

Efficacy and Safety of Intragastric Balloon with Concomitant GLP-1 Receptor Agonists versus Balloon Alone for Weight Loss: A Systematic Review and Meta-Analysis

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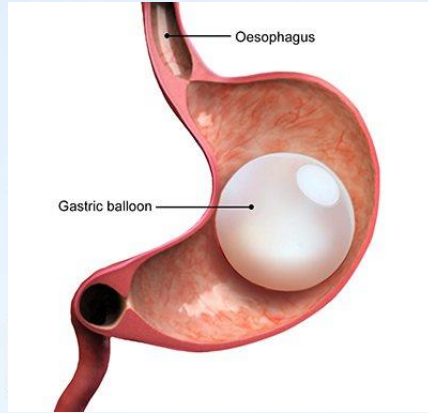


Conflict Of Interest

Nothing to Disclose.



The Rationale



10-15% TWL over 6 months



BUT high weight
regain after removal



GLP-1 RA

10-15% TWL over 12-18 months



Neurohormonal appetite control



Combination could **amplify initial weight loss**
AND prevent rebound.



Study Characteristics & The "Protocol Problem"

6 comparative studies | 439 patients

3 RCTs | 3 Observational

Balloons: Orbera, MedSil, Allurion, Spatz3 | GLP-1 RAs: Liraglutide (3), Semaglutide (3)



Critical Finding: Protocols varied significantly—some used GLP-1 RA concomitantly (during IGB), others as maintenance (after IGB removal).



This protocol heterogeneity drove our findings.



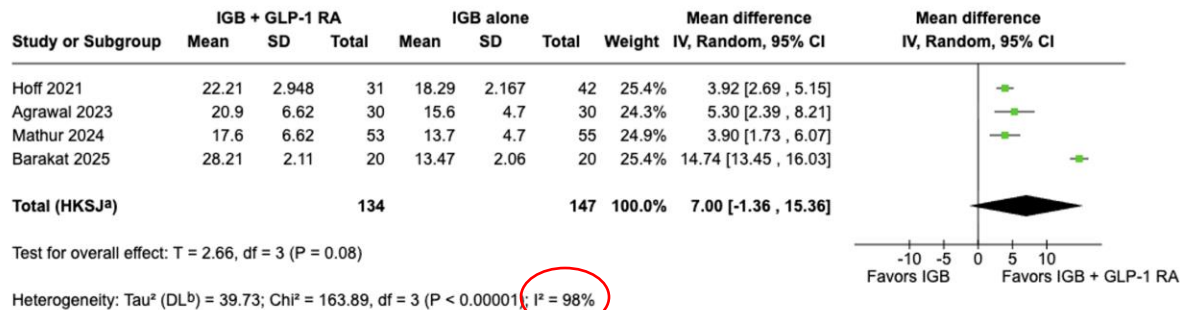
RESULTS - The Weight Loss Controversy

Primary Analysis

- All Studies Pooled → MD 7.00% ($p=0.08$)
- **NOT Significant**
- (Heterogeneity $I^2=98\%$)



A. %TWL

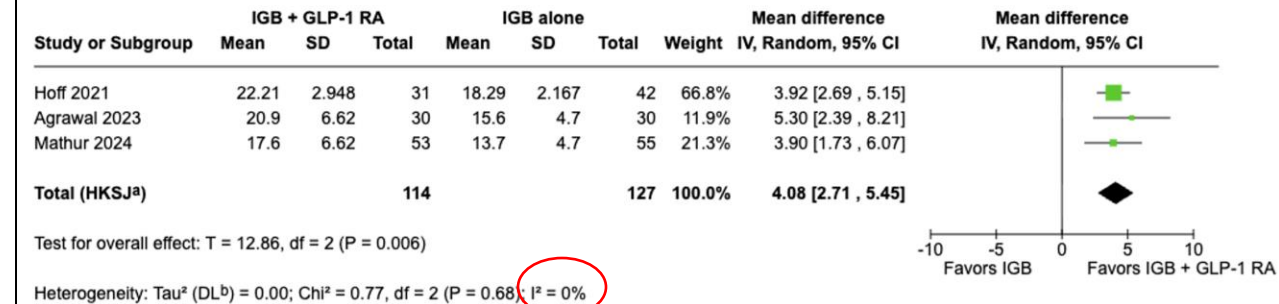


Sensitivity Analysis

- Comparable Protocols → MD 4.01% ($p=0.006$)
- **SIGNIFICANT**
- **Homogeneous** ($I^2=0\%$).



B. %TWL (excluding Barakat et al.)



- **Timing Matters:** Concomitant therapy works.
- Maintenance strategy is a different question.

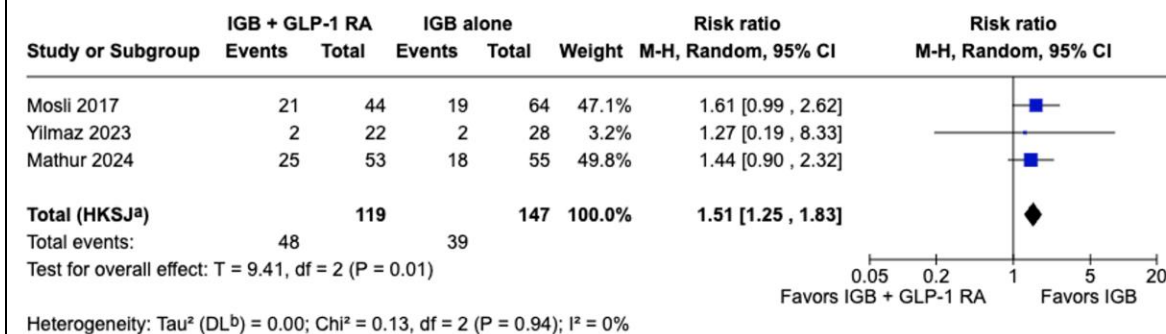


RESULTS - Safety (GI Adverse Events)

