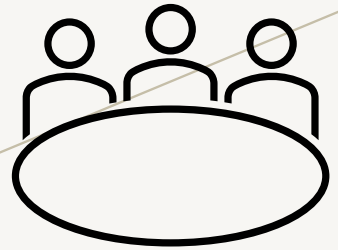

THE PLACE OF COMBINED MEDICAL AND SURGICAL THERAPY

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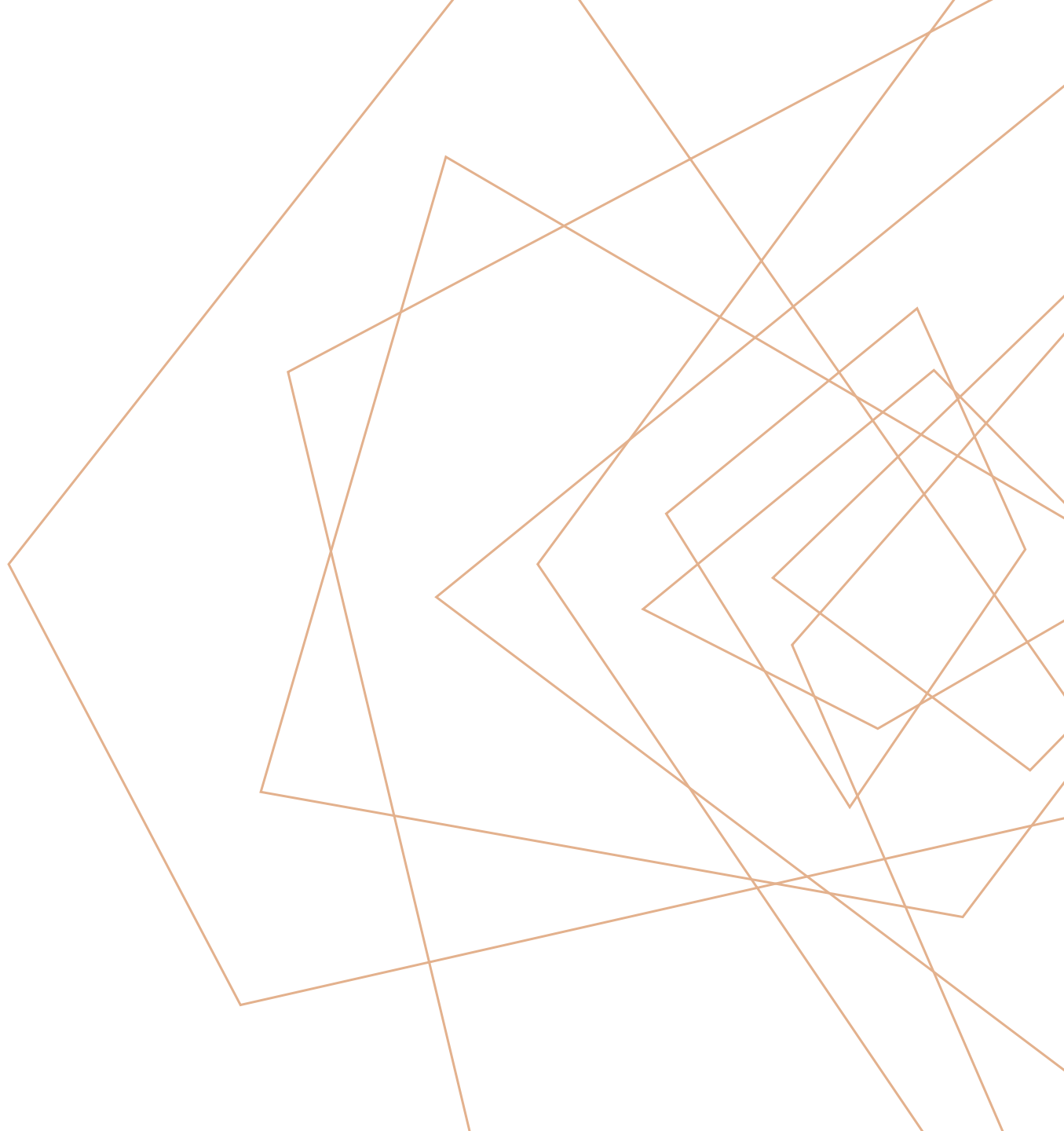
DISCLOSURES

No Financial Disclosures.



