Longitudinal comparison of the effect of gastric bypass to sleeve gastrectomy on liver function in a bariatric cohort: Tehran Obesity Treatment Study (TOTS)

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Abstract

Background- Patients with morbid obesity commonly have fatty liver disease and elevated liver enzymes. While surgery effectively induces weight loss, bariatric techniques may differ regarding liver function improvement.

Aims- To evaluate and compare the trends of liver function recovery after gastric bypass surgery (GB) with sleeve gastrectomy (SG) in a university hospital setting.

Methods- Adult bariatric candidates without history of alcohol consumption or other etiologies of liver disease who underwent SG (n=682) or GB (n=355) were included. Trends of weight loss parameters and alanine transaminase (ALT), aspartate transaminase (AST), alkaline phosphatase (ALP) at 0, 6 (in 90.4%), 12 (in 83.5%), and 24 months (in 67.1%) were compared using generalized estimating equations method.

Results- Overall, 1037 patients with mean age of 38.4±11.2 and mean body mass index of 44.9±6.2kg/m^2 were analyzed. Seventy-eight percent of patients had fatty liver by ultrasound. Both GB and SG patients lost significant weight, with GB patients having a higher percentage of excess weight loss at 24 months (80.1% vs. 75.9%, $P_{between\text{-}group}$=.008). SG patients showed more favorable trends in liver chemistries with significantly lower ALT at 12 months and AST and ALP levels at 6 and 12 months. However, the two groups were comparable at 24 months. Significantly more GB patients developed high-ALT at 6 and high-AST at 6 and 12 months. Undergoing GB was associated with smaller 0-12 month changes in ALT, AST, and ALP.

Conclusions- Bariatric surgery resulted in improvement in liver function parameters, with SG showing advantages over GB in the first postoperative year.