



# ROUX-EN-Y GASTRIC BYPASS REVERSAL DUE TO RECALCITRANT HYPOCALCAEMIA AFTER TOTAL THYROIDECTOMY

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## Introduction

Y-en-Roux Gastric Bypass (RYBG) is a bariatric surgery for weight reduction in patients with Obesity . This causes a shift of the absorption locations of calcium and vitamin D, leading to an increased risk of calcium homeostasis changes<sup>1</sup>.

Iatrogenic Hypoparathyroidism is a possible complication of a total thyroidectomy. To ameliorate this complication it's needed an intact intestinal tract to maximize calcium and vitamin D absorption.

Hypocalcaemia refractory to medical treatment is a serious complication in patients undergoing total thyroidectomy with prior RYBG and there is no consensus on how to proceed in this situation.

## Clinical Case

- I. Identification: 34 years old, female, Caucasian.
- II. Family History: Irrelevant
- III. Medical History: Obesity (BMI 45,7Kg/m<sup>2</sup>), under RYGB in 2013, with total loss of 47Kg (actual BMI 27,3Kg/m<sup>2</sup>).

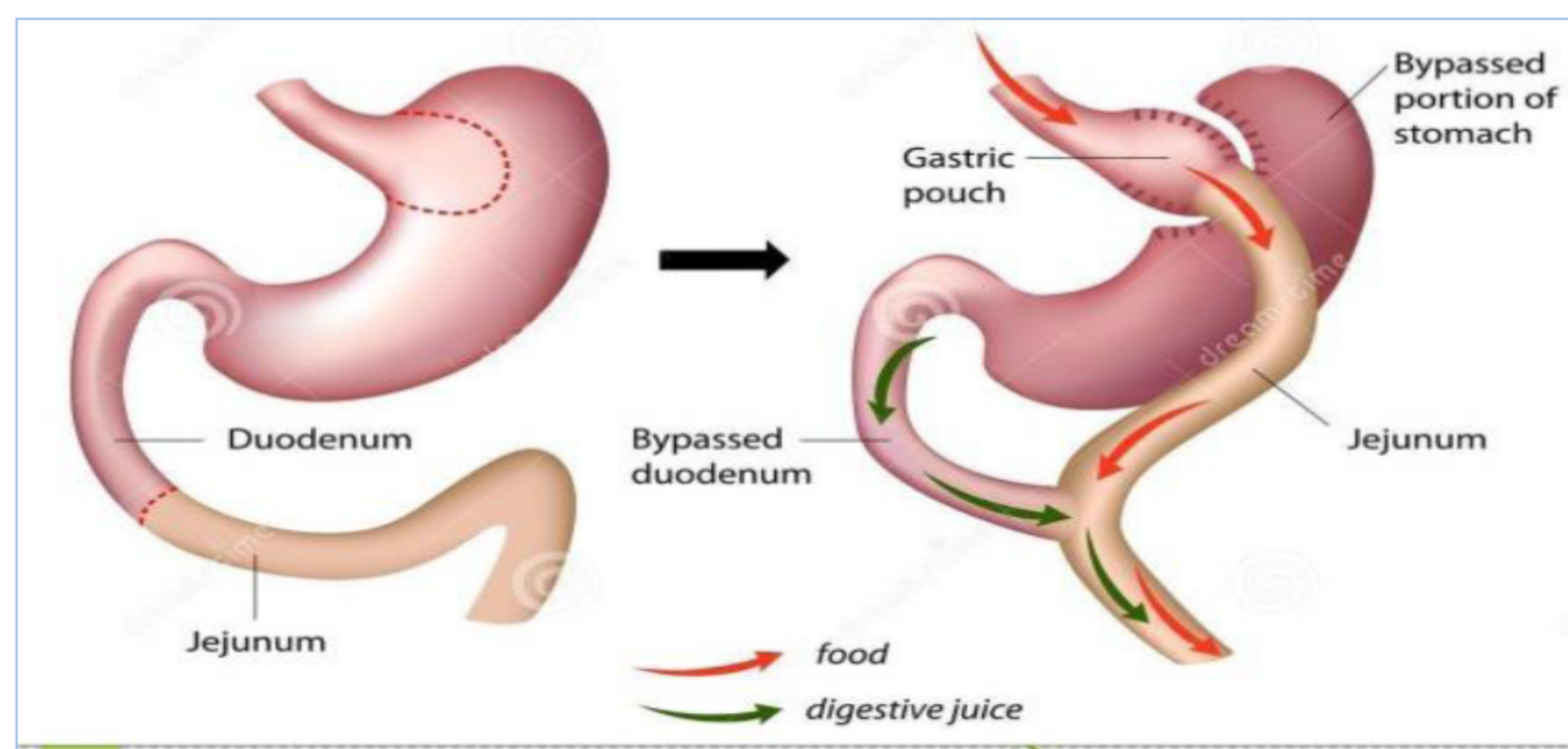
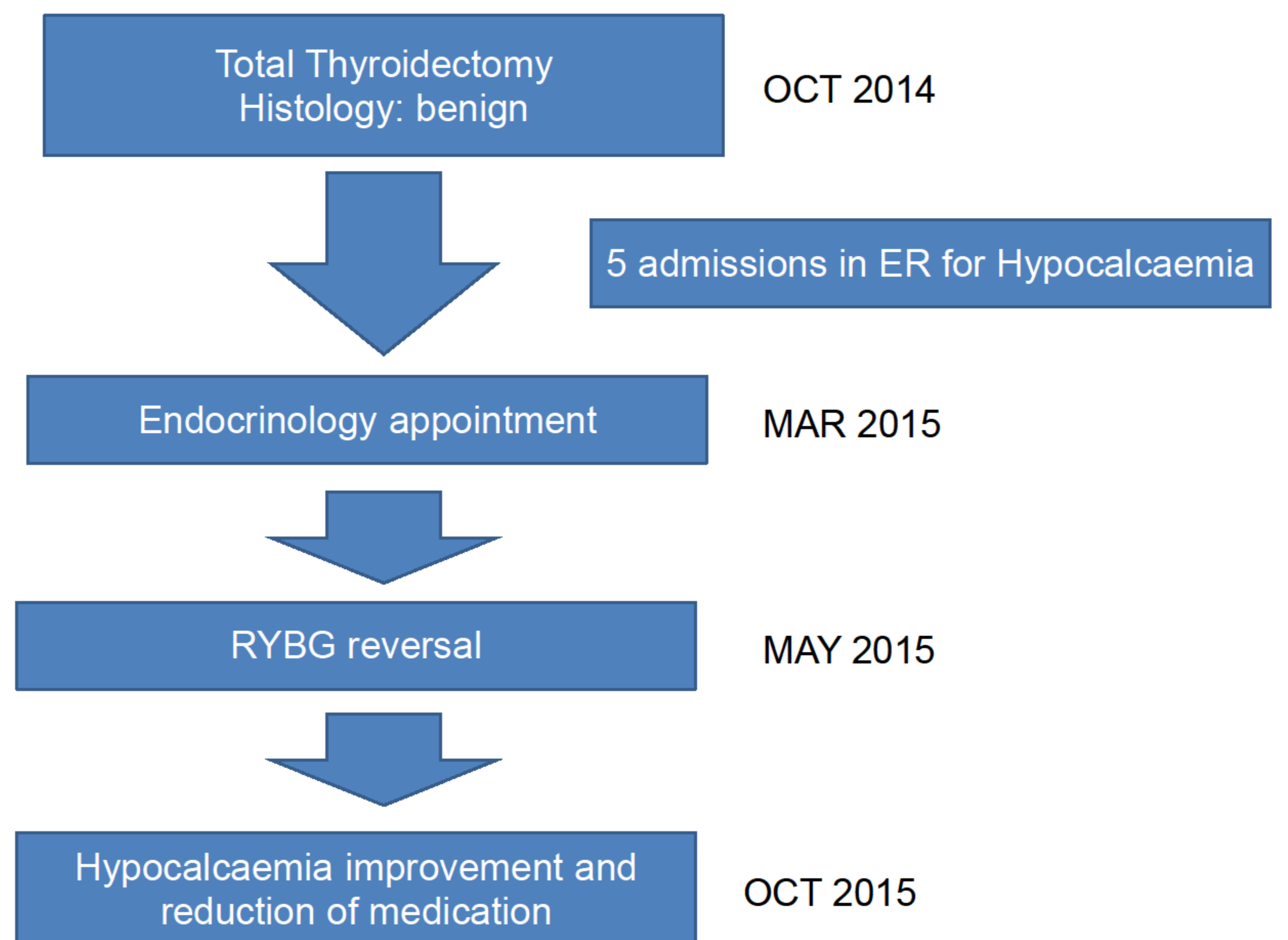