CanMEDS Roles Covered: CROCKER - “Canadian Obesity Weekend 2022”

X	**Medical Expert** (as *Medical Experts*, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centered care. *Medical Expert* is the central physician Role in the CanMEDS Framework and defines the physician’s clinical scope of practice.)
	Communicator (as Communicators, physicians form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.)
X	**Collaborator** (as *Collaborators*, physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.)
	Leader (as *Leaders*, physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.)
	Health Advocate (as *Health Advocates*, physicians contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.)
X	**Scholar** (as *Scholars*, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.)
	Professional (as *Professionals,* physicians are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.)

OBJECTIVES

Preoperative

Medical Weight management / Preoperative Weight Loss

Comorbidity Optimization and Alternative Therapeutic Options

AOM

Postoperative

Inadequate Weight Loss / Weight Recidivism

Comorbidity and Complication Management

Future Considerations

Research?

PREOPERATIVE

Patient #1

46 yo male with BMI of 43 kg/m2. Accepted into Bariatric Surgery program but surgery delayed for unknown length of time due to Covid Pandemic. They are interested in working on medical weight management in the interim.

Patient #2

50 yo female with BMI 65 kg/m2. Interested in bariatric surgery but BMI Limit of 55 kg/m2. Please see for medical weight management as a bridge to surgery.

MEDICAL WEIGHT MANAGEMENT (MWM) AND PREOPERATIVE WEIGHT LOSS (PWL)

PWL Controversial.

Two questions:

- Does PWL change postoperative weight loss outcomes?
- Does PWL change surgical complication risk and mortality?

PROSPECTIVE RCT STUDIES

- **Alami et al. 2006**
  - 100 Lap RYGB Patients
  - 10% PWL vs No PWL requirement
- Results: Preop BMI 44.5 vs. 50.7 (p 0.0027)
  - Operative Time: 220 vs. 257 min (0.008)
  - %EWL at 12 mn: 53.9% vs. 50.9% (NS)

- **Van Nieuwenhove et al 2011**
  - 298 Lap RYGB Patients
  - 2 wk VLCD vs. None
- Results: Preop Weight Loss -4.9 kg vs. -0.4 kg (p<0.001)
  - No Difference in OR time, EBL, intra-op complications
  - 30 Complications: 8 vs. 18 (p = 0.04)
  - No Difference 3 mn EWL

- **Parikh et al. 2011**
  - 55 Bariatric Surgery Patients
  - MWM Program vs. Usual Care
- Results: > 50% lost to follow up
  - No difference in postoperative weight loss

- **Kalarchian et al 2016**
  - 143 Lap RYGB and Lap Band Patients
  - 6 mn Behavioural Lifestyle program vs. Usual Care
- Results: Not enough data to study 30 day complication rate
  - 24 mn postoperative weight loss
    - All patients: 26.5% BLP vs. 29.5% UC (p=0.02)
    - RYGB: 34.7% BLP vs. 34.5% UC (p 0.4)

- Anderin et al 2015
  - 22327 patients undergoing RYGB
    - 96.5% Laparoscopic
  - Compared preoperative weight loss 1 year prior to surgery with postop complications
  - Total Weight Change Percentiles:
    - 25th Percentile **-0.5%**
    - 50th percentile -4.7%
    - 75th percentile **-9.5%**

TABLE 3. Any Postoperative Complication Within 6 Weeks After Surgery in Relation to Preoperative Weight Loss Divided Into Percentiles

