



# A life-threatening rare presentation of spontaneous liver tumor rupture with respiratory distress and further lifesaving management with literature review

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## 1. Visual case discussion

A 54 year old Bangladeshi gentleman, with recently diagnosed hepatocellular carcinoma due to chronic hepatitis B infection with peritoneal metastasis presented to the emergency department with complain of abdominal pain and gradual distention over 7–10 days. There was no associated fever, nausea, hematochezia or any difficulty in passing stool. Blood pressure on presentation was 110/60 mmHg with heart rate of 110/min, respiratory rate of 28/min and normal oxygen (O<sub>2</sub>) saturation at room air. On clinical examination, the patient was distressed due to tense abdomen with slit like umbilicus. On clinical examination, the patient was cachectic looking and was having jaundice and pallor. Flanks were full and there was positive fluid thrill on clinical examination. There were no other stigmata of chronic liver disease. Urgent bed side point of care ultrasound (POCUS) was remarkable for massive ascites. Urgent USG guided abdominal paracentesis revealed hemorrhagic ascites. Next day the patient became hypotensive and hemoglobin dropped to 2 gm/dl from the initial presentation. Urgent CT abdomen with contrast was performed and it revealed tumor rupture with extravasation of venous contrast as shown in the Fig. 1

Urgent hepatic artery embolization was performed by the interventional radiologist. Afterwards, the patient was stabilized and no further drop in hemoglobin was noticed. He underwent MRI scan of the liver as shown in Fig. 2: with case discussion in a multidisciplinary team including hepatobiliary surgeon, interventional radiologist, oncologist and primary medical team. It was decided to perform bland

embolization for liver lesions for high risk of rupture. Patient underwent bland embolization with no post-procedure complications. He was discharged without further hospital complications and with follow up of an oncologist.

## 2. Discussion

Spontaneous rupture is a life-threatening complication of Hepatocellular Carcinoma (HCC), leading to shock and death. It is considered the third most common cause of mortality each year, with a rate of 25–75%, which can be reduced by early detection.<sup>1</sup> The incidence of HCC highly depends on geographic location. Still, it has the highest burden in East Asia and Africa, rising in Europe and United States that attributed to non-alcoholic steatohepatitis rather than viral hepatitis.<sup>2</sup> There are multiple risk factors associated with enhanced rupture rates such as HCC tumor size (usually >5 cm), liver cirrhosis, hypertension, previous treatment with Trans-arterial Chemo-embolization (TACE), portal vein thrombus, and extrahepatic invasion.<sup>3</sup> Ruptured HCC can be diagnosed based on computed tomography scans or ultrasonography, but other diagnostic modalities such as paracentesis and angiography can also be considered. The management of ruptured liver tumors is still debatable, and a case-based approach is an essential base on hemodynamic stability, hepatic function, and tumor progression. Hemodynamically stable patients with no evidence of hemorrhage can be treated conservatively followed by eligibility assessment for Trans-arterial Embolization (TAE) or hepatic resection. Hepatic resection is

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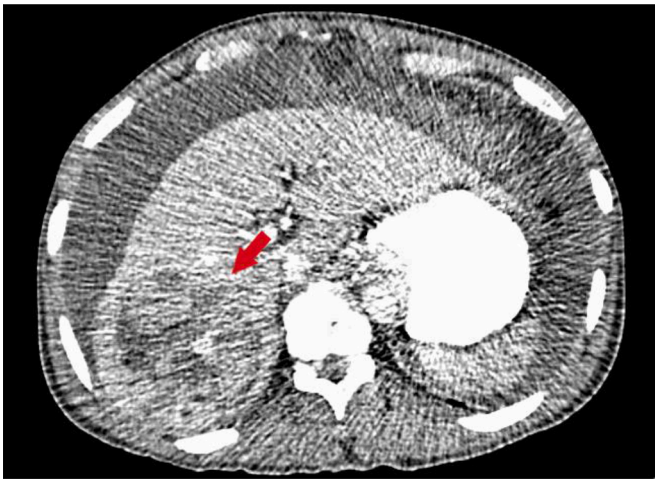
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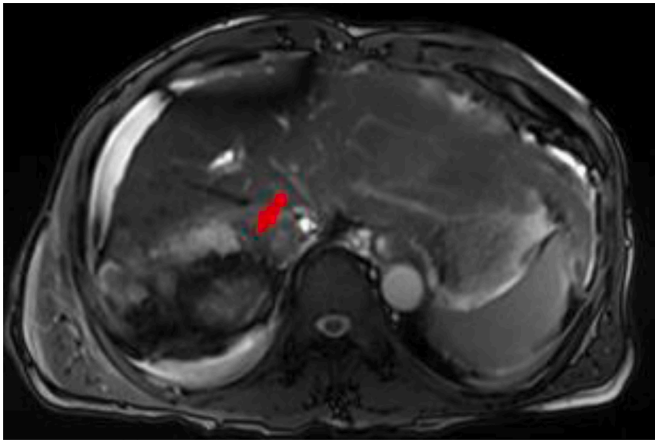
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**Fig. 1.** Left liver lobe rupture due to exophytic mass. CT scan abdomen showing left liver lobe rupture due to exophytic mass.



**Fig.: 2.** Malignant lesions of the liver suggestive of hepatocellular carcinoma with rupture of tumor lesions. MRI abdomen showing malignant lesions of the liver suggestive of hepatocellular carcinoma with rupture of tumor lesions.

considered in individuals with preserved liver function with improved long-term survival and cure rate.<sup>4</sup> On the other hand, Trans-arterial

Embolization (TAE) is the least invasive procedure preferred in hemodynamically unstable patients whose initial surgical intervention is challenging and associated with a high success rate of up to 100% and reduced 30 days mortality rate as performed in our patient case.<sup>5</sup> After the intervention, such patients need adequate counselling and close follow up as outpatient as well.

#### CRediT authorship contribution statement

**Saba Nabavi Monfared:** Conceptualization, Writing – original draft, Validation, Project administration, Funding acquisition. **Phool Iqbal:** Conceptualization, Writing – original draft, Writing – review & editing, Visualization, Validation, Project administration, Funding acquisition. **Sushil Niraula:** Supervision, Validation, Project administration, Funding acquisition.

#### Declaration of Competing Interest

All authors have participated in (a) conception and design, or analysis and interpretation of the data; (b) drafting the article or revising it critically for important intellectual content; and (c) approval of the final version. The article I have submitted to the journal for review is original, has been written by the stated authors, and has not been published elsewhere. The image(s) that I have submitted to the journal for review are original, was (were) taken by the stated authors, and has not been published elsewhere. This manuscript has not been submitted to, nor is under review at, another journal or other publishing venue. The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

#### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.visj.2021.101146](https://doi.org/10.1016/j.visj.2021.101146).

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