Figure 1: RYBG Procedure



Date	Calcium (8,6-10mg/dl)*	Phosphorus (2,7-4,5mg/dl)	PTH (16-87 pg/ml)	TSH	Medicação			
					Calcium carbonate 1500 mg	Calcitriol 0,25ug	calcium Gluconate Iv	LT4
6.Oct.14					Total Thyroidectomy			
Oct 2014	6,9			46	1	1	Sim	100
Nov 2014	6.1	5.4	-		6 cp/d	6 cp/d		125
Mar 2015	7.2	5.4	-	0,08	21cp/d	4 cp/d	3/3 weeks	200
29.May.15					RYBG reversal			
30.May.15	6.1				3 cp/dia	with 400 UI colcalciferol		175
Jun 2015	8.4	4.4	<3		5 cp/dia	with 400 UI colcalciferol		
Oct 2015	6	4.6	4	0.14	6 cp/dia	with 400 UI colcalciferol	1x/m	175/150

Table 1: Analytical and therapeutical evolution

## Discussion/Conclusion

After RYBG the incidence of hypocalcaemia varies between 15 and 48% and vitamin deficiency between 50% and 63%. This is because the duodenum is responsible for 80-100% of the vitamin D-dependent calcium uptake mechanism, with the remaining being absorbed in the distal small intestine in a less effective way<sup>2</sup> shape. Moreover gastrectomy reduces gastric acidity required for calcium salts' absorption. That is why the citrate calcium may be best absorbed than carbonate calcium. Thiazides may also be used because it will increase renal calcium reabsorption<sup>3</sup>. Cases have been reported, with some success in reversing hypocalcaemia using synthetic PTH<sup>4</sup> and RYBG reversal<sup>5</sup>, however it's needed randomized trials to test its real effectiveness and application. In our case after RYBG reversal, there was an improvement of hypocalcaemia with reduced medication, however the follow-up is still very short, and in the cases described follow-up is 12 months.

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3- N.F.Mahlay, L. G. Verka, K. Thomsen, S. Merugu, and M. Salomone, "VitaminD status before roux-en-Y and efficacy of prophylactic and therapeutic doses of vitamin D in patients after roux-en-Y gastric bypass surgery," *Obesity Surgery*, vol. 19, no. 5, pp. 590-594, 2009.

4- Betsy Palai, et al, "Life-Threatening Hypocalcemia following Subtotal Parathyroidectomy in a Patient with Renal Failure and Previous Roux-en-Y Gastric Bypass Surgery," *Case Reports in Endocrinology*, vol. 2011,

5- Campos, Guilherme M. et al Laparoscopic reversal of Roux-en-Y gastric bypass: Technique and utility for treatment of endocrine complications, *Surgery for Obesity and Related Diseases*, Volume 10, Issue 1, 36 - 43 2014