- **Abdominal Pain:** RR 1.51 (p=0.01)

• 41.1% vs 26.5%

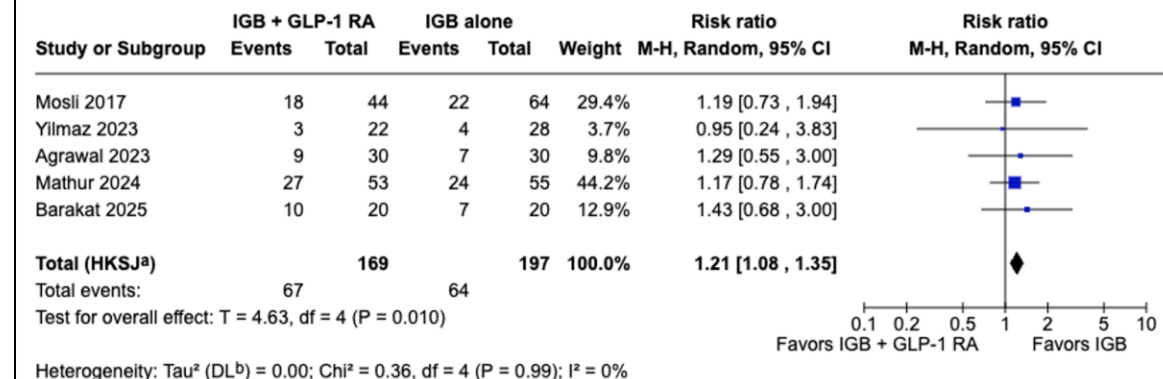
A. Abdominal Pain



- **Nausea/Vomiting:** RR 1.21 (p=0.010)

• 39.6% vs 32.4%

B. Nausea and vomiting



- **More side effects, but manageable**
- **Did NOT increase early balloon removal**
- (3% vs 2.5%)



The Takeaway: Potential Benefit, but Need Standardization



- Concomitant GLP-1 RA with IGB provides additional weight loss (~4% TWL) when protocols are standardized.
- GI side effects are increased but do not lead to higher balloon removal.
- BUT current evidence is limited by heterogeneity and small sample sizes.



Not yet routine. Consider in selected patients. Larger RCTs with standardized protocols are needed.



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Baseline characteristics of the included studies

Author	Year	Study design	IGB / GLP-1 RA used	Duration of IGB	Total participants (IGB / IGB + GLP-1 RA)	Age (IGB / IGB + GLP-1 RA)	Females (IGB / IGB + GLP-1 RA)	Baseline Weight (IGB / IGB + GLP-1 RA) (kg)	Baseline BMI (IGB / IGB + GLP-1 RA)	Follow-up
Mosli et al.	2017	Observational	ORBERA / Liraglutide	6 months	64 / 44	64.9 / 32.5	47 / 30	99.3 / 103.8	37 / 38	12 months post IGB placement
Hoff et al.	2021	RCT	ORBERA / Liraglutide	6 months	42 / 31	34.4	NS	97.78 / 97.63	33.93 / 33.95	6 months post IGB placement
Yilmaz et al.	2023	Observational	MedSil / Liraglutide	6 months	28 / 22	32.5 / 34.5	19 / 17	78 / 82	30.3 / 29.9	6 months post IGB placement
Agrawal et al.	2023	Observational	Allurion / Semaglutide	4 months	30 / 30	42.7 / 42.3	13 / 13	110.5 / 113	39.2 / 39.9	4 months NS
Mathur et al.	2024	RCT	Allurion / Semaglutide	4 months	55 / 53	40.2 / 42.1	24 / 24	113.2 / 109.8	39.9 / 39.5	4 months post IGB placement
Barakat et al.	2025	RCT	Spatz3 / Semaglutide	6 months	20 / 20	36.9 / 36.2	13 / 14	115.8 / 117.1	38.75 / 39.36	12 months post IGB placement

RCT, randomized controlled trial; NS, not specified. Median.



Dosage and timing of GLP-1 RAs used in each study

Author	GLP-1 RA used	Timing	Dosage	Route
Mosli et al.	Liraglutide	1 month post IGB placement to 1 month post removal	0.6 mg/day first week, then 1.2 to 1.8 mg/day	Subcutaneously
Hoff et al.	Liraglutide	1 month post IGB placement	0.6 mg/day increased weekly up to 3 mg/day	Subcutaneously
Yilmaz et al.	Liraglutide	1 month post IGB placement to 1 month post removal	0.6 mg/day	Subcutaneously
Agrawal et al.	Semaglutide	NS (Concurrent)	NS	NS
Mathur et al.	Semaglutide	7 days post IGB placement	1st month 3 mg, 2nd month 7 mg, 3rd and 4th months 14 mg	Orally
Barakat et al.	Semaglutide	2nd to 4th months; 7th to 8th months post IGB placement	0.5 mg once weekly, then 1 mg once weekly for the succeeding months	Subcutaneously

NS, not specified.