Any Postoperative Complication	No. Events/ No. Cases	Multivariate 95% CI for OR		
		OR	Lower	Upper
Weight loss				
25th percentile (ref)	576/5495	1.00		
50th percentile	974/11003	0.82	0.73	0.93
75th percentile	457/5470	0.87	0.82	0.94

Anastomotic leak 24%

Deep Infection/Abscess 37%

Minor Wound Complications 54%

- Gerber et al 2016
  - 20564 patients undergoing RYGB
  - Preoperative weight loss effect on **postoperative weight change**
  - Total Weight Change Percentiles:
    - 25th Percentile 0 %
    - 50th percentile -4.5%
    - 75th percentile -8.6%

Table 4
Postoperative relative weight change in relation to preoperative relative weight loss. Multiple logistic regression was performed to calculate the probability to lose more weight than median relative weight loss for patients in the 25th percentile of preoperative weight loss (reference) (n = 9570)

Preoperative weight loss	Multivariate 95% CI for OR			Postoperative weight change, median (%)	Weight change compared with ref. (%)	*P*
	OR	Lower	Upper			
1 yr after surgery						
25th percentile (ref)	1.00			–29.8	—	
50th percentile	1.42	1.28	1.57	–31.3	–5	<.001
75th percentile	2.39	2.10	2.72	–33.3	–11.8	<.001
2 yr after surgery						
25th percentile (ref)	1.00			–30.7	—	
50th percentile	1.35	1.23	1.51	–32.3	–5.3	<.001
75th percentile	1.88	1.66	2.12	–33.8	–10.1	<.001

CI = confidence interval; OR = odds ratio.

- Sun et al 2020
  - 480075 patients who underwent bariatric surgery
  - 2015-2017
  - **30 Day Postoperative Mortality**

Table 4. Association of Weight Loss Percentage With Intraoperative or 30-Day Postoperative Mortality

Model	OR (95% CI) by weight loss percentage				
	0% (n = 86 063)	>0% to <5.0% (n = 240 424)	5.0%-9.9% (n = 118 142)	≥10.0% (n = 35 446)	*P* for trend
Deaths, No. (%)	105 (0.1)	230 (<0.1)	129 (0.1)	47 (0.1)	NA
Model 1[a]	1 [Reference]	0.73 (0.58-0.93)	0.67 (0.52-0.87)	0.65 (0.46-0.93)	.02
Model 2[b]	1 [Reference]	0.77 (0.61-0.98)	0.71 (0.54-0.93)	0.58 (0.41-0.82)	.003
Model 3[c]	1 [Reference]	0.76 (0.60-0.96)	0.69 (0.53-0.90)	0.58 (0.41-0.82)	.003

MBSAQIP

- Mocanu et al 2021
  - 548597 patients who underwent bariatric surgery
  - 2015-2018
  - **Postoperative Complications**

Table 4
Effect of PWL on leaks, bleeds, serious complications, and mortality as evaluated by multivariable logistic regression

	Leak			Bleed			Serious complications			Mortality		
	OR	95% CI	*P* value	OR	95% CI	*P* value	OR	95% CI	*P* value	OR	95% CI	*P* value
Percent weight loss												
0–5% versus 0%	.87	.77–.98	.02	.94	.87–1.02	.2	.97	.93–1.02	.2	.78	.61–.99	.04
5–10% versus 0%	.72	.63–.83	<.0001	.96	.88–1.05	.4	.95	.91–1.00	.04	.81	.62–1.06	.1
>10% versus 0%	.68	.56–.84	<.0001	1.08	.96–1.22	.2	1	.93–1.06	.9	.6	.39–.92	.02

Large Retrospective studies appear to show benefit for PWL on postoperative weight loss and complications.

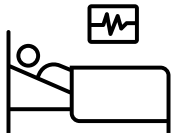
How was this preoperative weight loss achieved?

How does this translate into medical weight management?

Do they also have benefits on patient long term weight loss outcomes, comorbidities, and QOL?

