

Bariatric Surgery Can Lead to Bone Loss

BY SHERRY BOSCHERT

EXPERT ANALYSIS FROM A MEETING ON OSTEOPOROSIS SPONSORED BY THE UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

SAN FRANCISCO – Bariatric surgery can be beneficial for obese people, but it also can lead to significant bone loss.

The limited data so far suggest that decreased bone mineral density after bariatric surgery increases the risk for fracture, Dr. Anne Schafer said at the meeting.

The extent of bone loss within a year after Roux-en-Y gastric bypass can be equivalent to “what you would expect in the first 5 years of menopause” in some women, said Dr. Schafer of the division of endocrinology at the University of California, San Francisco.

A 2011 study not yet published by the Mayo Clinic, Rochester, Minn., compared fracture rates in 277 patients undergoing bariatric surgery with local age- and sex-matched fracture rates. The surgeries occurred in 1985-2004, and 94% were gastric bypasses. The retrospective chart study found 138 fractures in 82 patients since the surgery, with a standardized incidence ratio of 2.1 for any fracture and 1.9 for fractures of the hip, spine, wrist, or arm after bariatric surgery, she said.

Dr. Schafer incorporated her own clinical experience with recommendations from the Endocrine Society and from Tufts University in advising clinicians to take the following steps in managing patients undergoing bariatric surgery.

Prior to surgery, check serum 25-hy-

droxyvitamin D (25[OH]D) levels and prescribe preoperative treatment to augment vitamin D in patients with low levels.

After surgery, all patients should take two multivitamins per day to make sure their micronutrient needs are met.

After malabsorptive bariatric surgery, such as gastric bypass, patients also should take calcium supplements, though there aren't enough data to pinpoint the best dose or to identify which patients might most need it, Dr. Schafer said. She recommended 1,200-2,000 mg/day (preferably in citrate form) after malabsorptive surgery and possibly after restrictive bariatric surgery such as adjustable gastric banding.

Based on the preoperative vitamin D level, prescribe 800-2,000 IU/day of vitamin D₃ supplementation after malabsorptive surgery and possibly after restrictive bariatric surgery. “I've had people who need more” than that dose range, she added.

For postoperative surveillance, check calcium homeostasis laboratory tests every 6 months for the first 2 years and then annually after malabsorptive surgery and possibly after any bariatric surgery. The tests include calcium, albumin, phosphate, creatinine, 24(OH)D, and parathyroid hormone.

If the parathyroid hormone level is high, but the 25(OH)D level is low, treat with vitamin D supplementation. If the parathyroid hormone level is high and the 25(OH)D level is ideal, check the patient's 24-hour urinary calcium, and if that is low, increase calcium intake.

Because some of the etiology of bariatric surgery-induced bone loss may

be the preferential loss of lean mass over fat mass, or changes in fat distribution, encourage patients to consume protein and to exercise, she said.

The Endocrine Society recommends dual-energy x-ray absorptiometry (DXA) at baseline and annually in people undergoing malabsorptive bariatric surgery. No data show that such monitoring improves outcomes, “but I do think that you should consider it for any people who can fit on the DXA scan before the operation,” Dr. Schafer said. The weight limit for the scanner is about 275-350 pounds.

Dr. Schafer also advises a DXA scan 1-2 years postoperatively. Incorporate those results into “your clinical judgment and other risk factors like age or prior history of fractures to set up an individualized plan for monitoring bone density from there.”

High body mass index has been associated with high bone mineral density, and either voluntary or involuntary weight loss is associated with bone loss and increased fracture risk. Bariatric surgery leads to loss of bone mass for many reasons, she said, including nutritional deficiencies from malabsorption, the body's signals about decreased skeletal loading with weight loss, and changes in fat-secreted hormone.

Most of the data on bone loss after bariatric surgery are for Roux-en-Y gastric bypass, which induces early and sustained increases in bone turnover and decreases in bone mineral density. Fewer data are available on other procedures, but some studies suggest that another malabsorptive procedure, biliopancreatic diversion, may produce effects similar

to those of gastric bypass, and that adjustable gastric banding may have less of an impact on bone, she said.

