



## Case Report

# Surgical Treatment of Giant Liver Hemangioma, Case Report and Literature Review

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### Abstract

Hemangiomas are the most common benign primary hepatic neoplasms, often being incidentally discovered. In most of the cases, they are small, asymptomatic and often require follow up. Giant hemangiomas are known as being larger than 5 cm and mostly consists of a cavernous haemangioma, is usually asymptomatic, diagnosed incidentally. In this study, we aimed to show that giant hemangiomas would be treated safely with surgical resection without transarterial embolization before the surgery. We present a 56-year-old male patient with liver hemangioma, who was diagnosed incidentally on thorax computerised tomography and consulted to thorax disease clinic with coughing complaint for a month.

A case, which is rarely mentioned in literature, of a 30 cm sized asymptomatic giant cavernous hemangioma treated by surgical resection without any complication.

We suggest that some patients should go through surgical treatment even if they do not have any complaint. Not only symptoms but also size and risk of rupture by trauma should be considered in these cases. However, all possible circumstances must be taken under consideration. Transarterial embolization is not the necessary.

**Keywords:** Cavernous hemangioma; giant hemangioma; hepatic hemangioma.

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Hemangioma is the most common benign tumour of the liver, which affects 3%-20% of the general population and also is diagnosed on autopsies.<sup>[1–3]</sup> The female to male ratio of the incidence of hemangiomas is 5:1, and they are identified more frequently in middle-aged women.<sup>[3]</sup> Although the pathogenesis of hemangioma is not clear, it is thought that hepatic haemangioma (HH) is a congenital vascular malformation or hamartoma.<sup>[4–6]</sup> Histologically, it is a mesenchymal lesion consisting of blood-filled vascular cavities of different size, surrounded by a simple layer of flat endothelial cells, supported by a fibrous connective tissue. In its typical form, three histological subtypes have been

described: the capillary haemangioma, the cavernous hemangioma and the sclerosed hemangioma (Table 1).<sup>[7]</sup>

Hemangioma is usually diagnosed incidentally on screening; like ultrasonography (US), computerised tomography (CT) or magnetic resonance imaging (MRI). In the sonography, it is a hyperechogenic, homogenous lesion presenting a posterior acoustic enhancement. In unenhanced CT, the density of the lesion is the same as the vessels. In MRI, the lesion presents a homogenous and hyperintense on T2-weighted images, hypointense on T1 weighted images and the absence of restriction of the apparent diffusion coefficient (ADC).<sup>[8,9]</sup>

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**Table 1.** Characteristics of the typical histological appearance of hepatic hemangiomas

	Capillary haemangioma	Cavernous haemangioma	Sclerosed haemangioma
Histological composition	Reduced vascular spaces	Large vascular spaces	Extensive benign fibrosis at the centre of the lesion
Size	Extensive connective tissue Small size (in general <1 cm)	Not very extensive connective tissue Lesion <3 cm = typical appearance Giant >4 cm	Average size (3.7 cm on the average)
Morphology	Nodular, homogenous	Well defined, internal septa	Geography map appearance, central scar capsular retraction, punctiform calcifications

Giant hemangiomas are known as being larger than 5 cm and mostly consist of a cavernous haemangioma, is usually asymptomatic, diagnosed incidentally often requires routine follow up. Indications for surgery include the presence of progressive abdominal symptoms, spontaneous or traumatic rupture, rapidly enlarging lesions, Kasabach–Merritt syndrome and unclear diagnosis (suspect of malignancy).<sup>[10–12]</sup> Four types of surgical procedures, including liver resection, enucleation, hepatic artery ligation, and liver transplantation, can be applied.<sup>[13–16]</sup>

Resection and enucleation are the most commonly used surgical methods. In this operation, the most feared risk is massive intraoperative hemorrhage, especially in giant hemangiomas larger than 10cm in size, because of the likelihood of major vascular injury when resecting or enucleating the hemangioma.<sup>[17, 18]</sup>

