Risks and benefits of major liver resection in patients with initially unresectable colorectal liver metastases

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Surgery remains the only curative option for patients with colorectal liver metastases with survival rates reaching more than 60% at 5-years. Yet, more than 75% of the patients present with advanced multiple bilobar liver disease by the time of diagnosis and are therefore not candidate for upfront resection. While improvements in chemotherapy regimen using targeted therapies now provide response rates ranging from 57 to 62%, a significant proportion of patients will still require liver volume modulation in order to achieve safe R0 major resection leaving more than 30% of future liver remnant functional volume with adequate inflow and outflow. In such setting, two groups of patients experience dramatically opposite outcomes. On the one hand, a group of initially unresectable patients of good oncologic prognosis who require only few chemotherapy cycles to achieve resectability. In these “fast responders”, liver volume modulation using portal vein embolization does not favour the growth of liver metastases in the embolized and non-embolized lobes, the underlying liver often shows only minimal chemotherapy associated injury and major resection is well tolerated with almost no mortality and acceptable morbidity. In these patients, long-term outcomes with 5-year survival rates of more than 50% join that of initially resectable ones. On the other hand, a group of initially unresectable patients of poor oncologic prognosis in whom resectability is marginally achieved using numerous chemotherapy cycles or change in the baseline chemotherapy regimens. These “slow responders” at poor oncologic prognosis experience significant tumor progression following portal vein embolization either precluding resection or leading to more complex and technically demanding procedures on highly diseased underlying liver parenchyma. In these patients, surgery is associated with prohibitive mortality reaching up to 19%. Moreover, the high rate of major postoperative complications often precludes reasonable early use of adjuvant chemotherapy and therefore favours the risk of recurrence. Recently, there has been growing enthusiasm regarding a new treatment strategy combining right portal vein ligation and in situ splitting. This approach, which is now commonly known as the ALPPS approach, is thought to provide marked and rapid hypertrophy of functional liver tissue allowing for reduction of the time interval between first-step and second-step surgeries thus, theoretically, preventing tumour progression. Nevertheless, both high morbi-mortality rates and raising concerns regarding the potential influence of such rapid hypertrophy on tumour progression will require further investigations to address the true oncologic benefits of this strategy in initially unresectable patients. Altogether, it seems that while aggressive surgical management should be undertaken in “fast responders”, “slow responders” should rather benefit alternative strategies in order to both improve post-operative tolerance and allow adjuvant therapy.


