

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

The hanging manoeuvre to complete liver resection for a locally advanced angiosarcoma: A case report



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ARTICLE INFO

Article history:

Received 13 June 2015

Received in revised form

10 September 2015

Accepted 12 September 2015

Available online 16 September 2015

Keywords:

Surgery

Angiosarcoma

Hepatectomy

Hepatic

ABSTRACT

INTRODUCTION: Angiosarcomas arising in the liver are rare tumours in the Western world. We report a case of a locally advanced primary hepatic angiosarcoma and also describe the manoeuvres used to achieve operative resection.

PRESENTATION OF A CASE: A 52-year old woman presented with vague right upper quadrant pain. Abdominal imaging revealed a heterogenous tumour in the right liver measuring 15 centimetres in maximal diameter. Although the tumour was deemed to be resectable, there was free fluid in the right paracolic gutter suggestive of rupture.

Intra-operatively, the peritoneal cavity was noted to be free of metastatic disease. However, tumour was adherent to the diaphragm precluding traditional mobilization of the liver. Therefore, a modified hanging manoeuvre was performed using a nasogastric tube. This allowed controlled mobilization of the right liver, parenchymal transection and en-bloc resection of the diaphragm with good hemostasis. Histologic examination revealed a primary angiosarcoma with uninvolved margins.

DISCUSSION: When they occur, primary hepatic angiosarcomas are most often locally advanced. Nevertheless, surgeons should be aggressive in the pursuit of complete resections because this is the only therapeutic modality that has been shown to have a survival advantage.

CONCLUSION: Hepatobiliary surgeons should keep the hanging manoeuvre in their armamentarium when performing complex liver resections for locally advanced angiosarcomas.

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1. Introduction

Angiosarcomas account for 0.58% of all primary liver tumours [1]. These patients usually present late when the tumour is locally advanced and therapeutic options are limited [2]. We report the case of a 52-year old woman who presented with a locally advanced angiosarcoma originating from the right liver. The lesion could only be excised safely using an anterior parenchymal transection aided by the hanging manoeuvre.

2. Report of a case

This report is in line with the CARE criteria [3]. A 52-year old woman with no chronic medical illnesses experienced worsening vague right upper quadrant pain for 5 days prior to presentation. She was otherwise well and there was no weight loss, anorexia, gastrointestinal symptoms and/or history of trauma. Physical examination was normal.

Blood investigations revealed a haemoglobin count of 10,000/dl. Electrolytes, renal function and liver function tests were normal. With a suspicion of gallstone disease, an abdominal ultrasound was ordered. Ultrasound did not identify any gallstones but noted the presence of a tumour in the right liver. Endoscopic evaluation excluded the presence of upper and lower gastrointestinal primaries.

Contrast enhanced CT scan revealed a large heterogenous tumour in the right hepatic lobe measuring 10 × 12 × 15 centimetres in maximal diameter (Figs. 1 and 2). There was evidence of free fluid in the right paracolic gutter suggestive of rupture. The tumour extended to Cantlie's line but did not involve portal vein or hepatic artery bifurcation. The left liver was normal and there were no metastatic foci in the chest or pelvis.

This patient was prepared for general anaesthesia and taken to the operating room for extended right hepatectomy. Intra-operatively, the peritoneal cavity was noted to be free of metastatic disease. The tumour had a bossellated surface (Fig. 3) and was adherent to the diaphragm. Since traditional mobilization of the right liver was not possible, a hanging manoeuvre was performed. The avascular space anterior to the inferior vena cava was developed from the lower border of the liver to the supra-hepatic

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Fig. 1. Axial views of a contrast enhanced CT scan of the liver revealing a large heterogenous tumour in the right hepatic lobe (Asterix). Yellow arrows point to an area of tumour that breaches Glisson's capsule.

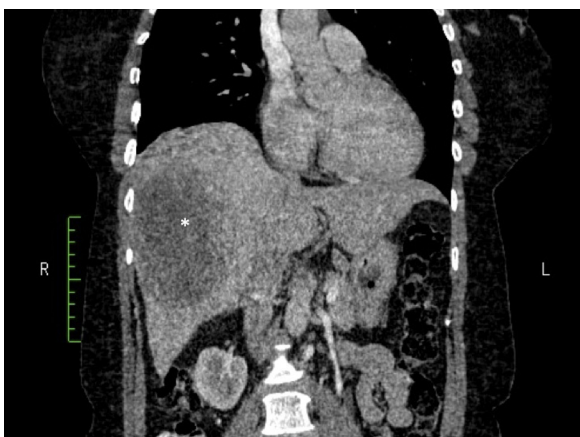


Fig. 2. Coronal views of a contrast enhanced CT scan of the liver revealing a large heterogenous tumour in the right hepatic lobe (Asterix).

