

CENTRAL BISECTIONECTOMY - A FEASIBLE ALTERNATIVE FOR CENTRALLY LOCATED LIVER TUMORS

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Central Bisectionectomy is the resection of segments 4a, 4b, 5, and 8 of the liver, and it was defined by Brisbane terminology. Case Report: A 54 years old female, presented for right upper quadrant pain, weight loss (8 kg / 2 months); blood tests: normal AFP level; negative AgHbs, AbAnti HBc, Ab Anti HCV. UGE/LGE with a normal aspect; CT scan revealed centrally located liver tumor (segments 4a, 4b, 5, and 8) that invades the MHV, away from the portal vein bifurcation. We performed a regulated central bisectionectomy with ligation of vascular pedicles for right anterior section (segments 5 and 8) and those for left medial section (segments 4a and 4b). With good postoperative course, the patient was discharged in the 9th postoperative day. After 6 months of careful follow-up no tumor relapse signs have been observed. Central bisectionectomy can not be performed when the tumor invades the vascular pedicles afferent to remaining parenchyma and requires two planes of transection. Central bisectionectomy is the best choice of surgery procedure for centrally located liver tumors which preserves the maximum amount of liver parenchyma thus minimizing the risk of postoperative liver failure.

Keywords: central hepatectomy, mesohepatectomy, central bisectionectomy, cholangiocarcinoma

INTRODUCTION

Central Bisectionectomy refers at the resection of segments 4a, 4b, 5, and 8 of the liver, and it was defined by Brisbane terminology. Formerly named in many other ways (mesohepatectomy, central hepatectomy, central lobectomy) central bisectionectomy is the elective surgery for liver tumors located in central segments (4a, 4b, 5 and 8), with better results than extensive liver resections (right/left trisectionectomy) because it minimizes the risk of postoperative liver failure¹.

CASE REPORT

A 54 years old female, non-alcoholic and non-smoker, presented for right upper quadrant pain, weight loss (8 kg / 2 months), with no history of fever, jaundice or vomiting. Blood tests revealed normal AFP level; negative AgHbs, Ab Anti HBc, Ab Anti HCV, elevated AST and ALT level, normal bilirubin, alkaline phosphatase and gamma-glutamyl transferase. Upper gastrointestinal exam/colonoscopy with normal aspect; CT scan revealed centrally located liver tumor (segments 4a, 4b, 5, and 8) that invades the medial hepatic vein (MHV), away from the portal vein bifurcation, without arterial invasion, with a max diameter of 75/ 69 mm. and compression of the trunk of the left hepatic vein (LHV) (Figure 1). Rest of the examination was found to be normal

The estimated liver volumes to be resected in case of left or right trisectionectomy were estimated to be 73% respectively 78%, leaving, in this case, a remaining volume of 27% and 22% respectively, with consecutively postoperative acute liver failure risk. Otherwise, a central bisectionectomy with preserving both left lateral section

and right posterior section would maintain an approximate volume of 49%.



Figure 1 CT Scan – the tumor is located in central liver, segments 4a, 4b, 5 and 8.

We performed a regulated central bisectionectomy with ligation of vascular pedicles for right anterior section (segments 5 and 8) and those for left medial section (segments 4a and 4b) (Figure 3). Parenchymal transection was done with Sonopet Ultrasonic Aspirator (Stryker) with approximately 400 ml of blood lost.

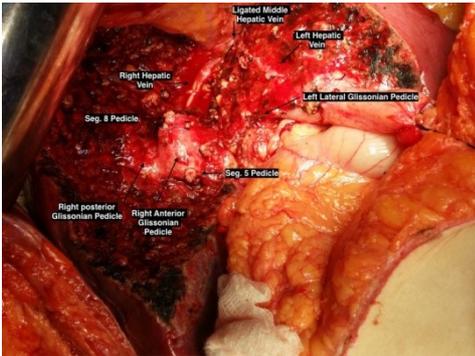


Figure 2 Intraoperative aspect of the tumor

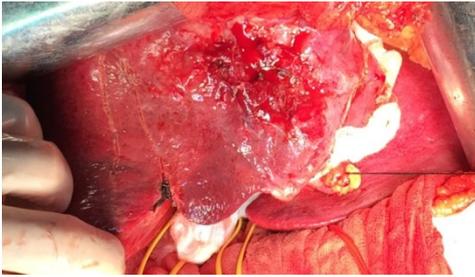


Figure 3. Postresection aspect

With good postoperative course, the patient was discharged in the 9th postoperative day. The histological examination revealed an intrahepatic cholangiocarcinoma. Gemcitabine-based chemotherapy was indicated for 2 months after the surgery. After 6 months from surgery, the patient presents well, without tumor relapse signs, with normal tumor markers (Figure 4)



Figure 4. CT scan 6 months postoperatively

DISCUSSION

Based on current literature, central bisectionectomy is a good option for anatomical parenchymal-preserving resection in patients with centrally located liver tumors¹. Although the risks of this procedure are evident: longer surgery time, greater blood loss, biliary and vascular complications, a potential need for 2 bilioenteric anastomoses, all attributed to the proximity to the hilar structures¹ and the presence of two planes of resection instead of a single one, it appears to be safe and comparable in both early and long term perioperative outcomes when compared to extended hepatectomy². There are obvious advantages: lower risk of postoperative acute liver failure due to the larger preserved liver

parenchyma and the possibility of repeated liver resections in case of future malignant recurrence^{3,4}.

As central bisectionectomy can not be performed when the tumor invades the vascular pedicles afferent to the remaining parenchyma, preoperatively imaging tests are very important and advances in imaging techniques are the ones to improve and establish the foundation of segment-oriented resection¹.

As this procedure removes entire left medial and right anterior sectors, leaving untouched the left lateral and right posterior sectors it represents an attractive option for patients with limited functional liver like those with liver cirrhosis or those with chemotherapy induced steatohepatitis.

We recommend that prior to any major liver resection and even to a central bisectionectomy the volume and function of residual liver remnant should be assessed by a hepatic volumetry, performed by a radiologist or even by the surgeon with minimal radiological knowledge, with free, open-source image processing software packages being available today, like ImageJ and OsiriX[®], prospective hepatic CT volumetry done with those being reliable and accurate, comparable with professional radiological softwares⁵.

CONCLUSIONS

Central bisectionectomy is the best choice of surgery procedure for centrally located liver tumors, because it preserves the maximum amount of liver parenchyma and thus minimizing the risk of postoperative liver failure. Central bisectionectomy should be considered in all the patients with centrally located liver malignant tumors, especially in those with limited liver functions, as those with chemotherapy associated steatohepatitis.

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