

## So Much to Lose: A Review of 25 Bariatric Surgery Cases in People Living With HIV (PLWH) at an Urban, Ryan White-Funded HIV Clinic

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# So Much to Lose: A Review of 25 Bariatric Surgery Cases in People Living With HIV (PLWH) at an Urban, Ryan White-Funded HIV Clinic

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## Background

Early in the HIV epidemic, people living with HIV (PLWH) often struggled to maintain body weight. Since the 1990s, combination antiretroviral therapy (cART) has transformed the lives of PLWH, reducing morbidity and increasing life expectancy. In this time, as obesity rates have surged in the US, obesity and its associated comorbidities have become major health issues in PLWH.<sup>1,2</sup> Recently, questions have been raised about a possible association between modern antiretrovirals, particularly integrase strand-transfer inhibitors (INSTI), and weight gain with various management strategies being proposed. Bariatric surgery is utilized commonly to manage obesity, but data remains limited regarding cART outcomes post-operatively considering the alteration of gastrointestinal anatomy and subsequent impact on nutrient and/or medication absorption.<sup>3-6</sup> We evaluated outcomes following bariatric surgery in a cohort of PLWH at an urban, Ryan White-funded HIV clinic.

## Methods

28 PLWH who underwent bariatric surgery were identified retrospectively. Patients with at least 12 months of follow-up post-operatively were included for further analysis. Medical records were abstracted for demographics, HIV viral load (VL), CD4, cART, weight, BMI, glomerular filtration rate (GFR, MDRD), hemoglobin A1c and number of medications taken for comorbidities (diabetes [DM], hypertension [HTN], hyperlipidemia) at baseline and up to 36 months post-surgery. For missing data, last observation was carried forward but not beyond the current post-surgery interval. Reasons for virologic rebound, cART changes and post-operative complications were also analyzed.

## Results

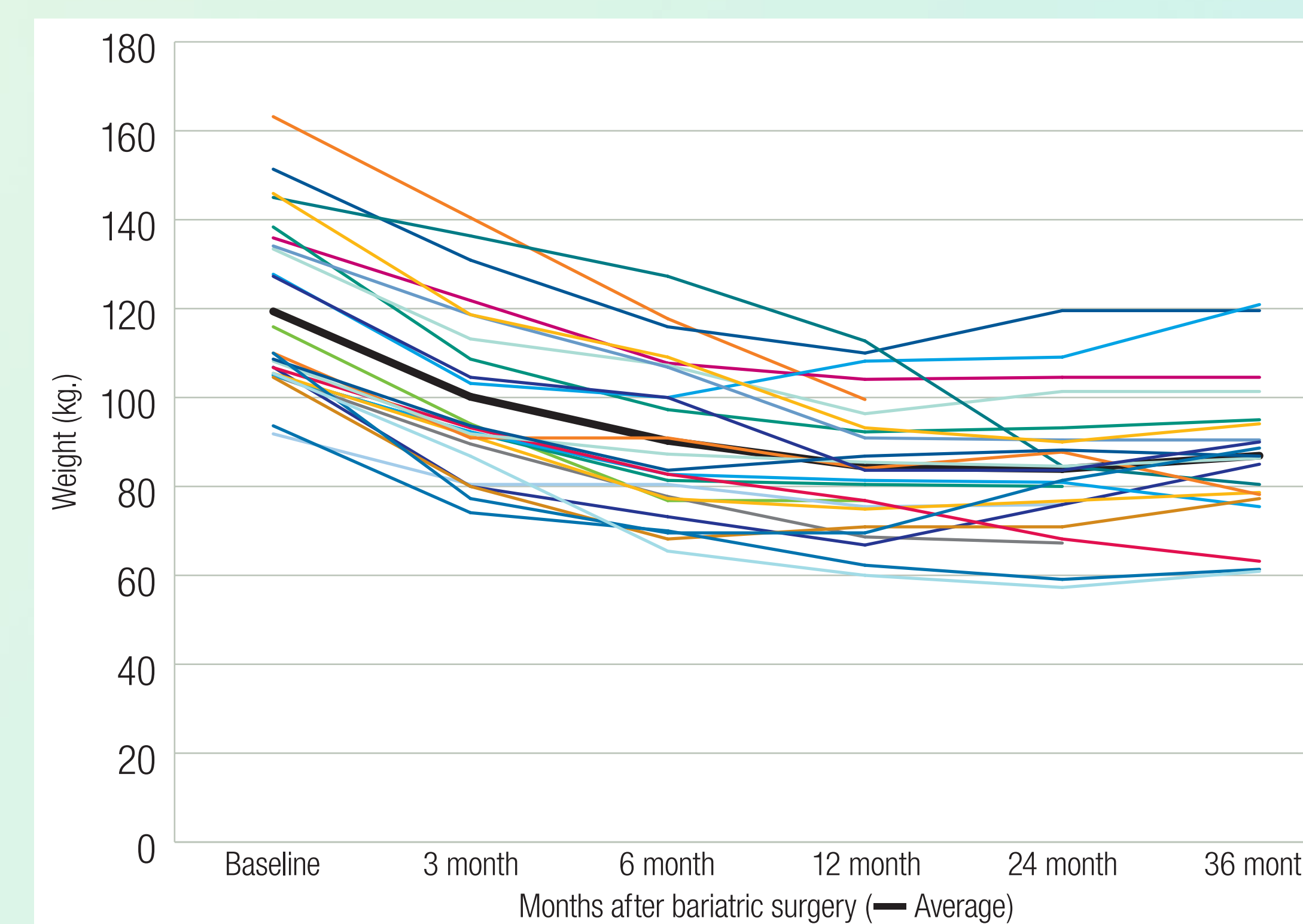
- 25 of 28 PLWH had at least 12 months of post-operative follow-up and were analyzed. Two were excluded due to lack of baseline data and 1 with recent surgery and <12 months follow-up.
- At baseline, patients were mainly female (76%) with mean age of 46 (24-61) and BMI of 43.7 kg/m<sup>2</sup> (32-56) and underwent sleeve gastrectomy (60%) or Roux-en-Y gastric bypass (40%).
- All but 6 patients were taking INSTI as part of their cART at baseline, limiting ability for pre/post-operative comparative analysis between cART regimens.
- Mean BMI decreased 28.6% at 12 months to 31.28 kg/m<sup>2</sup> (p<0.001) and was maintained through 36 months (31.97 kg/m<sup>2</sup>, p<0.001) with the steepest declines occurring in the first 12 months.
- Seven patients had DM with a mean A1c of 8.2% (6.5-11.4) at baseline. A1c decreased to 5.9% at 12 months (p=0.009).
- Mean DM medication use per patient declined 80% from 2.14 meds per patient (range 1-4) to 0.43 (range 0-2) at 12 months (p=0.011) and 91% to 0.20 (range 0-1) at 36 months (p=0.034).
- 18 patients were using a mean of 1.78 antihypertensive medications at baseline. Use decreased to 0.67 meds at 12 months (p<0.001) and 0.60 meds at 36 months (p<0.001).