COMPLEX PATIENTS

MEDICAL OPTIMIZATION



PERIOPERATIVE MEDICINE

DISCUSSION OF NON-SURGICAL THERAPIES

MEDICAL OPTIMIZATION PRIOR TO SURGERY

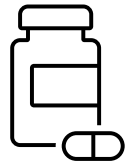
Case:

- 30 yo female with a BMI 40. With planned bariatric surgery within the year.
- PMHx of Provoked VTE (Cast, Estrogen, Weight), DM2
- Medication: DOAC, Semaglutide
- Since starting Semaglutide at a dose of 0.5 mg weekly, she has lost 12.5% TBWL

Discussion:

- Is transitioning to lifelong warfarin with regular INR checks something she wishes to continue?
- Could she consider re-evaluating surgery in light of her early response to semaglutide?

A.O.M.



PREOPERATIVE WEIGHT LOSS?

One retrospective study suggested higher preoperative weight loss with MWM and GLP1 RA was associated with:

- Less weight loss after bariatric surgery
- Higher **overall** weight loss from initiation of therapy

PERIOPERATIVE MANAGEMENT?

No studies available. Anecdotal.

POSTOPERATIVE

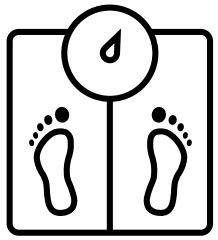
Consult: 45 yo female 1.5 years after RYGB.

Please see regarding:

a) Inadequate Weight Loss

b) Weight Recidivism

c) Weight Stability



MEDICAL WEIGHT MANAGEMENT

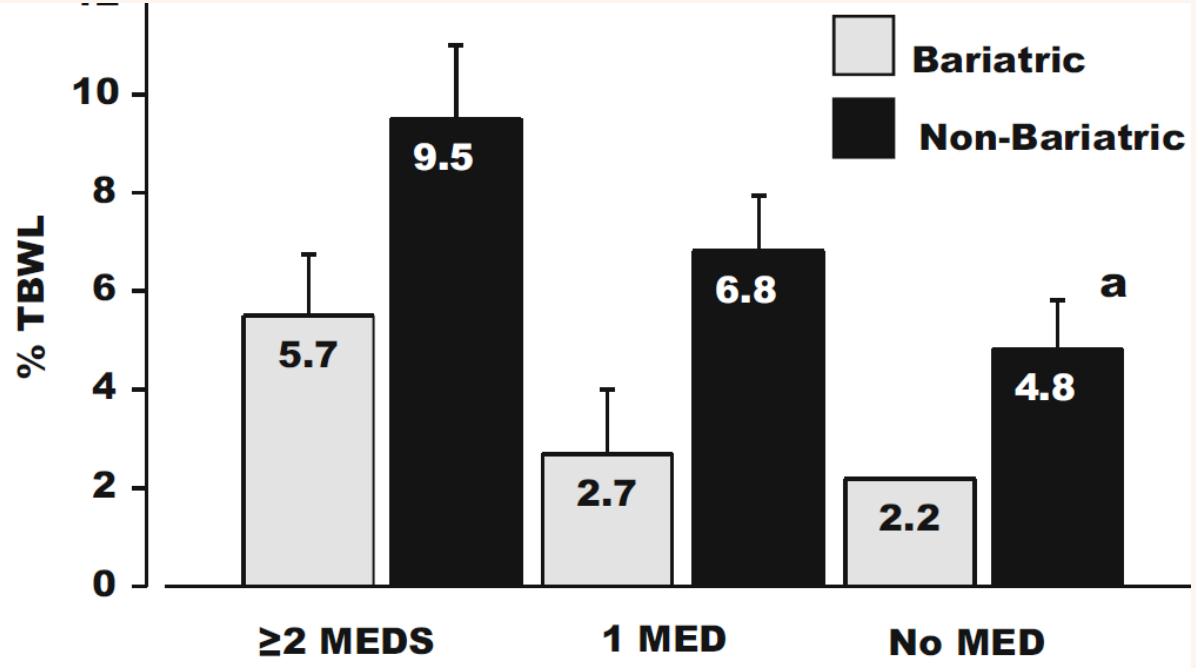
- Nijamkin et al 2012 (RCT)
  - P: 6 months Post-RYGB (n = 72)
  - I: Nutrition/Lifestyle small groups every 2nd week for 6 weeks
  - C: Usual Care
  - O: *12 months
    - %EWL 80% vs. 64% (p = 0.001)
    - *Higher Physical Activity and Protein

