



Risk Factors Associated With Liver Damage after Weight Loss Surgery

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DESCRIPTION

Bariatric Surgery (BS) can improve the adverse metabolic status and hepatocellular pathological status of Nonalcoholic Fatty Liver Disease (NAFLD). However, transient abnormally elevated Alanine Amino Transferase (ALT) and Aspartate Amino Transferase (AST) levels have been observed in the early stage after BS. ALT and AST are indicators of liver chemistry, and abnormally high levels suggest liver or potential liver cell damage. This phenomenon has been previously reported in biliopancreatic diversion. However, the studies found that this phenomenon persisted in other forms of BS, such as Sleeve Gastrectomy (SG), Roux-en-Y Gastric Bypass (RYGB), and Sleeve Gastrectomy with Jejunum Bypass (SGJB). Liver-related complications or adverse outcomes following BS suggest that we should pay attention to the evaluation of liver status after surgery. To explore the risk factors for early liver injury after BS, we retrospectively reviewed a series of clinical data before and after surgery in patients with obesity who received BS at our center for obesity and metabolic diseases.

Liver-related complications, such as elevated liver enzymes, thrombocytopenia, and impaired coagulation parameters, have been reported after BS. Severe ascites, hepatorenal syndrome, and liver failure also occur. The occurrence of hepato-related complications after BS is mainly seen in surgeries with a bypass length that is too long, and the mechanism may be related to malnutrition caused by an alimentary/common limb that is too short. However, most of the transiently elevated liver enzyme levels recovered gradually during the follow-up. In addition, we observed elevated liver enzymes after nonbypass surgical procedures, suggesting that other mechanisms may be involved. Multivariate logistic regression analysis showed that waist circumference was an independent risk factor for early postoperative liver injury. Clinical studies have found that increased waist circumference, rather than weight, promotes liver

enzymes, and increases the risk of NAFLD. Excessive preoperative waist circumference often results in excessive visceral adipose tissue, which can damage liver cells by secreting inflammatory factors and related metabolites. As a result, the compensatory function of liver cells decreased in the early postoperative period, and liver enzymes increased abnormally for a short time. Also, it has been reported that surgery can stimulate the liver and lead to oxidative stress reactions, thus affecting early postoperative liver function. A large WC before BS is more likely to lead to early postoperative liver enzyme elevation and liver injury, but most can recover on their own. Studies found that liver enzymes were also abnormally increased one year after BS. Omega-Loop Gastric Bypass (OLGB), a method of BS, is a risk factor predicting liver enzyme elevation. This may be due to liver injury caused by different mechanisms; that is, excessive waist circumference and fat content, as previously mentioned, may lead to early liver injury and to long-term liver injury caused by influencing nutrient absorption by contrast bypass. Therefore, attention should be paid to long-term follow-up evaluation of the liver after BS, especially in patients with an enlarged WC and bypass surgery, to reduce liver-related surgical complications. The advantage of our study lies in the screening of risk factors for the early elevation of ALT and AST after BS and the preliminary analysis combined with data from the reported literature. Also, in the context of increasing attention to the improvement of NAFLD after BS, attention to liver chemistry, and hepatocyte status during follow-up is needed. The limitations of our study were the small number of included patients. Moreover, we did not measure visceral fat parameters, so we could not determine the direct relationship between liver enzyme elevation and visceral fat content. However, waist circumference is currently an effective indicator for the assessment of abdominal obesity, and it remains to be seen whether other methods are always superior to waist circumference in visceral adipose tissue estimation.

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