



Partial left hepatectomy in a young patient with ruptured hepatic adenoma: A case report

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Abstract

BACKGROUND

Although hepatic adenomas (HA) account for less than 0.04% of all liver neoplasms, their occurrence in young women is rare but strongly associated with oral contraceptive use, particularly in the 20-40 years age group, with an annual incidence estimated at approximately 3 to 4 cases per 100000 population.

CASE SUMMARY

We report the case of a previously healthy 30-year-old female patient, a regular user of combined oral contraceptives, who presented with acute hemorrhagic abdomen due to spontaneous rupture of a HA. The clinical presentation occurred after physical exertion and was with evidence of intra-abdominal bleeding. Initial management included selective hepatic arterial embolization as a conservative approach. Due to ongoing hemorrhage, an urgent left partial hepatectomy was indicated.

CONCLUSION

The operation was completed without adverse events, and postoperative recovery was favorable. This report emphasizes the significance of prompt diagnosis and immediate surgical intervention when hemodynamic compromise occurs due to HA rupture.

Key Words: Hemorrhagic acute abdomen; Hepatic adenoma; Arterial embolization; Hepatectomy; Case report

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Core Tip: Hepatic adenomas (HA) are rare benign liver neoplasms. Clinically, they are usually asymptomatic. We report a case of intra-abdominal hemorrhage due to spontaneous rupture, configuring a hemorrhagic acute abdomen with imminent risk to life. Combined with the analysis of cases indexed in PubMed, spontaneous rupture of a HA represents a rare and serious medical emergency, responsible for approximately 20%-30% of complications from these tumors. Early detection of suspicious lesions is a favorable factor for patient survival. After the discovery of HA, providing appropriate active treatment has positive effects on the prognosis of patients. The treatment plan should be based on the patient's response to conservative measures and hepatic arterial embolization up to emergency hepatectomy, depending on the extent of the lesion and hemodynamic stability.

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INTRODUCTION

Hepatic adenomas (HA) are frequently associated with the use of oral contraceptives in women of childbearing age[1], although they can also affect men, there are others risk factors such as: Metabolic syndromes with diabetes, obesity, glycogen storage diseases, and fatty liver disease[2].

Despite the known association between oral contraceptives and HA, this condition is rare in the general population. The estimated prevalence of HA is approximately 3 per 100000 women using oral contraceptives per year, with a high prevalence between the ages of 20 and 40[1]. This makes the occurrence of spontaneous hemorrhagic rupture in young patients even more uncommon, although clinically relevant, with a significant impact on emergency management.

This risk is higher in lesions larger than 5 cm or with specific histological characteristics[3]. Several recent reports indicate hepatectomy as an effective alternative for definitive hemorrhage control, especially when embolization fails or is not feasible. Computed tomography plays an essential role in early diagnosis, allowing the identification of signs of rupture and active bleeding[4-6].

CASE PRESENTATION

Chief complaints

A 30-year-old Brazilian woman presented on initial physical examination, a palpable and painful abdominal mass was found in the epigastrium extending laterally into the right hypochondrium for 12 hours after intense physical activity.

History of present illness

The patient reported a two-day history of recurrent abdominal pain before presentation.

History of past illness

The patient sought care at a local hospital after experiencing abdominal pain for two days. Computed tomography (CT) imaging of the abdomen revealed a heterogeneous, expansile mass with blood content, centered on the lateral segments of the left hepatic lobe; as a radiological change on admission from abdominal CT and evidence of contrast extravasation in the arterial phase at the level of the left hepatic artery in segment VIII. Our endovascular therapy procedure with embolization was performed using absolute ethanol material (98%), one of the most used sclerosing agents for embolization, which may be delivered percutaneously or through a catheter directly into the target vessel. Ethanol acts as an ablative agent, causing endothelial injury, necrosis of the vascular wall, and thrombus formation. Angiographic result with complete occlusion of the target vessel and reduction of hemorrhagic extravasation upon embolization control.

The lesion had irregular contours, discontinuity of the upper border, and perilesional hematic fluid, consistent with tumor rupture and active bleeding. The patient was admitted to the intensive care unit for clinical monitoring, empirical antibiotic therapy, and serial laboratory monitoring of hemoglobin and hematocrit levels every six hours. During arteriography, contrast extravasation was observed in the hepatic nodular mass (segment 8), demonstrating active bleeding and the need for embolization intervention. Selective embolization of the left hepatic artery was performed, which was technically successful, with the control of bleeding after embolization of the target vessel. Given the failure to definitively control the bleeding and the strong suspicion of a ruptured hepatic adenoma, a multidisciplinary discussion involving the hepatobiliary surgery and interventional radiology teams was conducted, which indicated a left partial hepatectomy.