- Sarwer et al 2012 (RCT)
  - P: 4 months Post-bariatric surgery (n=84)
  - I: 8 dietary counselling sessions
  - C: Standard postoperative care
  - O:
    - TWL 20.7% vs. 18.5% (p = 0.08)
    - *Very poor compliance

- Kalarchian et al 2016 (RCT)
  - P: 1 year post-RYGB
  - I: Structured dietary intervention with portion controlled food provided (Nutrisystem)
  - C: 60 min behavioral weight loss session + 4 F/U
  - O:
    - 4mn -4.56% vs -0.13% (p = 0.003)
    - 6mn – 4.07% vs. -0.14% (p = 0.05)

- Lopes Gomes et al 2017 (RCT)
  - P: minimum 24 months post-bariatric surgery + W.R.
  - I: 16 weeks hypocaloric diet + Whey protein
  - C: 16 weeks hypocaloric diet
  - O:
    - Weight: - 1.9 kg vs. + 0.4 kg (significant)
    - Whey protein group: increased FFM, decreased FM

Srivastava et al 2018



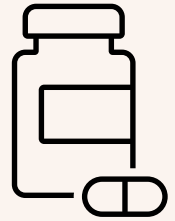
Retrospective, N=48

Population: Post-Bariatric Surgery Weight Regain

Intervention: Medical Obesity Specialist, ILT, AOM

USE OF A.O.M. POSTOPERATIVELY

- **Liraglutide**
  - Multiple studies from 16 weeks to 8 months. 5.5-9.7% TBWL
- **Orlistat**
  - Zoss 2002, 8 months of therapy lead to 8 kg vs 3 kg
- **Contrave**
  - Unknown, one study with individual medication weight loss not included
- **Phentermine/Topiramate**
  - Multiple studies, 6-9.8% TBWL
- **Semaglutide?**
  - BARI-STEP



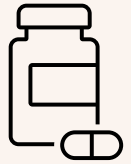
WHEN IS THE IDEAL TIME?

Thakur et al 2020

- RCT
- Population: n=23, LSG, BMI ≥ 30
- Intervention:
  - Liraglutide vs. placebo
  - 6 weeks to 6 months post-op
- Results at 24 weeks:
  - %TBWL 28.2% vs. 23.2% (p = 0.116)
  - %EWL 58.7% vs. 44.5% (p = 0.043)
  - BAROS Score (QOL) higher in liraglutide group
  - No difference in comorbidities