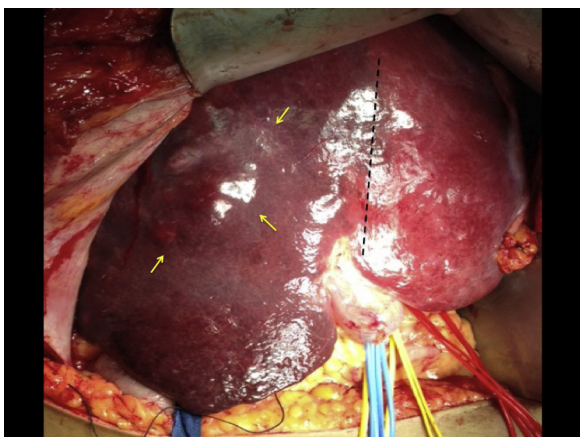


Fig. 3. The peritoneum has been entered to reveal the anterior surface of the liver. Yellow arrows demonstrate the tumour with a bosselated surface. The right hepatic artery and portal vein have already been ligated (not visible in this figure), resulting in ischemic change to the right liver as indicated by the broken black line.

space (Fig. 4). A large bore nasogastric tube was advanced into the avascular space and used to elevate the liver and facilitate anterior parenchymal transection without prior mobilization (Fig. 5). Hemostasis was ensured and this allowed controlled mobilization of the right liver to the point at which the tumour invaded the

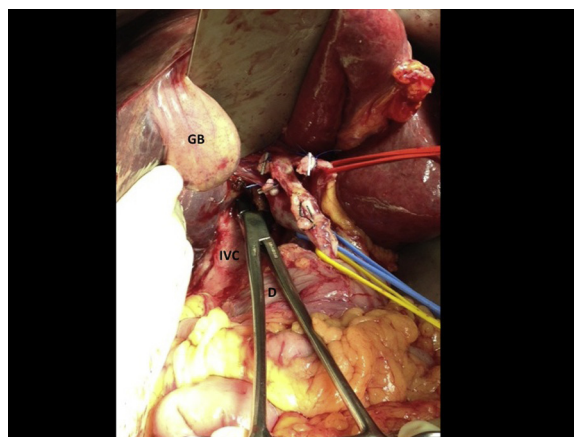


Fig. 4. In preparation for a hanging manoeuvre, a large vascular clamp is passed anterior to the duodenum (D) and used to develop the avascular space anterior to the inferior vena cava (IVC). The plane is developed along the plane of Cantlie's line from the IVC to the gallbladder (GB). Multiple vessel loops are seen encircling the main portal vein (blue sling), hepatic artery proper (red sling) and the common bile duct (yellow sling).

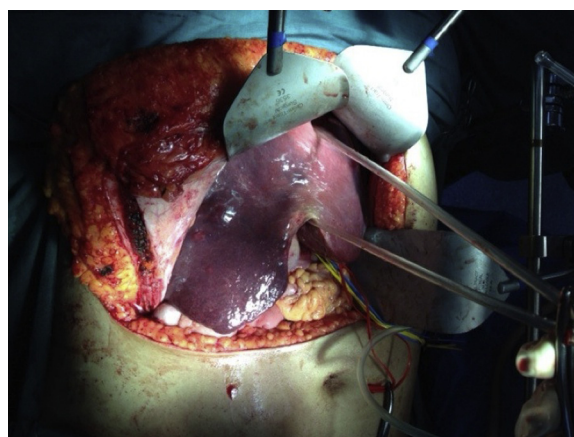


Fig. 5. A large bore nasogastric tube has been passed along the avascular space anterior to the IVC and used to carry out a hanging manoeuvre that will facilitate parenchymal transection.

diaphragm (Fig. 6). Complete removal demanded en-bloc resection of the diaphragm (Fig. 7). The diaphragm was repaired primarily in two layers using 1/0 polypropylene sutures. Hemostasis was ensured and drains left in-situ.

Pathologic examination confirmed the presence of 9 × 12 × 15 cm tumour with several haemorrhagic cystic areas ranging in size from 0.5–2 cm in diameter and scattered areas of necrosis. Resection margins were clear and uninvolved liver tissue was grossly unremarkable. The tumour invaded but did not penetrate the diaphragm.

Histologic examination revealed a primary angiosarcoma with uninvolved margins. There were numerous foci of infarction and tumour necrosis. The malignant cells were poorly differentiated. There were numerous spindle-shaped and bizarre multi-nucleated giant cells with indistinct cell margins, large nucleoli, prominent chromatin and frequent mitotic figures (Fig. 8). These bizarre cells spread along the hepatic sinusoids in sheets as they invaded into the adjacent hepatocytes (Fig. 9). Immuno-histochemical staining revealed that this tumour was positive for CD31 antigen but negative for Desmin, Keratin and S-100 proteins.

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