

Scientific letter

Severe Maintained Hypocalcemia After Parathyroidectomy for Hyperparathyroidism in a Patient With Multiple Endocrine Neoplasia I and Prior Bariatric Surgery[☆]

Hipocalcemia severa mantenida en paciente paratiroidectomizada por hiperparatiroidismo en contexto de neoplasia endocrina múltiple tipo I con cirugía bariátrica previa

Long-term complications of malabsorptive procedures for morbid obesity include hypovitaminosis D and secondary hyperparathyroidism.^{1,2} In recent years, there have been reports of cases after total or partial thyroidectomies with maintained hypocalcemia that was refractory to treatment.^{1,2} Nonetheless, in this bibliographic review, we found no cases of patients who had undergone bariatric surgery with primary hyperparathyroidism after the procedure, which can camouflage calcium deficiency and promote the effects of bone demineralization.

Multiple endocrine neoplasia type 1 (MEN-1) syndrome is an autosomal dominant disorder characterized by the appearance of tumors in the parathyroid (present in almost all patients by the age of 50), anterior pituitary and pancreatic islet cells. Hyperparathyroidism is the most common manifestation of MEN I, with almost complete penetrance at the age of 50. In most cases, it is the initial manifestation.³

We report the case of a patient who had primary hyperparathyroidism in the context of MEN I syndrome after gastrojejunal bypass, which camouflaged severe calcium deficiency.

The patient is a 39-year-old woman with MEN I syndrome who had undergone bariatric surgery in 2007, involving vertical gastropasty and Roux-en-Y gastric bypass, with a biliopancreatic loop of 100 cm, 250 cm intestinal loop and common loop of 150 cm. During the short- and long-term post-op, there were no apparent complications. At that time, she had normal parathyroid hormone (PTH) (200 pg/mL) and calcium levels.

During outpatient follow-up in 2012, mild maintained hypercalcemia was detected (range 9.5–10.5), which reached

11 in 2012; PTH levels rose to 434.00 pg/mL. Given the patient's family history of MEN I, parathyroid scintigraphy was ordered, which demonstrated 2 deposits with increased activity in the lower poles, compatible with parathyroid adenomas (Fig. 1). She likewise presented slightly elevated phosphatase alkaline levels, at around 100–105 U/L. Densitometry showed a T-score with a standard deviation of –1.1 in the femur and –0.6 in the spinal column at the end of 2011.

In May 2012, the patient underwent subtotal parathyroidectomy with preservation of the right lower half of the parathyroid glands, which measured 6 mm in diameter and was viable in macroscopic appearance. Due to this factor, self-transplantation was ruled out, although parathyroid tissue was cryopreserved. PTH levels in the internal jugular vein prior to parathyroidectomy were 359 pg/mL in the left and

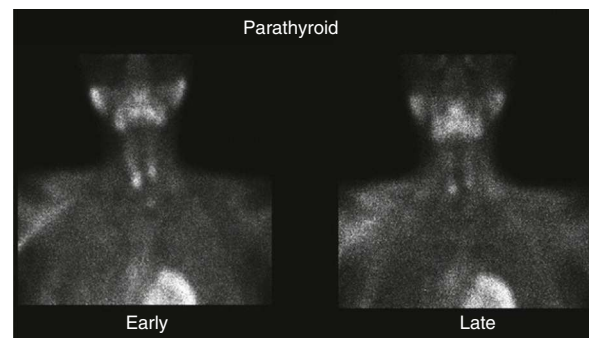


Fig. 1 – Parathyroid scintigraphy showing 2 deposits of activity in the lower poles, compatible with parathyroid adenomas.

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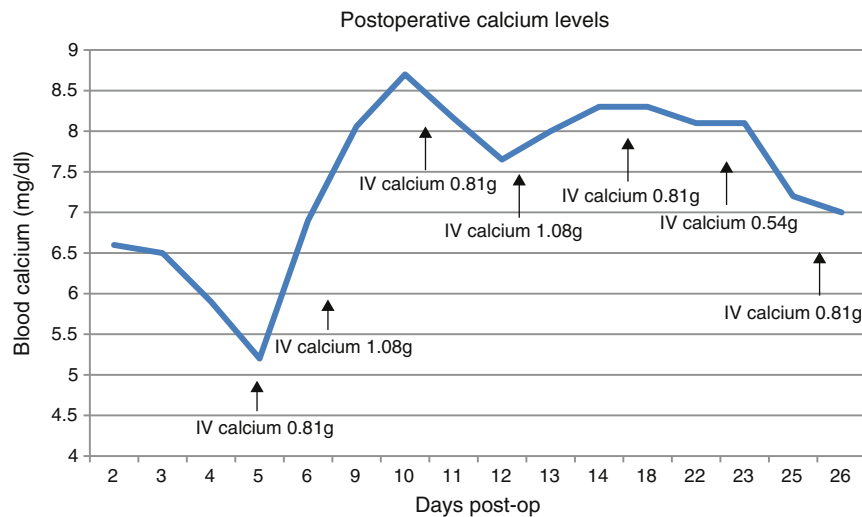


Fig. 2 – Post-op calcemia levels.

