Bariatric Surgery Outcomes in Patients with Chronic Liver Disease: A Nationwide Study

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BACKGROUND

- The spectrum of liver disease ranges from non-alcoholic fatty liver disease (NAFLD) and progresses to chronic liver disease (CLD) and subsequently liver cirrhosis (LC).
- Liver disease is a risk factor for surgical complications and a relative contraindication to bariatric surgery.
- This study evaluates early outcomes after bariatric surgery in patients with CLD and LC.

METHODS

- This is a retrospective analysis of the 2012–2016 Healthcare Cost and Utilization Project-National Inpatient Sample.
- Adult patients with obesity undergoing laparoscopic sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGB) were studied.
- CLD and LC were identified along with patient comorbidities.
- Outcomes were Long Hospital Stay (LHS) defined as ≥5 days, blood product transfusion, total hospital charges, and in-hospital mortality.
- Binary logistic regression was used for multivariate analysis (MVA).

REFERENCES

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Comparison of demographic and comorbidities

	No CLD N=122,529	Non-cirrhotic CLD N= 16,605	Cirrhosis N= 818
Demographic			
Age, year, mean ± SD	44.6±12	45.1±11.8	53.3±9.7*
Male Gender, n (%)	25,756 (21%)	3890 (23.4%)	239 (29.2%)*
Co-morbidities, n (%)			
Diabetes Mellitus	33,997 (35.1%)	5919 (45.5%)*	522 (70.4%)*
Hypertension	55,591 (45.4%)	6745 (40.6%)*	195 (23.8%)*
Hyperlipidemia	42,338 (34.6%)	7237 (43.6%)*	350 (42.8%)*
Chronic pulmonary disease	23,031 (18.8%)	3497 (21.1%)	184 (22.5%)
Obstructive Sleep Apnea	50,446 (41.2%)	8394 (50.6) *	445 (54.4%) *
Congestive Heart Failure	1529 (1.8%)	214 (1.9%)	21 (3.6%) *
Chronic Kidney Disease	2625 (2.1%)	383 (2.3%)	48 (5.9%)*

Comparison of Procedures and Outcomes

	No CLD N=122,529	Non-cirrhotic CLD N= 16,605	Cirrhosis N= 818
Procedure			
Roux-en-Y Gastric Bypass	43,914 (35.8%)	6991 (42.1%)*	308 (37.7%)
In-hospital Outcomes			
Blood Product Transfusion	1081 (0.9%)	158 (1%)	28 (3.4%)*
Length of Stay ≥5 days	2619 (2.1%)	403 (2.4%)	37 (4.5%)*
Total Charges, USD, median (IQR)	41,360 (28,270)	42,600 (29,900)	46,640 (32,550)*
Mortality	38 (0.03%)	12 (0.1%)*	(<0.3%) †

SD: Standard Deviation; CLD: Chronic Liver Disease; USD: United States Dollar; IQR: Interquartile Range

* P value < 0.05 in comparison to patients without chronic liver disease

P value < 0.05 in comparison to patients with non-cirrhotic CLD

† Number of observation ≤10 has not disclosed based on Healthcare Cost and Utilization Project agreement

RESULTS

- 139,952 patients were analyzed (RYGB 36.6%, female 78.6%, age 44.7±12 years).
- CLD was listed in 17,423 (12.4%) patients, including 818 (0.6%) with LC.
- Non-alcoholic fatty liver disease was the most common cause of CLD.
- Patients with LC were more likely to be older, male, and have diabetes mellitus and hyperlipidemia. 37.7% of LC and 42.1% of non-cirrhotic CLD patients underwent RYGB.
- Transfusion, length of stay, and total charges were higher in the LC group.
- In-hospital mortality was higher in CLD (0.1%) and LC (<0.3%).
- In MVA, LC was an independent predictor of LHS (Odds Ratio (OR): 1.82, 95% CI: 1.25-2.67) but non-cirrhotic CLD was not a predictor of LHS.
- Subgroup MVA in CLD showed RYGB was independently associated with LHS (OR: 1.85, 95% CI: 1.53-2.25).

CONCLUSION

- Patients with CLD and LC undergoing bariatric surgery have an increased rate of in-house mortality as well as length of hospital stay compared to patients without liver disease. However, these rates may not be clinically significant.
- Bariatric surgery can be safely performed in appropriately selected patients with CLD and LC following preoperative optimization.