Before Bariatric Surgery, Get Baseline Bone Density

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SAN FRANCISCO — Weight loss after bariatric surgery induces a drop in bone mineral density and increases the risk for falls and fractures, but it's unclear whether most of theses changes are clinically significant, Dr. Brian N. Sabowitz said.

The sparse data that exist tend to look at relative changes. They don't give absolute numbers that might show whether a patient's new bone density or fracture risk after weight loss from bariatric surgery is any higher than bone density or fracture risk in someone who already is at the target weight that the surgical patient eventually achieves, he said at the annual meeting of the International Society for Clinical Densitometry.

Obese people are likely to have vitamin D deficiency, which has been associated with an increased risk of fracture, noted Dr. Sabowitz, founder of a weight-loss clinic that performs bariatric surgery in Lake Havasu City, Ariz., where he also was a patient to undergo his own Roux-en-Y gastric bypass. In addition, Dr. Sabowitz is medical director of an osteoporosis center in Lake Havasu City.

Fifteen of 18 patients he saw in January 2008 for consults before bariatric surgery had deficient vitamin D levels. A prospective, controlled study in 2007 of 19 obese and 19 nonobese patients found serum levels of vitamin D were 60% lower in the obese group than in the controls. When they were exposed to UV radiation, obese patients absorbed half as much vitamin D, probably because the fat-soluble vitamin was being sequestered in adipose tissue instead of reaching the bloodstream.

Physiologic changes from bariatric surgery—whether gastric banding or gastric bypass surgery—make it more difficult for micronutrients to be absorbed. One study of 21 women found that 36% of ingested calcium entered the bloodstream before gastric bypass surgery, which reduced calcium absorption to 24%. Bariatric surgery also can lead to deficiencies in levels of vitamin B_{12}, folate, thiamine, and iron.

Getting a baseline bone density measurement in an obese patient before bariatric surgery can be difficult, and fat may alter the scan results. For densitometry of the femoral neck, be sure to move the fat panus out of the way, he advised. If nothing else, get scans of the bilateral forearms to have some baseline measurement.

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A 1992 study found decreased levels of serum calcium, osteocalcin, 25-hydroxyvitamin D, and other markers of bone health in 26 women 10 years after gastric bypass surgery, compared with levels in 7 control women who lost weight without surgery. A trend toward lower bone density at the femoral neck in the surgery group did not reach statistical significance.

Another separate study found that forearm bone density was higher in eight obese patients than in eight normal-weight controls at baseline, but 1 year after bariatric surgery on the obese patients forearm densities were similar between groups (Braz. J. Med. Biol. Res. 2007;40: 509-17). Femoral neck bone mineral density in the surgery patients dropped to levels significantly lower than in the control group, however, so the risk remains "controversial," he said.

Data from the National Health and Nutrition Examination Survey suggest that fracture risk doubles in obese people who lose 10% of body weight, but the survey doesn't compare the absolute fracture risk after weight loss with that in controls.

"We don't have very good ways to treat patients who get osteoporosis because of weight loss, if that's what's happening," he said. Bariatric surgery patients must switch their medications to liquid or crushable alternatives to get the medicine past the physiologic obstacles created by the surgery. Bisphosphonates come in pill form and are not amenable to this.

"The main thing is to optimize preoperative status" by normalizing vitamin D and calcium levels and getting baseline readings of bone density and bone turnover markers to help with decision making, Dr. Sabowitz said. ■