Personal and family history

Patient with Hashimoto's thyroiditis regularly in use of levothyroxine and combined oral contraceptives.

Physical examination

Physical examination revealed the following vital signs: Body temperature of 36.5 °C, blood pressure of 117/68 mmHg, heart rate of 82 beats per minute, and respiratory rate of 19 breaths per minute. A painful abdominal mass approximately 7 cm in diameter was detected in the right abdominal and epigastric areas.

Laboratory examinations

Hemoglobin levels were decreased, while other blood and urine analyses revealed no abnormalities.

Imaging examinations

Initial abdominal ultrasound revealed two hepatic nodules in segment II. On August 3, 2024, a non-contrast abdominal CT scan was performed, which showed a heterogeneous expansile mass with hematic content, centered in the lateral segments of the left hepatic lobe. Initially, the patient was admitted with a non-contrast CT scan, without enhancement of the heterogeneous mass, followed by referral to our medical service, followed by a new tomography scan by the Hospital, this last examination with contrast identification and in the arterial phase a rapid and intense enhancement (hypervascular) in relation to the hepatic parenchyma.

After the tomography on August 4, in the portal phase, the actual size tended to decrease, with the lesion being more isodense or slightly hypodense compared to the adjacent liver, however at the arterial phase the image demonstrated persistent vascularization in the expansive lesion, measuring approximately 8.7 cm in length, associated with an adjacent blood collection of approximately 65 cm³ in volume. Embolic material was observed in the arterial branches of the hepatic hilum, in addition to an anatomical variant with the left hepatic artery originating from the left gastric artery. A small bilateral pleural effusion and underlying atelectasis were also identified, with no evidence of active contrast extravasation into the peritoneal cavity.

FINAL DIAGNOSIS

Combined with the patient's clinical and imaging data, this shows a case of non-traumatic ruptured hepatic adenoma (Figure 1).

Histopathological analysis

Ellinger Anatomical Pathology Laboratory in Marília, São Paulo, Brazil. Well-differentiated hepatocellular neoplasm, with circumscribed borders, hepatocytes with ample cytoplasm, focal macrovesicular steatosis (approximately 5%), without atypia, sparse ducts and unpaired arterioles, extensive hemorrhages, in a subcapsular location, measuring 10.5 cm. Diagnosis: Hepatocellular adenoma (Figure 2).

TREATMENT

Following an uncomplicated recovery, the patient was discharged on the fifth postoperative day. Subsequent follow-up at two weeks involved clinical assessment and magnetic resonance imaging of the upper abdomen (Figure 3).

OUTCOME AND FOLLOW-UP

At 2 months postoperatively, the patient was released for physical and work activities.

DISCUSSION

Hemorrhagic rupture of HA is a rare but potentially fatal medical emergency that requires early diagnosis and appropriate intervention. The use of oral contraceptives is the risk factor most strongly associated with the development