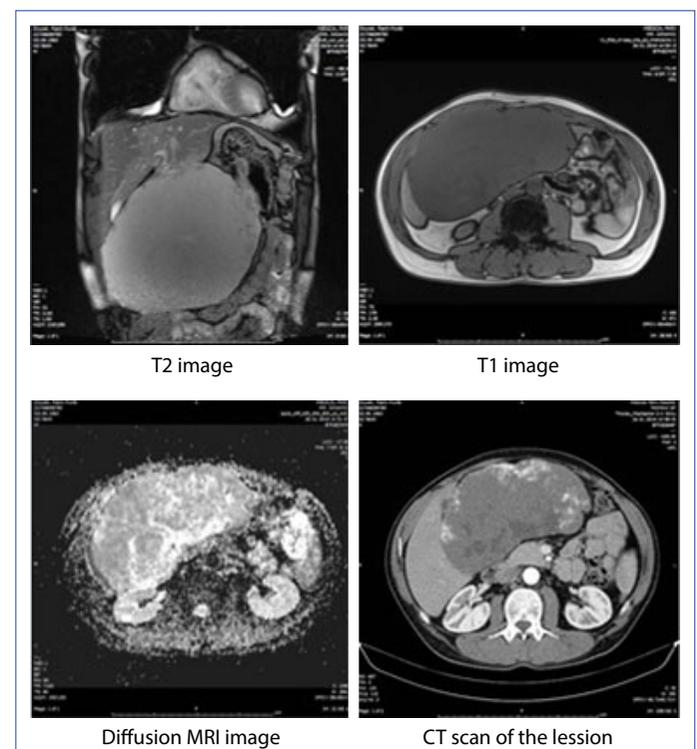
In this study, we report a case of asymptomatic cavernous hepatic hemangioma about 30 cm in diameter protruding from left lobe to lower abdomen.

## Case Report

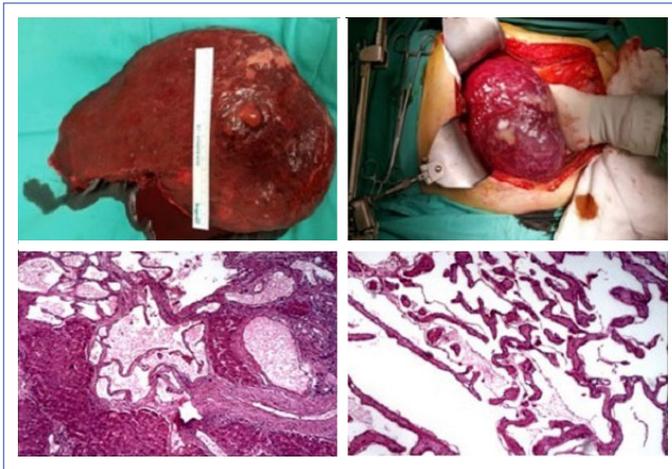
A 56 year old male incidentally is diagnosed on thorax CT (Fig. 1) who consulted to thorax disease clinic with coughing complaint for a month. When he was scanned with thorax CT, a giant liver hemangioma was seen at the lower images, which were about 30 cm. He was directed for consultation to our clinic. In our examination, we palpated a mass which lies from under the right subcostal to the para-umbilical area. We screened the mass with the US and MRI (Fig. 1).

We diagnosed the 30 cm giant hemangioma originating from the sol hepatic lobe and very close to the gallbladder. He showed no symptoms about this situation. We decided to operate after we tried embolization, which was unsuccessful because of technical difficulty. All of the complications about the surgical procedure, including death were explained, and patients' consent for surgical procedure, was obtained. On admission, patients' all

laboratory parameters were normal except platelet level, which was 132x10<sup>3</sup>. We prepared blood suspensions for transfusion (such as erythrocyte, thrombocyte susp). During the operation, we made chevron incision. When we entered the abdomen, we saw a cavernous mass which covered 2/3 of the abdominal cavity. We elevated a mass to reach to hepatoduodenal ligament. There was no invasion. Then, we performed left hepatectomy within 25 minutes (Fig. 2). After resection, we made hemorrhage control, and the raw surface of the liver was checked for bile leaks and the omentum was placed over the free surface; a silicone drain was placed to allow postoperative bile leakage and hemorrhaging to be monitored. After four days, the patient was discharged, and no complication was observed. The pathological result came as cavernous hemangioma (Fig. 2).



