



# Liver resection in obesity patients

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We enjoyed the article by Kampf *et al.* (1) on obesity and its association with fatty liver and post-hepatectomy liver failure (PHLF). They concluded that obesity, defined by body mass index (BMI), was associated with liver steatosis and fibrosis; however, postoperative complications, including PHLF after liver resection, were comparable regardless of BMI, suggesting that liver resection is safely performed in obese patients. However, the surgical method for obese patients is also important, and Inoue *et al.* have reported that open liver resection for colorectal liver metastases (CRLM) in obese patients resulted in a significantly higher risk of infectious complications than laparoscopic liver resection (2).

As the authors mentioned in the limitations section, obesity was assessed using BMI in this study, but other assessments (waist circumference and body composition) need to be considered. Moreover, fatty liver was assessed by pathological evaluation of the resected liver specimens, which cannot be assessed preoperatively.

We conducted the analyses in 167 patients who underwent hepatectomy for CRLM at our institute between

May 2007 and December 2021. BMI was the most useful assessment for diagnosing fatty liver by preoperative computed tomography (CT) (3) (*Table 1*). Therefore, we are in favor of assessing obesity using the BMI, which is widely available and easy to evaluate.

Although obesity appears to be associated with a higher risk of postoperative complications after liver surgery, there is no consensus regarding its effect on long-term outcomes. Generally, postoperative complications contribute to poor long-term outcomes (4). However, some studies have reported the protective effects of obesity on long-term outcomes (5,6). In our cohort, among the various obesity assessments, only high waist circumference was a significantly favorable prognostic factor for overall survival (*Table 2*).

As the rate of obesity increases worldwide, it is important to consider liver resection in patients with obesity. In addition, we should return to the basics and reaffirm the importance of evaluating obesity based on BMI and waist circumference, which do not require special testing equipment, rather than body composition using CT and body composition analyzers.

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**Table 1** Diagnostic performance for fatty liver

Variables	AUC	P value
BMI	0.793	<0.01
Waist circumference	0.779	<0.01
SFA	0.692	<0.01
VFA	0.785	<0.01
VFA/SFA ratio	0.570	0.30

AUC, area under the curve; BMI, body mass index; SFA, subcutaneous fat area; VFA, visceral fat area.

**Table 2** Univariate analysis in relation to overall survival according to obesity after hepatectomy for colorectal liver metastases

Variables	OS univariate analysis	
	Hazard ratio (95% CI)	P value
BMI, high	0.71 (0.36–1.40)	0.32
Waist circumference, high	0.58 (0.35–0.96)	0.04
SFA, high	0.96 (0.58–1.57)	0.86
VFA, high	1.02 (0.62–1.67)	0.95
VFA/SFA ratio	1.11 (0.67–1.84)	0.68

OS, overall survival; CI, confidence interval; BMI, body mass index; SFA, subcutaneous fat area; VFA, visceral fat area.

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