Stanford 2017

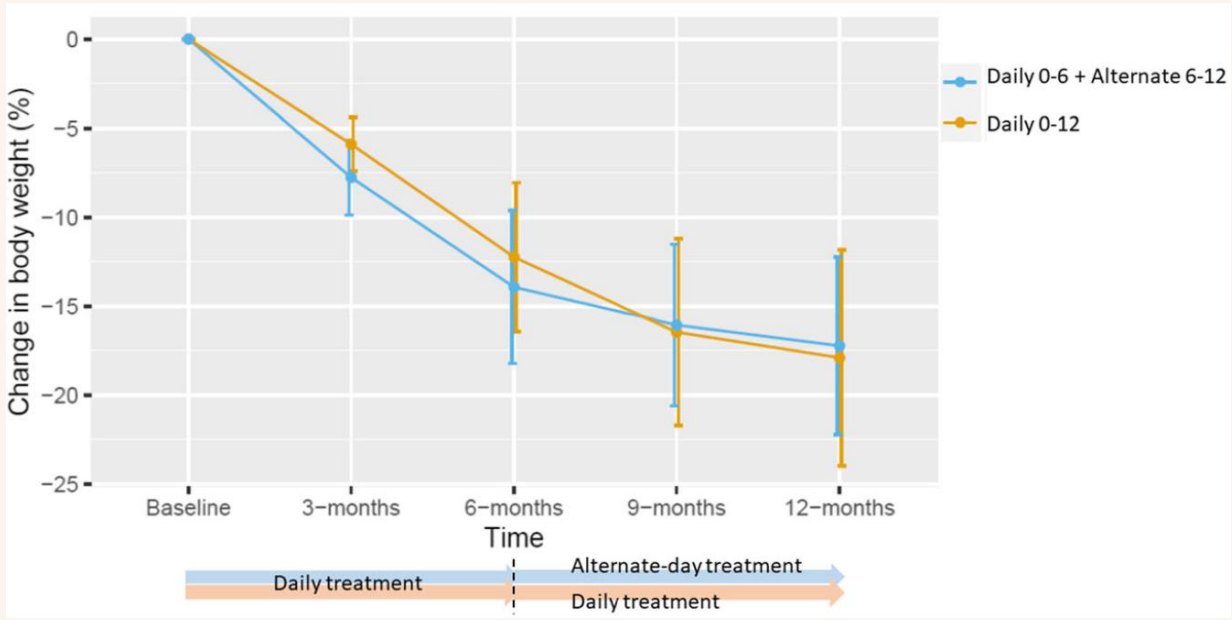
- Retrospective
- Population: n=319, RYGB/LSG
  - Weight Regain
  - Inadequate Weight Loss
- Intervention: Adjunctive AOM
- Results:
  - Mean: 7.6% (17.8 lb)
  - Cumulative:
    - Plateau: 32.3%
    - Weight Regain 26.8%



