

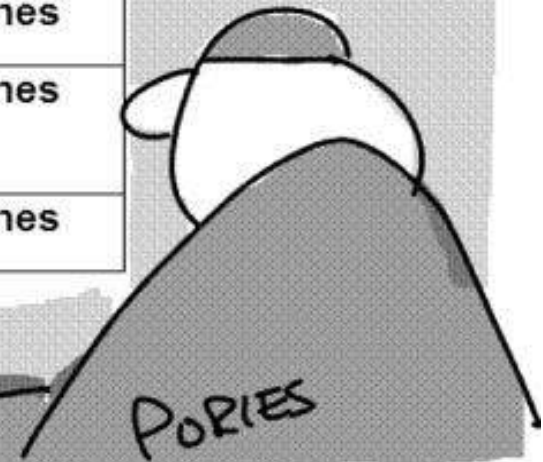


Bariyatrik cerrahi sonrası bağırsak-beyin aksı

Prof. Dr. Volkan Demirhan Yumuk
İstanbul Üniversitesi Cerrahpaşa Tıp Fakültesi
Endokrinoloji, Metabolizma ve Diyabet Bilim Dalı
Türkiye Obezite Araştırma Derneği
European Association for the Study of Obesity (EASO)

Önce bir cerrah gözüyle bakalım

OR SCHEDULE			
OR	Dx	Operation	Surgeon
#14	Diabetes	Gastric Bypass	Brown
#14	Hypertension	Gastric Bypass	Brown
#14	Cardiopulmonary Failure	Gastric Bypass	Brown
#17	Asthma	Gastric Bypass	Jones
#17	Pseudotumor Cerebri	Gastric Bypass	Jones
#17	Crippling Arthritis	Gastric Bypass	Jones



Hokus Pokus mu?

Anatomik modifikasyon

UKPDS
STAMPEDE

Yol haritası

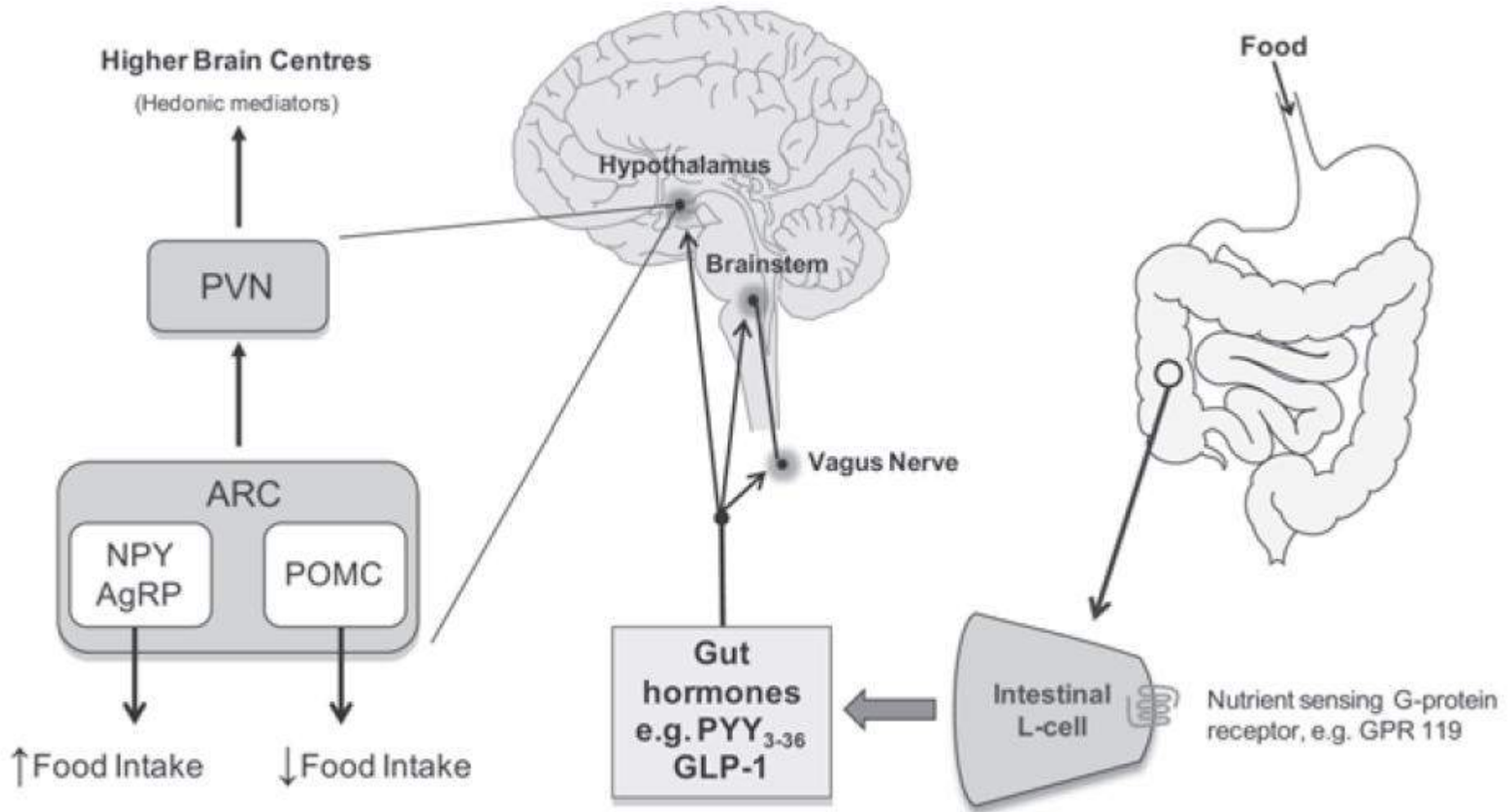
- Bağırsak beyin aksı
- Bariyatrik cerrahi sonrası
 - Gastrik band
 - Sleeve gastrektomi
 - Gastrik by-pass
- Sonuç



