Roxanne Dutia,[1,2] Katrina Brakoniecki,[1,2] Phoebe Bunker,[1,2] Furcy Paultre,[1,2] Peter Homel,[3] André C. Carpentier,[4] James McGinty,[5,6] and Blandine Laferrère[1,2,6,7]

RESPONSE TO COMMENT ON DUTIA ET AL.

Limited Recovery of β-Cell Function After Gastric Bypass Despite Clinical Diabetes Remission. Diabetes 2014;63: 1214–1223

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We thank Dr. Pontiroli, and agree with his commentary (1). Dr. Pontiroli provides an interesting observation regarding change in β-cell function following weight loss by gastric banding in subjects with type 2 diabetes. His data show minimal improvement in insulin release, as assessed by the Δinsulin/Δglucose during an oral glucose tolerance test (OGTT), but a significant improvement in insulin sensitivity by homeostasis model assessment, 18 months after gastric banding (1,2). In our study (3), we observed a significant improvement in both β-cell glucose sensitivity (slope of the insulin response to a change in plasma glucose levels) during an oral glucose challenge, and insulin sensitivity by homeostasis model assessment, after 10% and 30% weight loss by Roux-en-Y gastric bypass (RYGBP). The improvement in insulin secretion after RYGBP and the lack of improvement after gastric banding suggests indeed that gastrointestinal factors, potentially incretins, are important for insulin secretion in response to nutrient ingestion after RYGBP. This is further confirmed by our finding that β-cell glucose sensitivity minimally improves upon intravenous glucose stimulation after 10% or 30% weight loss, in spite of clinical diabetes remission. Comparison between these studies with slightly different modeling, while extremely valuable, does not account for potential differences in weight loss between studies.

Similar to Pontiroli's and our own data, Kashyap et al. (4) observed improvement in the insulinogenic index (Δinsulin/Δglucose 0–30 min) during a meal test after ~10% weight loss post-RYGBP, but not after gastric restriction (either by gastric banding or vertical sleeve gastrectomy). Interestingly, Bradley et al. (5) also observed a marked increase in the dynamic insulin secretion rate (primarily occurring during the first 60 min of a test meal) after RYGBP, but not after a 20% matched weight loss by gastric banding in a nondiabetic population. Future studies, directly comparing RYGBP versus gastric banding in a population with diabetes, after equivalent weight loss, will help further elucidate the importance of changes in the gastrointestinal anatomy versus weight loss to improvements in β-cell function.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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[1]Department of Medicine, St. Luke's Roosevelt Hospital Center, New York, NY
[2]New York Obesity Nutrition Research Center, St. Luke's Roosevelt Hospital Center, New York, NY
[3]Department of Medicine, Albert Einstein School of Medicine, New York, NY
[4]Department of Medicine, Centre de Recherche Clinique Etienne-Le Bel, Université de Sherbrooke, Sherbrooke, Quebec, Canada
[5]Division of Minimally Invasive Surgery, Department of Surgery, St. Luke's Roosevelt Hospital Center, New York, NY
[6]Columbia University College of Physicians and Surgeons, New York, NY
[7]Division of Endocrinology and Diabetes, St. Luke's Roosevelt Hospital Center, New York, NY

Corresponding author: Blandine Laferrère, bbl14@columbia.edu.