438 pg/mL in the right. Intraoperative levels after exeresis were 32 in the left and 38 in the right.

In the immediate post-operative period and despite therapy with 1 g calcium taken orally every 8 h and 0.5 µg of calcitriol, the patient presented severe hypocalcemia crises (reaching a minimum value of 5.9 mg/dL), with accompanying tetany 72 h after the intervention. She required up to 1.08 g of IV calcium and 1 µg of calcitriol daily.

On the 18th day after surgery, corrected calcium levels stayed above 8 mg/dL; we decided to decrease the IV calcium to 0.81 g/day. Finally, after 23 days of hospitalization, intravenous calcium supplementation was reduced to 0.5 g per day, and the patient had calcium levels of 7 mg/dL.

Postoperative calcium and PTH levels are shown in Figs. 2 and 3.

Due to the drop in calcium to below 8 mg when the intravenous calcium administration was reduced, and given the patient's clinical stability, we decided to continue treatment through the home hospitalization program. The patient continued to receive intravenous calcium therapy of

0.8 g per day, along with 1.5 g of oral calcium every 8 h, magnesium and vitamin D. The patient has been monitored in the outpatient clinic.

During follow-up, the patient has presented arthralgia, but no other symptoms associated with phosphocalcic metabolism regulation. Parenteral calcium was progressively reduced until its withdrawal. The patient is currently in treatment with 0.25 µg per day of calcitriol and 2 g of oral calcium every 8 h.

The coincidence in a patient of malabsorptive bariatric surgery and MEN I is quite improbable; in fact, there are no reports of this situation in the medical literature

There are two mechanisms by which hypocalcemia may appear in patients who have undergone gastric bypass.¹ First of all is the defunctionalization of the duodenum (where most of the calcium is absorbed), which means that the calcium is absorbed by means of a more deficient mechanism in a distal area of the small bowel. Second is the malabsorption of vitamin D, due to a lower effect of the biliary salts secondary to surgery.^{4,5}

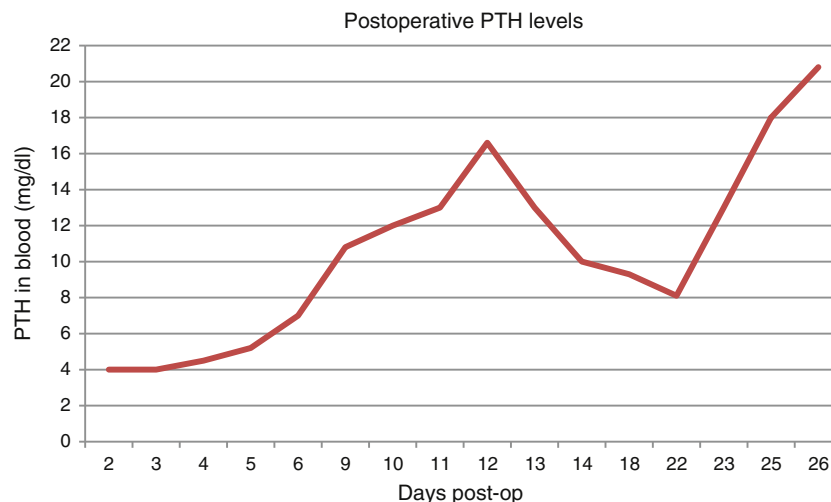


Fig. 3 – Post-op parathyroid hormone levels.

Patients who have undergone malabsorptive bariatric surgery are at risk for developing nutritional deficiencies. Specialists recommend calcium supplements after these procedures^{1,2,6,7} and occasionally vitamin D supplements (although in this case it was not administered due to the high calcium levels). Osteoporosis studies are also recommended, including densitometry, for example.^{2,5,8}

In conclusion, in spite of the rare nature of the case, we should consider the possibility of a balance between intestinal malabsorption that causes hypocalcemia and resorption due to hyperparathyroidism that causes hypercalcemia, which provides normal calcemia results, even with elevated parathyroid hormone levels. It is for this reason that we should not concentrate on only these analytical parameters in the follow-up after malabsorptive procedures. According to our own experience and the bibliography, it is recommendable to order a complete battery of tests including densitometry if malabsorption is suspected.^{2,5,8} Furthermore, parathyroid surgery should not be delayed in patients with sporadic or hereditary primary hyperparathyroidism who have undergone bariatric surgery and meet the criteria for surgery.⁹

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Conflict of Interest

The authors declare having no conflict of interests.

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