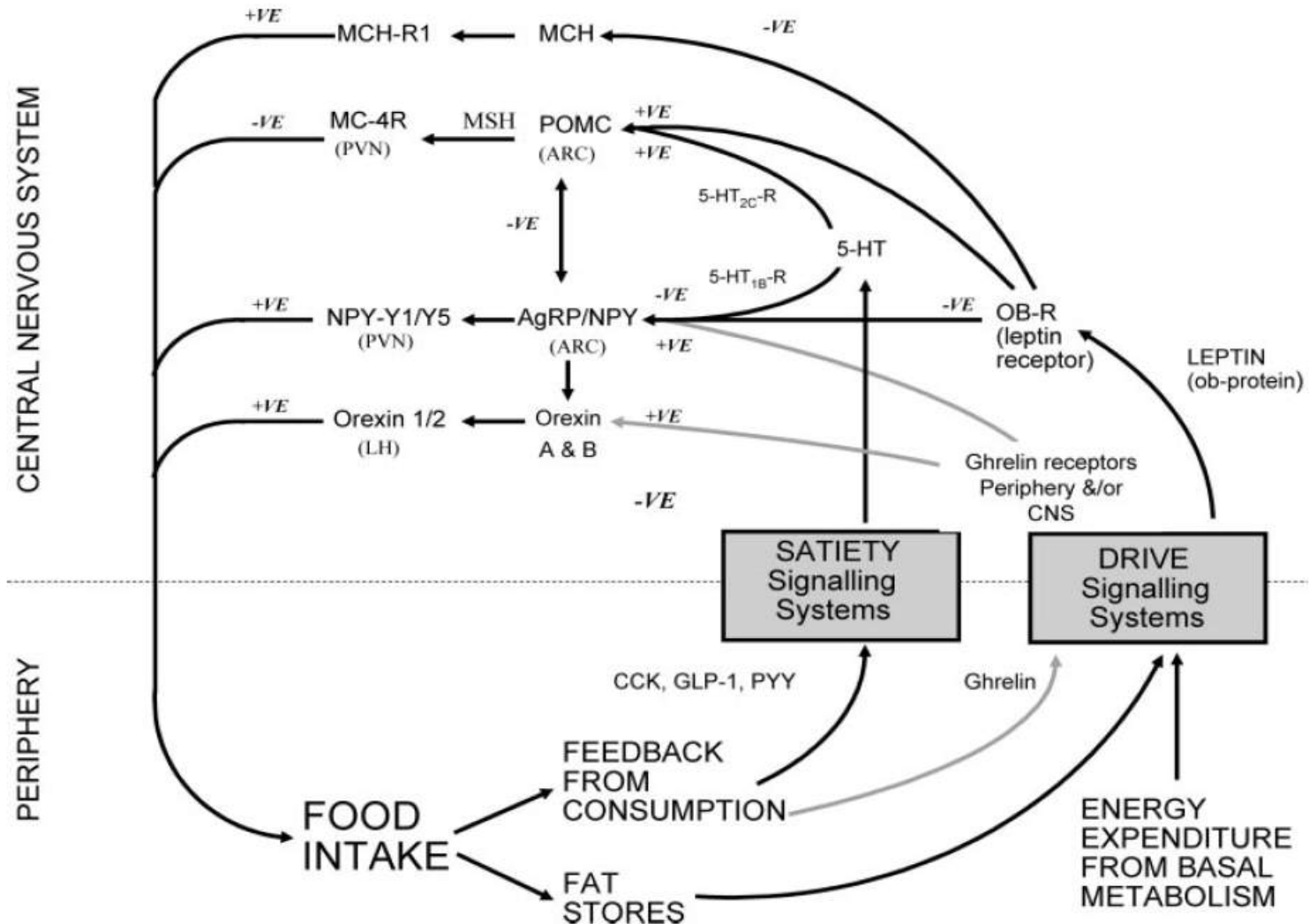
İştahı etkileyen faktörler

	Peripheral		
	Episodic	Tonic	Central
Orexigenic	Ghrelin	Progesterone	NPY Orexins (A and B) Beta-Endorphin Dynorphin Endocannabinoids MCH AgRP Galanin
Anorexigenic	CCK Enterostatin GLP-1 PYY Amylin Oxyntomodulin Pancreatic Polypeptide Obestatin	Leptin Oestrogens	5-HT Noradrenaline Dopamine Melanocortins CART