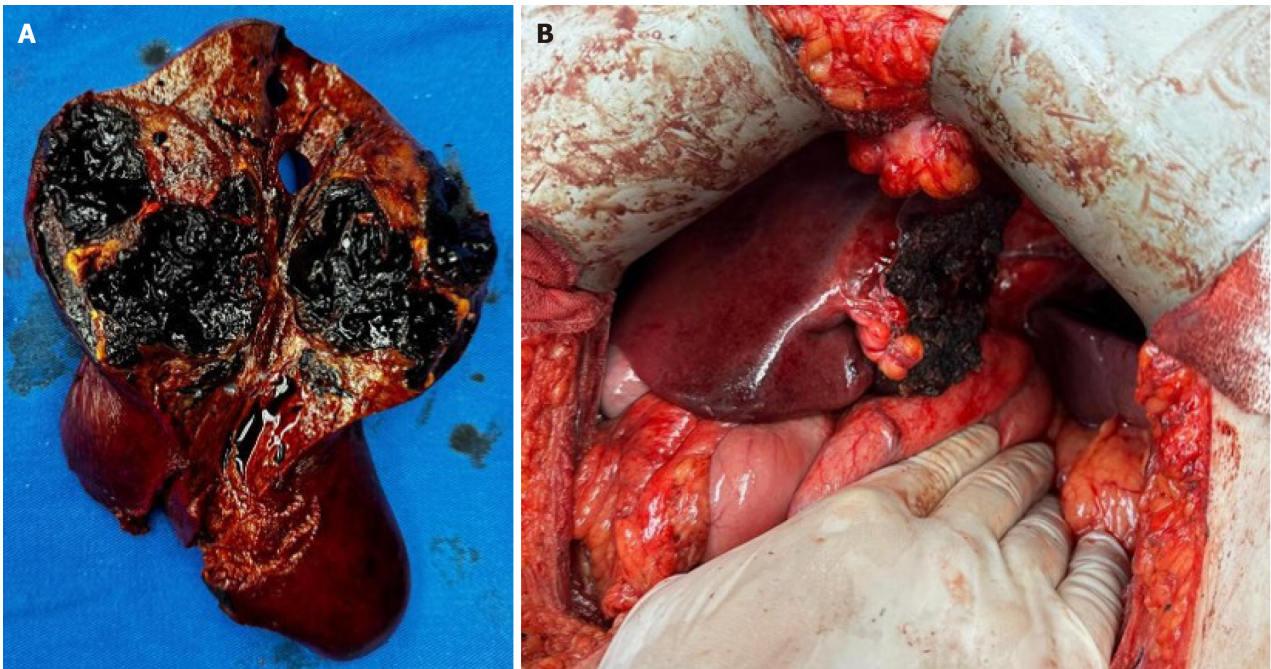


Figure 1 Imaging and macroscopic examination of the hepatic adenoma. A: Surgical specimen showing a well-defined and partially encapsulated subcapsular lesion in the left hepatic lobe; B: Intraoperative view after resection of the hepatic lesion, showing exposure of the remaining liver parenchyma.

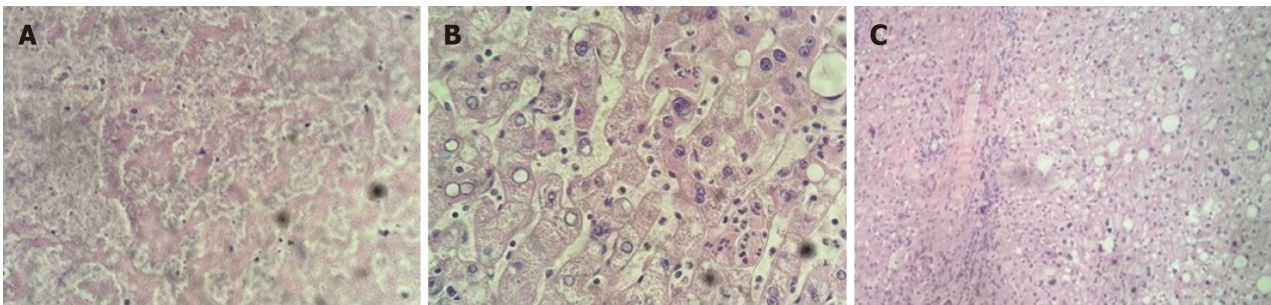


Figure 2 Histopathological and immunohistochemical examination of the resected specimen. A: Area of coagulative necrosis within the adenoma [hematoxylin and eosin (H&E), 100 ×]; B: Higher magnification showing benign hepatocytes arranged in plates without portal tracts (H&E, 400 ×); C: Lower magnification showing preserved hepatic parenchyma adjacent to the lesion (H&E, 100 ×).

of adenomas, increasing both the incidence and the possibility of serious complications, such as spontaneous rupture and massive bleeding[1].

Selective arterial embolization is considered a valid initial approach in stable patients, as it can temporarily control bleeding and allow clinical stabilization[2-4]. However, procedure failure, as occurred in this case, reinforces the central role of surgery as definitive treatment[5]. Studies show that emergency hepatectomy, although challenging, can provide effective bleeding control and complete histopathological analysis, which is essential to rule out malignant transformation [6,7].

Recent reports highlight that bulky lesions, larger than 5 cm, are more prone to spontaneous rupture and massive intraperitoneal hemorrhage, supporting the indication for early surgery in these scenarios[8]. Situations which the rupture occurred after prior abdominal trauma, highlight that the presence of underlying liver lesions can complicate conditions initially attributed solely to trauma and reinforce the need for surgical management in cases of bulky or hemorrhagic tumors[9,10].