DOSING

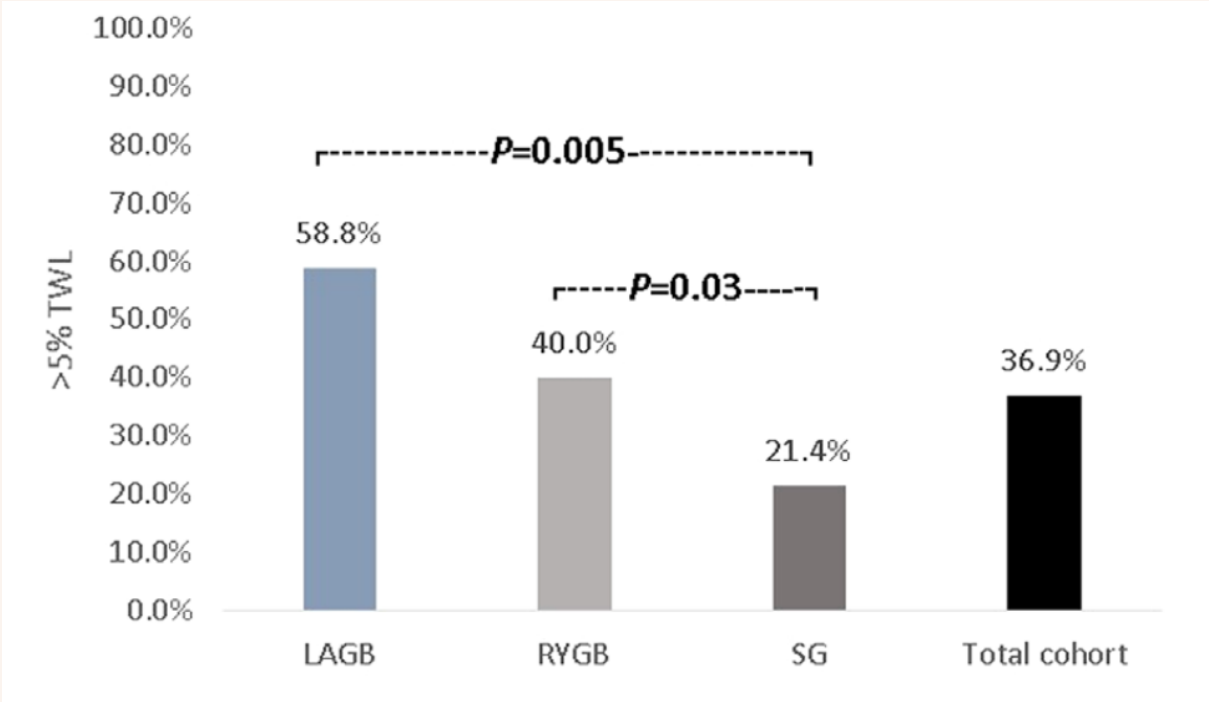
Rubio et al 2021

- Prospective
- 23 Post-Bariatric Surgery Patients with Weight Regain
- Intervention:
  - 3.0 mg Liraglutide x 6 months
  - **Daily vs. <u>Every 2nd Day Dosing</u>**
- Results:
  - Average Weight loss 17.6%
  - 85% under post-operative nadir



SURGERY TYPE

Hanipah 2017



BEYOND A NUMBER ON THE SCALE

GRAVITAS RCT 2019

- Population: Post-Metabolic Surgery with Recurrent/Persistent DM2
- Intervention:
  - Liraglutide 1.8 mg OD vs. Placebo
  - 26 Weeks

	Treatment (liraglutide *vs* placebo)
HbA_{1c} (mmol/mol) ★	−13·3 (−19·7 to −7·0; p=0·0001)
HbA_{1c} (%) ★	−1·22 (−1·80 to −0·64; p=0·0001)
Bodyweight (kg) ★	−4·23 (−6·81 to −1·64; p=0·0017)
Systolic blood pressure (mm Hg)	2·14 (−4·52 to 8·80; p=0·52)
Diastolic blood pressure (mm Hg)	2·88 (−1·67 to 7·44; p=0·21)
Total cholesterol (mmol/L)	−0·03 (−0·41 to 0·35; p=0·88)
LDL cholesterol (mmol/L)	0·04 (−0·29 to 0·37; p=0·82)
HDL cholesterol (mmol/L)	0·03 (−0·08 to 0·15; p=0·54)
Triglycerides (mmol/L)	−0·26 (−0·56 to 0·04; p=0·089)
King's Obesity Staging Criteria score	0·23 (−0·87 to 1·32; p=0·68)

Elhag et al 2021

- Retrospective
- Population: RYGN/LSG/AGB with IWL or WR
- Intervention: Liraglutide
- Results:
  - 6 mn: 5.97-6.41%
  - 12 mn:4.99-6.93%
  - Only cardiometabolic improvement was a reduction of SBP (8-9 mmHg) in revisional group

INADEQUATE WEIGHT LOSS

WEIGHT RECIDIVISM

WEIGHT STABILITY

COMORBIDITIES

COMPLICATIONS

FUTURE CONSIDERATIONS

AREAS FOR RESEARCH

What is the ideal composition and timing for implementing MWM into a surgical program?

When and how should we initiation AOM surrounding bariatric surgery? If effective preoperatively, should we reinitiate postoperatively?

Beyond a number on the scale - Can combined MWM with surgical patients improve QOL and comorbidities?

CONCLUSIONS

- Preoperative weight loss appears to be associated with improved postoperative weight loss and reduced operative complications.
- Medical Bariatric specialist have an important role of comorbidity optimization (Pre/Postoperative) and discussion of alternative therapy.
- A.O.M.s and Medical Weight Management appear to be effective for postoperative weight loss (IWL/WR).
- More research is needed in the field to delineate the ideal combined medical and surgical care for patients living with obesity.

THANK YOU

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