For gastric bypass, one study of 15 patients showed an 8% decrease in total hip bone mineral density within 9 months (J. Clin. Endocrinol. Metab. 2004;89:1061-5). Femoral neck bone density decreased by 9% within 1 year of gastric bypass in a separate study of 23 patients (J. Clin. Endocrinol. Metab. 2008;93:3735-40). A third study of 42 patients showed a 7% decrease in spine bone density and a 10% decrease in total hip bone density a year after gastric bypass (Obes. Surg. 2009;19:41-6).

Vitamin D deficiency can be a problem after the surgery because many patients have low vitamin D levels beforehand, some of the surgeries are designed to create malabsorption, and patients eat less food and different kinds of food after surgery. In the worst cases, patients develop secondary hyperparathyroidism or bone loss, and there have been case reports of osteomalacia.

All the studies used DXA scans to assess bone density after bariatric surgery, but DXA assessment may be biased in the setting of marked weight loss because of changes in soft tissue surrounding the bones. “We need nonbiased methods of assessing bone mineral density” for future studies of bariatric surgery's effects, she said.

Dr. Schafer had no disclosures. ■

To view a video interview with Dr. Schafer, scan the QR code with your smartphone.



Overweight Linked to Higher Mortality in Black Women

BY MARY ANN MOON

FROM THE NEW ENGLAND JOURNAL OF MEDICINE

Among black women, the risk of death from any cause is increased for all categories of overweight and obesity, as it is in whites, according to a report in the Sept. 8 issue of the journal.

The hazard ratios also are similar in magnitude for black women as for white women and men, said Deborah A. Boggs, Sc.D., of the Slone Epidemiology Center at Boston University, and her associates (N. Engl. J. Med. 2011;365:901-8).

Previous studies of the link between overweight and mortality have included only a limited number of black subjects or have failed to report results on black subjects separately from those on whites, so it was uncertain whether the association was present in black women. Yet the prevalence of obesity and abdominal obesity both have risen fastest in black

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Major Finding: Black women's risk of death from any cause was increased in all categories of overweight and obesity, so that at a body mass index of 20 kg/m² or higher, every 5-unit increase in BMI correlated with an 18% rise in mortality risk.

Data Source: The ongoing, prospective follow-up Black Women's Health Study of 51,695 subjects in the United States who were aged 21-69 years at enrollment in 1995.

Disclosures: This study was supported by the National Cancer Institute. Dr. Boggs and her associates reported no relevant financial disclosures.

women, with projections that by 2020, 70% of black women will be obese and 90% will have abdominal obesity, the investigators noted.

Dr. Boggs and her colleagues used data on a subgroup of 51,695 subjects enrolled in the Black Women's Health Study (BWHS) to examine the relationship between risk of death and both overall and abdominal obesity.

They focused their analysis on the 33,916 subjects who had never smoked because this association can be confounded by the ef-

fects of smoking.

The BWHS is an ongoing prospective follow-up study of black women across the United States who were aged 21-69 years at enrollment in 1995 and who have been followed every 2 years since then.

The researchers found that the association between body mass index (BMI) and risk of death from any cause was curvilinear: lowest among women with a BMI of 20-25 kg/m² and rising as BMI approached both the lower and the higher extremes. Mortality risk was increased for every

category of BMI in the overweight and obesity range.

Among women with a BMI of 20 or higher, every 5-unit increase in BMI correlated with an 18% rise in the risk of death. “Previous studies involving black women have shown weaker associations of BMI with risk of death,” but those studies were small or otherwise flawed, the investigators said.

The higher mortality seen among women with the lowest BMI may have been associated with illness-related weight loss, they added.

Larger waist circumference was not significantly associated with increased risk of death except among nonobese black women.

In contrast, previous studies in white women and men found larger waist circumference to predict higher mortality risk, independently of BMI.

The positive association between BMI and risk of death was particularly strong for car-

diovascular causes of death. For other causes of death, only a very high BMI was associated with increased risk. And there were no associations between BMI and risk of death from cancer in this study.

The link between BMI and risk of death from all causes was stronger among women with higher levels of education, but not significantly so. Such an association may be more evident among less-educated persons because they have higher absolute risks of death and because of other factors related to low socioeconomic status, such as psychosocial stress and limited access to care, Dr. Boggs and her associates said.

“Previous studies of BMI and risk of death involving blacks have included a greater proportion of less-educated participants. This difference may account in part for the stronger relationship in the present study than that previously reported among blacks,” they added. ■