

of OSA is even greater among adolescents presenting for MBS, ranging from 46% to 70% [32,60,61]. Recent data demonstrate substantial improvement and/or resolution after MBS in adolescents, consistent with the outcomes in adults, with no increased morbidity or mortality [62,63]. Thus, OSA (e.g., apnea-hypopnea index >5) is a strong indication for performing MBS earlier.

Overview of obstructive sleep apnea: OSA has been shown to cause significantly decreased health-related quality of life (HRQoL) with increased risk of morbidity and mortality in adolescents. MBS in adolescents results in significant improvement or resolution of OSA. Thus, OSA should be considered a strong indication for MBS.

Nonalcoholic fatty liver disease (NAFLD) and steatohepatitis (NASH)

Nonalcoholic fatty liver disease (NAFLD) is a generic term for a wide spectrum of disease that ranges from fatty liver to advanced fibrosis and cirrhosis to hepatocellular cancer and end-stage liver failure. A study of childhood and adolescent liver epidemiology showed NAFLD in 9.6% of children between age 2 and 19 years [64]. However, Xanthakos et al. [65] evaluated the prevalence of NAFLD in children undergoing MBS in the Teen-LABS population. Of 165 patients who underwent liver biopsy at time of surgery, NAFLD was present in 59% patients with 24% borderline NASH and 10% showing definite nonalcoholic steatohepatitis (NASH) [65,66].

Treatment of obesity is the mainstream of management of NAFLD. Manco et al. showed that VSG is more effective than lifestyle intervention for reducing NASH and liver fibrosis in adolescents with obesity [50]. One of the largest studies in 109 adult patients with biopsy proven NASH and/or fibrosis showed 85% resolution of NASH and 34% improvement in fibrosis 1 year after MBS [67]. Hence, MBS should be recommended in patients with NAFLD.

Overview of nonalcoholic fatty liver disease (NAFLD) and steatohepatitis (NASH): NAFLD may be present in at least 59% of adolescent patients referred for MBS. Given complete resolution of NASH in approximately 85% of patients who undergo VSG or RYGB, NAFLD should be considered a strong indication for MBS in adolescents with severe obesity.

Idiopathic intracranial hypertension

Idiopathic intracranial hypertension (IIH) is defined as elevated intracranial pressure without clinical, radiologic, or laboratory evidence of a cause. IIH can lead to permanent visual impairment or blindness. IIH is also known as pseudotumor cerebri, benign intracranial hypertension, and pseudotumor cerebri syndrome. The overall incidence of IIH in the United States is 1 per 100,000 people, but increases to 15 to 19 per 100,000 in women between 20- and 44-years old with obesity [68]. There is a strong association between childhood obesity and increased risk of pediatric IIH [69]. The incidence of IIH in youth with obesity is lower in prepubertal children than in adolescents [68,69].