

Background

Cirrhotic patients with ascites have a 20% risk of umbilical hernia development due to elevated intra-abdominal pressures. Umbilical hernias in these patients have a tendency to expand quickly and are prone to spontaneous rupture, and consequently, to bowel incarceration, cellulitis, peritonitis, and eventually sepsis.

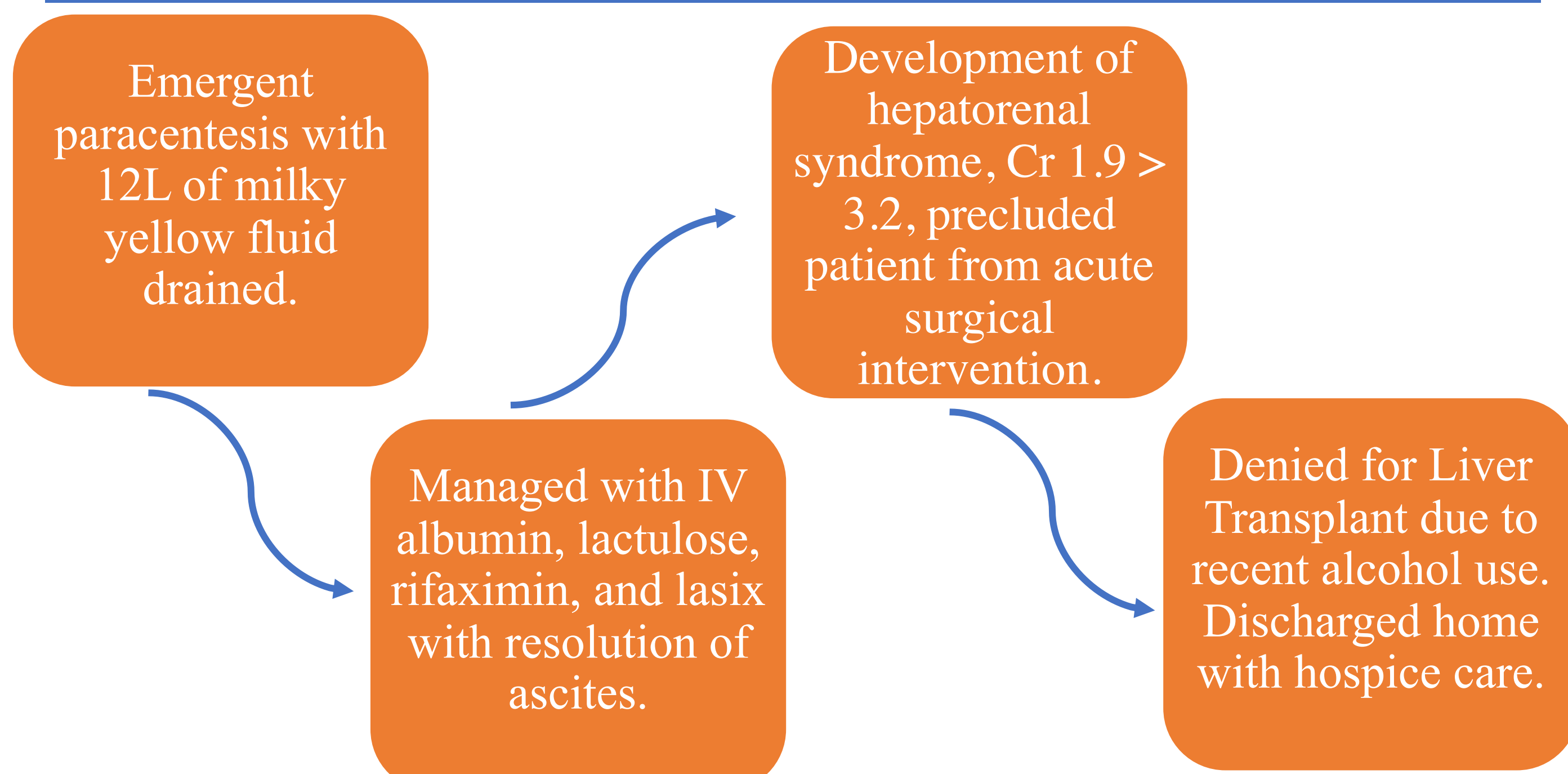
- Rupture prevention is dependent on the optimal management of underlying ascites, which includes diuretics, regular paracentesis, avoidance of alcohol/NSAIDs, and dietary salt & fluid restriction.
- Flood syndrome is named for the sudden rush of ascitic fluid that accompanies spontaneous rupture of an umbilical hernia.

Case Description

A 56-year-old man with a PMHx of cirrhosis secondary to alcoholism/chronic Hepatitis C infection complicated by ascites and hepatic encephalopathy [Child-Pugh grade C, Model for End-Stage Liver Disease (MELD) score of 26], as well as CKD at an unknown stage, presented to the ED with 1-day history of diffuse constant abdominal pain and distension, associated with fluid discharge from the umbilicus. Overnight, the patient reported a spontaneous rupture at his umbilicus with discharge of copious amounts of yellow fluid.

- **Surgical & Family Hx:** nonsignificant
- **Social Hx:** Most recent alcohol use 3 months prior to admission. Denies recreational drug or tobacco use.
- **Vitals on presentation:** Temp 97.7° F | BP 122/64 | HR 61 | RR 16 | BMI 19.4 kg/m²
- **Physical Exam:** abdomen distended, non-tender, and with normal bowel sounds. There is a soft, punctate wound of umbilicus overlying an existing hernia with active drainage of yellow fluid.

Methods



Flood syndrome is a rare and potentially fatal condition with mortality rate of 30% that affects people with end-stage liver disease.

Results



Figure 1: Photo of ascitic fluid drainage.



Figure 2: CT Abdomen/Pelvis without contrast showing advanced liver cirrhosis and moderate to large amount of ascites. Splenomegaly is also evident.

Ascites Fluid Studies

Cell Count	1912
Color/Appearance	Milky
WBC	152
RBC	1760
Albumin	0.5
Triglycerides	843
LDH	60
Cytology	Acellular
SAAG	5.2
Glucose	144

Table 1: Fluid studies above are consistent with chylous ascites.

Conclusion

Flood syndrome is a rare and potentially fatal condition with mortality rate of 30% that affects people with end-stage liver disease. Current literature and management is based off only a few case reports.

- Conservative management: emergent paracentesis, IV albumin replacement, lactulose & rifaximin, and lasix
- Elective umbilical hernia repair has only demonstrated positive results in patients who have had extensive preoperative optimization.
- Patients should be first assessed for TIPS to reduce the underlying intra-abdominal pressure, and then referred for surgical correction as soon as possible.
- Cirrhotic individuals with difficult hernias, such as a blocked or burst umbilical hernia, generally require immediate herniorrhaphy.

References

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2. Sheikh, M. M., Siraj, B., Fatima, F., Ehsan, H., & Shahid, M. H. (2020). Flood Syndrome: A Rare and Fatal Complication of Umbilical Hernia in Liver Cirrhosis. *Cureus*. <https://doi.org/10.7759/cureus.9915>
3. Anderson, S. S., McCreary, J. B., Alvarez, K. S., Brown, L. S., & Agrawal, D. (2018). Standardizing the Use of Albumin in Large Volume Paracentesis. *Journal of Pharmacy Practice*, 33(4), 420–424. <https://doi.org/10.1177/0897190018816252>