

Effects of bariatric surgery on intracellular tenofovir-diphosphate levels in patients taking HIV pre-exposure prophylaxis

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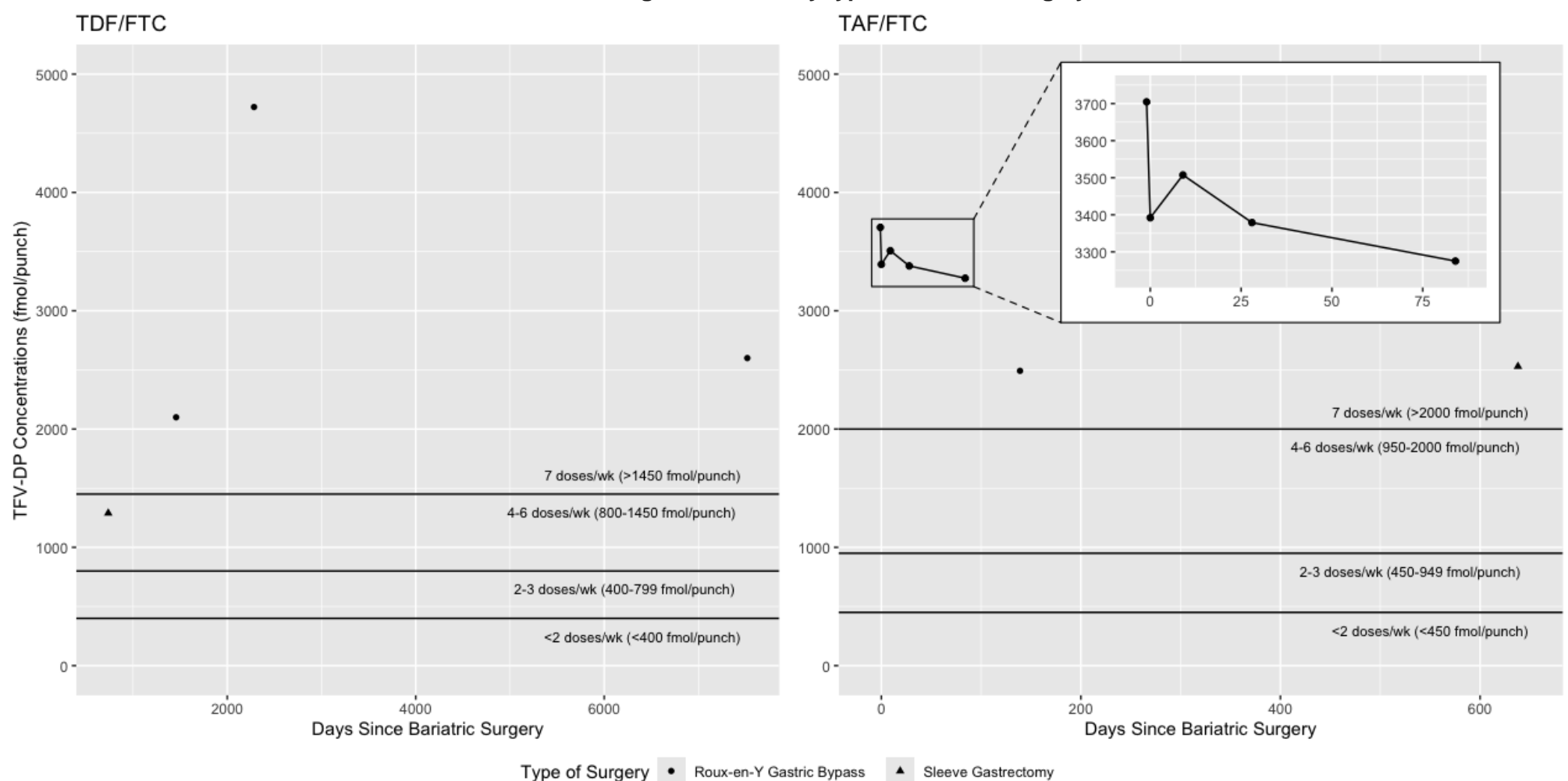
INTRODUCTION

- ❑ Bariatric surgery is an effective intervention for inducing long-lasting weight loss and decreasing obesity-related morbidity
- ❑ Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) are the most common bariatric surgeries
- ❑ While bypassing/resecting portions of the gastrointestinal tract successfully decreases food absorption, bariatric surgery may also influence drug bioavailability by reducing gastric mixing, emptying time, and surface area accessible for absorption of medications
- ❑ **Objective** = to measure concentrations of tenofovir diphosphate (TFV-DP) in dried blood spots (DBS) among individuals taking tenofovir disoproxil fumarate plus emtricitabine (TDF/FTC) or tenofovir alafenamide plus emtricitabine (TAF/FTC) who were scheduled to undergo/already underwent bariatric surgery

METHODS

- ❑ We enrolled TDF/FTC or TAF/FTC users who were undergoing/underwent bariatric surgery from PrEP clinics in Toronto or Ottawa
- ❑ We collected DBS samples immediately before participants administered their next daily dose of PrEP after at least 7 consecutive days of dosing
- ❑ Those who had already undergone bariatric surgery provided samples at baseline only
- ❑ 1 participant undergoing scheduled bariatric surgery provided samples pre-operatively and on post-operative days 7, 28, 84
- ❑ TFV-DP was measured by liquid chromatography tandem mass spectrometry
- ❑ We compared results against expected TFV-DP levels at different degrees of adherence and stratified by chronology of bariatric surgery, type of bariatric surgery, and PrEP regimen

Figure: TFV-DP levels in DBS samples from HIV PrEP users taking either TDF/FTC or TAF/FTC with expected reference ranges, stratified by type of bariatric surgery.



Bariatric surgery does not appear to compromise concentrations of oral PrEP

RESULTS

- ❑ **Participant characteristics (n=7)**
 - ❑ 6 self-identified as white and 1 as Indigenous and white
 - ❑ All were gay, cis-gender men
 - ❑ Median age was 48 years (Q1=44, Q3=51)
- ❑ **Bariatric surgery pre-enrolment (n=6)**
 - ❑ 4 received RYGB and 2 received SG
 - ❑ 4 were taking TDF/FTC and 2 were taking TAF/FTC
 - ❑ All had expected TFV-DP except for 1 TDF/FTC participant who underwent SG
- ❑ **Bariatric surgery post-enrolment (n=1)**
 - ❑ 1 TAF/FTC RYGB participant displayed a decrease in TFV-DP, although all values remained in the expected range at days 7, 28, 84

CONCLUSIONS

- ❑ TFV-DP concentrations were at/near expected levels in this small sample of men using oral PrEP who underwent RYGB or SG
- ❑ Only 1 participant was outside the expected (>1450 fmol/punch) with a TFV-DP concentration of 1289 fmol/punch
- ❑ TFV-DP concentrations >700 fmol/punch are associated with a 100% (95%CI=86-100%) risk reduction for HIV
- ❑ Further studies using both pre- and post-operative DBS samples could produce additional data on the pharmacokinetics of PrEP for individuals undergoing bariatric surgery

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