**Table 1: Impact of Bariatric Surgery on Key Metrics**

	Baseline	3 month	6 month	12 month	24 month	36 month
Sample (n)	25	25	25	25	23	20
Weight, mean (kg)	263	220	199	186	185	191
Weight, mean (kg)	119	100	90	84	84	87
BMI, mean (kg/m <sup>2</sup> )	43.68	36.86	33.16	31.28	30.91	31.97
HIV VL <20 (copies/ml)	92%	84%	80%	92%	87%	90%
CD4, mean (cells/mm <sup>3</sup> )	721.64	640.68	695.76	704.21	620.39	621.45
GFR, mean (mL/min/1.73m <sup>2</sup> )	82.33	87.17	91.00	88.17	85.73	84.63
Number of BP Meds, mean	1.78	1.06	1.06	0.67	0.65	0.60
Patients with Diabetes (N=7)	Baseline	3 month	6 month	12 month	24 month	36 month
Hemoglobin A1c (%)	8.19	6.69	6.06	5.91	6.50	6.42
Number of DM Meds, mean	2.14	0.43	0.43	0.43	0.29	0.20

- No significant changes were identified in GFR and number of meds used for hyperlipidemia.
- Nausea and acid reflux were common, mainly in the immediate post-operative period. Two patients interrupted cART briefly (<4 weeks duration) due to nausea; both had VL <20 copies/mL at 36 months. One patient switched to liquid cART between 3 and 12 months due to dysphagia and had VL <20 copies/mL at 36 months.
- Seven patients experienced temporary virologic rebound (VL>200) during initial follow-up, 3 due to post-surgery complications (2 nausea, 1 dysphagia), and 4 due to nonadherence. All patients resuppressed by the end of follow-up.
- No significant change in CD4 count (cells/mm<sup>3</sup>) was observed with the exception of a temporary decline in mean CD4 at 3 months from 721.6 at baseline to 640.7 (p=0.012), rebounding to baseline levels by 6 months (695.8, p=0.443) and persisting through 36 months (673.5, p=0.215).
- No deaths, opportunistic or post-operative infections occurred in this cohort.

**Figure 1: Decrease in Body Weight Following Bariatric Surgery**



## Conclusions

In the largest cohort of PLWH presented to date, we demonstrate that bariatric surgery is an option for PLWH to reduce body weight and improve outcomes of obesity-related comorbidities. Most patients experienced a significant decrease in medication usage for type 2 diabetes and hypertension. Post-operative issues impacting cART adherence can be managed effectively without compromising long-term virologic control.

Bariatric surgery is an option for PLWH to reduce body weight and improve outcomes of obesity-related comorbidities.

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