End-stage renal disease after bariatric surgery

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A 57-year-old woman with morbid obesity (body mass index 41.6), diabetes mellitus, hypertension and obstructive sleep apnea sought bariatric surgery for weight loss. Her pre-operative serum creatinine was 1.0 mg/dL (88.4 µmol/L), and she had no history of renal calculi. She underwent laparoscopic Roux-en-Y gastric bypass surgery with a 75-cm Roux limb. Post-operatively, she was non-adherent with calcium supplementation and had difficulties staying hydrated because of loose bowel movements. She lost 100 lbs (45.5 kg) and her diabetes, hypertension and obstructive sleep apnea resolved. Unfortunately, however, her creatinine gradually rose to 10.8 mg/dL (954.7 µmol/L) 1.5 years after surgery, requiring hemodialysis. The renal biopsy revealed moderate acute tubular injury with extensive calcium oxalate deposition. A diagnosis of oxalate nephropathy was made. The patient remains dialysis dependent despite aggressive calcium supplementation and low oxalate diet.

Obesity affects >30% of the US population [1], and bariatric surgery is becoming an increasingly common procedure for its treatment. The Roux-en-Y procedure is considered the bariatric procedure of choice, and 108 000 underwent it in the United States in 2003 [2].

Enteric hyperoxaluria is thought to develop when dietary oxalates are delivered to the colon uncomplexed with calcium resulting in increased enteric absorption. This may occur after bariatric surgery because of a reduction in lumen calcium due to its precipitation as insoluble long-chain fatty acids, thus preventing the formation of insoluble calcium oxalate that is excreted in the stool. Instead, urinary oxalate increases that may result in nephrolithiasis. In the past, jejuno-ileal operations were strongly associated with renal oxalate deposition, and more recently the newer Roux-en-Y procedure has been associated with oxalate nephrolithiasis [3]. End-stage renal disease due to oxalate deposition, as seen in this case, is a very rare consequence of the newer surgery, but should be considered when discussing its risks and benefits.

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References


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Fig. 1. Moderate acute tubular injury with extensive calcium oxalate deposition.