STUDY SUMMARY

Preoperative Low Energy Diet Diminishes Liver Size

Fris RJ. *Obes Surg.* 2004;14:1165-1170.

Introduction:

- Due to the large amount of intra-abdominal fat in morbidly obese patients, the upper stomach and gastro-esophageal area are often difficult to visualize during laparoscopic operations, which can influence the outcome of bariatric surgery.
- This may cause increased difficulty in achieving a safe view and may increase the risk of severe bleeding from retraction trauma.
- Preoperative weight loss can induce fat loss from the liver, reduce liver size, improve the surgical view, and reduce the risk of complications due to a bleeding traumatized liver.

Methods:

- A preoperative, very low energy (<800 calories/day) diet (OPTIFAST® VLCD Australia) was used for 2 weeks as a test of compliance in patients who were scheduled for laparoscopic gastric banding.
- Patients consumed one packet 3 times/day instead of three food-based meals.
- Liver size and body composition were measured pre- and post-diet.
- Patients and ultrasonographers were blinded to measurements; surgeons were unaware of liver measurements preoperatively.
- Measurements of the left lobe of the liver were taken three times (for accuracy) and repeated after 2 weeks on the VLCD diet.
- Body analysis was done at the start and at the completion of the VLCD diet on the same day as liver measurements.
- Weight, BMI, fat mass, and percentage fat were also measured pre- and post-diet and correlated to liver measurements.
- The change in these factors was calculated as a percentage change of the original measurement.
- At the end of the 2-week VLCD, all patients underwent uneventful laparoscopic placement of a gastric band.

Results:

- 40 patients (90% female) completed the study.
- Median age was 41 (range 25-74), median BMI was 47 kg/m^2 (SD 6.8), maximum BMI was 62 kg/m^2 and minimum BMI was 34.5 kg/m^2.
- There was a significant reduction in percent liver size (mean 5.1, 95% CI 3.3-6.8, $p<0.0001$).
  - Loss in size was the result of reductions in both length ($p<0.0001$) and depth ($p<0.02$).
- Significant reduction of percent body fat (mean 5.1, CI 95% 3.3-3.8, $p<0.0001$).
- Significant reduction in percent BMI (mean 4.2, CI 95% 3.6-4.8, $p<0.0001$) and percent weight loss (mean 4.1, CI 95% 3.5-4.7, $p<0.0001$).
- Percent change in body fat loss was correlated with percent change in liver size, but was not statistically significant ($r=0.07$, $p=0.62$).
- The four patients who did not lose weight preoperatively did not do well with weight loss postoperatively.
- While no patient's liver prevented laparoscopic placement of a gastric band, all livers had obvious visible infiltration and abnormal liver funtion tests.

Conclusion:

- If the patient is compliant, using a 2-week VLCD diet preoperatively should result in rapid weight loss.
- If significant weight loss occurs (>3 kg fat loss in 2 weeks), bariatric surgeons should feel confident that the hepatomegaly associated with steatohepatitis will improve.

Study summary prepared by Nestlé Health Science.

The complete study can be accessed at:
https://link.springer.com/article/10.1381/0960892042386977

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