



## Assessment of Tumor Biology of HCC for Liver Resection

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Surgical resection is one of the most effective treatments for the treatment of HCC. According to the past experience, there are many factors that affect the outcome of HCC resection. These factors can be divided into groups as patient demographic factors, tumor biology, and therapeutic method related factors.

The demographic factors of the patient can not be changed. But with the advance of modern medicine, most of them can be overcome and do not preclude the HCC resection for the patient. Such factors include age, sex, and some co-morbidities of the patient. The therapeutic method-related factors include the safety margin, heat distribution, heat-sink-effect, et etc., and some of these factors are inherited to the treatment modality and can not be changed. As to the tumor biology, those factors can not be changed by any other methods. However, just as any other groups of factors, the tumor biology factors affect the patient outcome in a relative manner, rather in an absolute manner.

The different tumor biology factor of HCC affects the patient outcome differently. Some factors, such as tumor size alone, do not affect overall survival significantly. But some factors, such as vascular invasion and multiplicity of the tumor, they do affect patient outcome significantly. In such instances, what are the factors that make surgical resection of HCC not valid demand further discussion. If sorafenib, with an average prolongation of patient survival of 2.9 months, can be adopted by FDA as a standard treatment for advanced HCC, then surgical resection should be considered valid for most of the patients with such unfavorable tumor biology factors, because clinically they can prolong the patient survival far longer than 2.9 months as compared to supportive treatment only.

So, it is hard to say what is the tumor biology factor, which makes surgical resection not valid, only that HCC resection in such patients are with inferior results than the traditionally resectable HCC patient. If patients can accept this, surgical resection for HCC can be applied to more patients with advanced HCC.