**Figure 1.** Abdomen MRI and thorax CT images.



**Figure 2.** Intraoperative and pathological images.

## Discussion

Many studies report that the size is not the absolute criteria for surgical treatment of hemangioma. Giant hemangiomas are usually silent, show no symptoms and recognized incidentally.<sup>[19]</sup> Etemadi et al.<sup>[20]</sup> reported that pain was attributed to hemangioma in only 12.6% of patients. They had a low but relevant risk of rupture (3.2%).<sup>[21]</sup> The presence of symptoms (abdominal pain or discomfort) mostly is the indication for surgery. Increasing size, intratumoral thrombosis or hemorrhage may cause pain, as a result of liver capsule distension. Abdominal fullness and palpable masses are associated with space occupation or compression caused by the lesion.<sup>[19, 22, 23]</sup> Zang et al.<sup>[24]</sup> found that 66.3% (57 of 86) of the patients had abdominal discomfort, pain or a palpable mass.

In addition to the surgical resection, radiotherapy, hepatic artery ligation or embolization can be applied to these cases.<sup>[11, 25]</sup> In our case, there was a giant hemangioma, almost 30 cm, with no complaint which could be palpated on the abdominal wall. Actually, it was surprising that he had not realized such a huge mass on the abdominal wall. Even though there was no complaint, we decided to perform surgical resection because of rupture risk (e.g. trauma). Once a hepatic hemangioma ruptures, the mortality rate may be as high as 70%.<sup>[26]</sup> Also, giant or cavernous hemangiomas larger than 10 cm are rare and ones reaching 20-40+cm<sup>[27]</sup> are even rare in the literature. Some surgeons, on the contrary to the latter, prefer to conduct surgery rather than to proceed with observation.<sup>[28, 29]</sup>

The most common surgical procedures are enucleation and resection. Some surgeons prefer enucleation, some of them prefer resection. Between the two techniques, there are some advantages and disadvantages. It is said that, enucleation is performed in a shorter operative time and

causes less intraoperative bleeding.<sup>[24, 30-32]</sup> On the other hand, by surgical resection, occluding left hepatic vein, making pringle maneuver and decreasing central venous pressure (supported anesthesia), the operative time can be shortened, and bleeding can be less. On the contrary, when enucleation is being performed and if you enter the capsule of hemangioma, it can be hard to get bleeding under control. Also, in our case hemangioma was covering nearly all the left lobe. Some researchers say that preoperative embolization of hemangioma is useful and decreases bleeding. Most of the reports published to date have used transarterial embolization (TAE) to convert inoperable hemangiomas into operable ones. Because embolization reduces the size of the mass, surgical maneuvers can be done easier.<sup>[33, 34]</sup> The common complications of TAE for the treatment of hepatic hemangiomas are nausea, vomiting, abdominal distention, fever, hepatic dysfunction, abnormal embolization and intrahepatic bile duct injury.<sup>[35, 36]</sup> On the other hand, evidence supporting the role of preoperative angiography and embolization is less clear. Results of this procedure are controversial because of the fear of causing ischemia, intracavitary bleeding or infection.<sup>[11]</sup> In our case, we tried to conduct embolization preoperatively. However, it was not successful; hence, we preferred left lobectomy.

## Conclusion

We report a giant hemangioma successfully treated with surgical resection. We suggest that some patients, who have giant hemangioma, should go through surgical treatment even if they do not have any complaint. Not only symptoms but also size and risk of rupture by trauma should be considered in these cases. However, we should note that all possible circumstances must be taken under consideration.

## Disclosures

**Informed consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

**Authorship Contributions:** Concept – G.B.M., N.Ö.; Design – O.B.M., N.Ö.; Supervision – G.B.M.; Materials – G.B.M., B.Ç.S., N.Ö.; Data collection &/or processing – G.B.M., B.Ç.S.; Analysis and/or interpretation – G.B.M.; Literature search – G.B.M.; Writing – G.B.M.; Critical review – G.B.M.

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