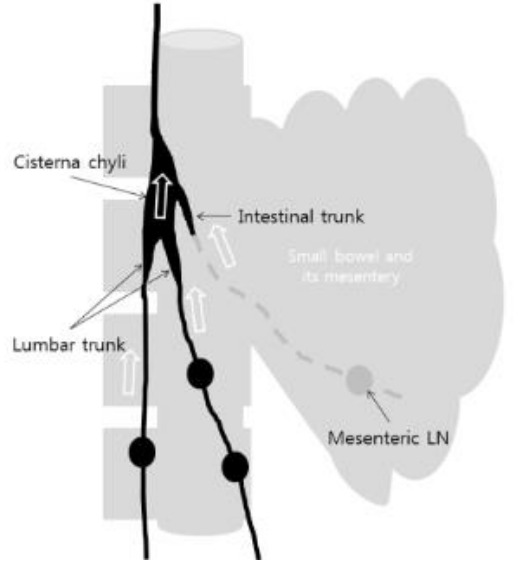
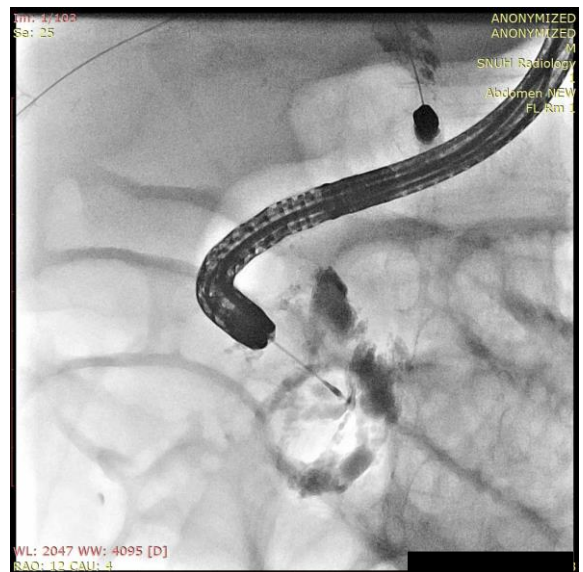


Figure 6

Figure 7

Figure 8



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