Another relevant aspect concerns diagnostic difficulties. A hepatic adenoma that mimicked metastasis on PET-CT, demonstrating that imaging methods cannot always accurately distinguish benign from malignant lesions[11]. This finding reinforces the importance of histopathological examination after resection, ensuring a definitive diagnosis and better risk stratification. Even rarer are cases that progress to severe liver failure. The first report of a two-stage liver transplant for a ruptured hepatic adenoma complicated by toxic liver syndrome after multiple embolization failures[12]. This case illustrates that, in extreme scenarios, resection alone may be insufficient, and transplantation should be considered as salvage therapy[13].

Furthermore, the literature emphasizes that multidisciplinary management is crucial to reducing complications. Some guidelines between hepatobiliary surgeons, interventional radiologists, and intensivists results in better postoperative outcomes. In the case presented, the joint decision-making between surgery and interventional radiology was crucial to

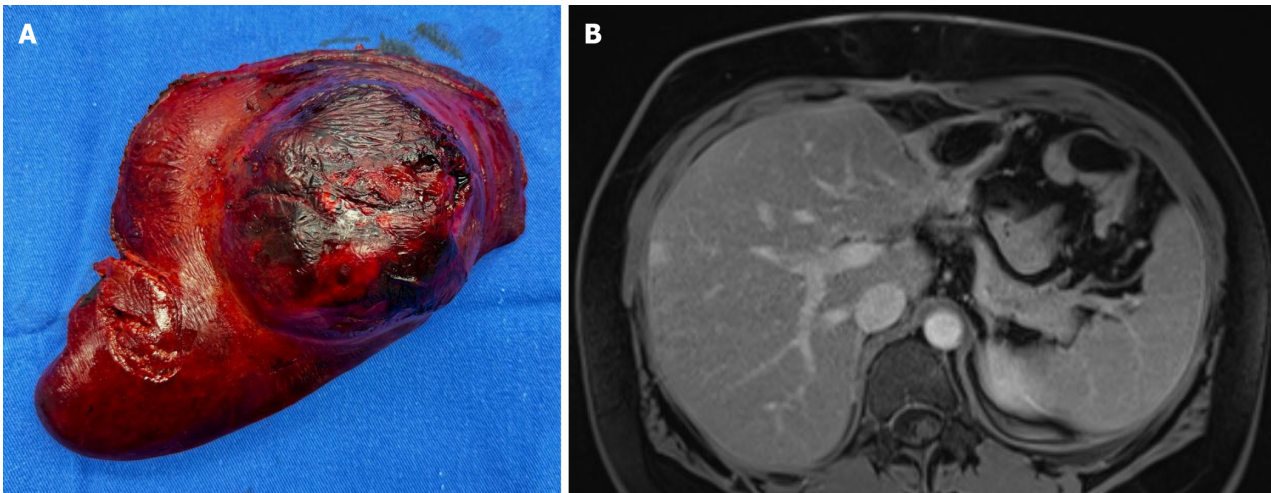


Figure 3 Evaluation of the surgical specimen and postoperative radiological monitoring. A: Sectioned surgical specimen, demonstrating a necrotic tumor with multiple areas of hemorrhage, measuring approximately 18.5 cm × 13.9 cm × 7.5 cm; B: Postoperative abdominal magnetic resonance imaging obtained two months after surgery, showing a normal appearance of the left hepatic remnant without residual lesion.

therapeutic success[14].

Therefore, this case contributes to the literature by reinforcing that, although arterial embolization is the first-line treatment in selected situations, surgical resection remains essential in the event of conservative treatment, ensuring both definitive resolution of the hemorrhage and histopathological diagnosis of the adenoma[15].

CONCLUSION

Left partial hepatectomy was effective in treating a ruptured hepatic adenoma after conservative management failed. This case contributes to understanding the management of emergencies associated with benign liver lesions, emphasizing the importance of surgical intervention in situations where conservative options, such as embolization, fail. It also reinforces the need for individualized patient assessment and multidisciplinary management.

FOOTNOTES

Author contributions: Pagani Junior MA, Lopes LA, Sergi Filho FA, Góes Scorsioni FA, Tavares Filho MB contributed to manuscript writing and editing, and data collection; Maluf Amaral RP, Medeiros LE, Guillen Carneiro LI, Belluzzo HG, Vinholo TR contributed to data analysis; Buchaim DV, Buchaim RL contributed to conceptualization and supervision; all authors have read and approved the final manuscript.

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