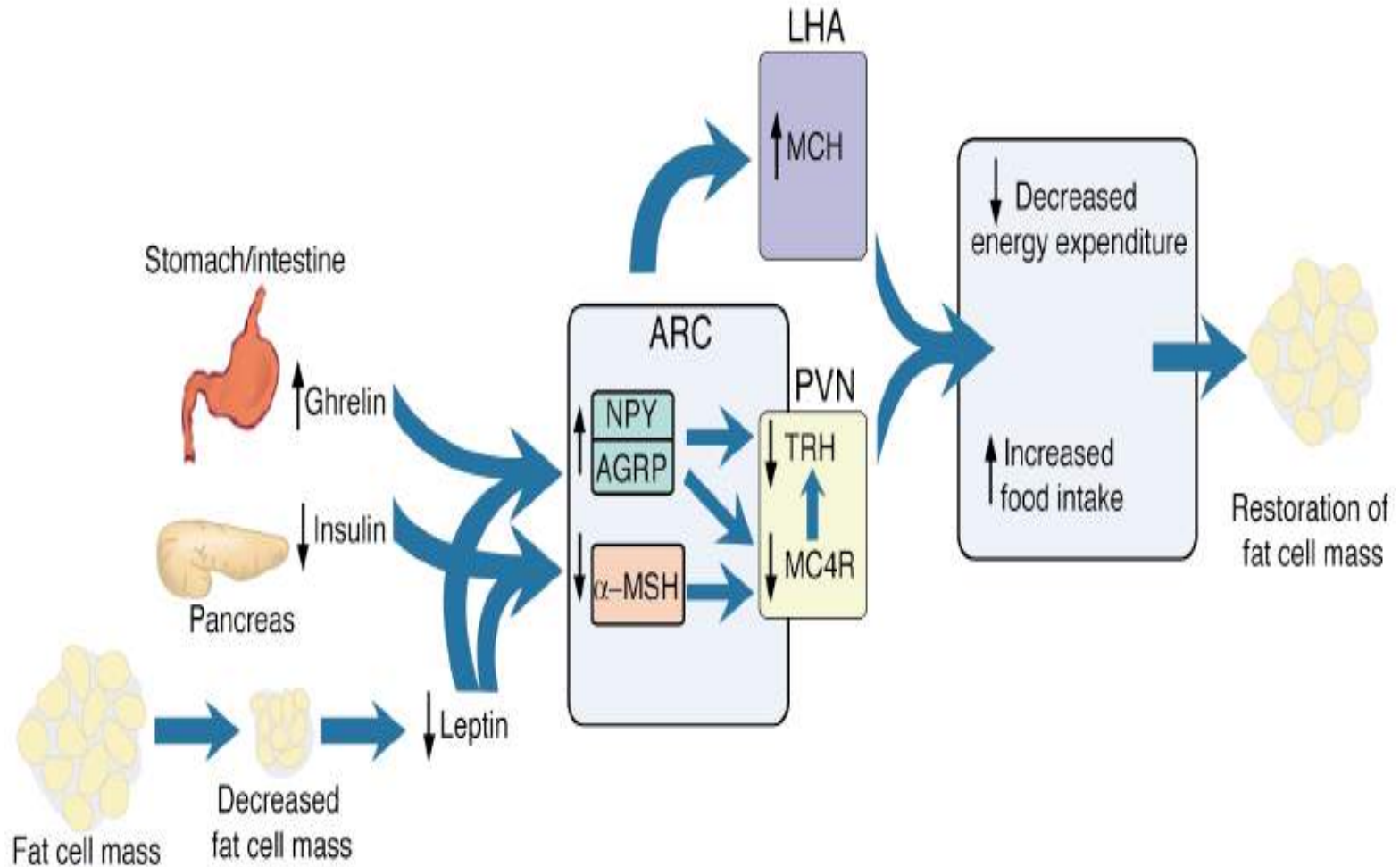
Bağırsak beyin aksı: Gıda alımı regülasyonu



Hipotalamik enerji regülatuar nöronlarına giden epizodik ve tonik sinyallerin entegrasyonu



Gıda alımını ve yağ kütleini regüle eden hormonal ve nöronal yollar



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www.glasbergen.com

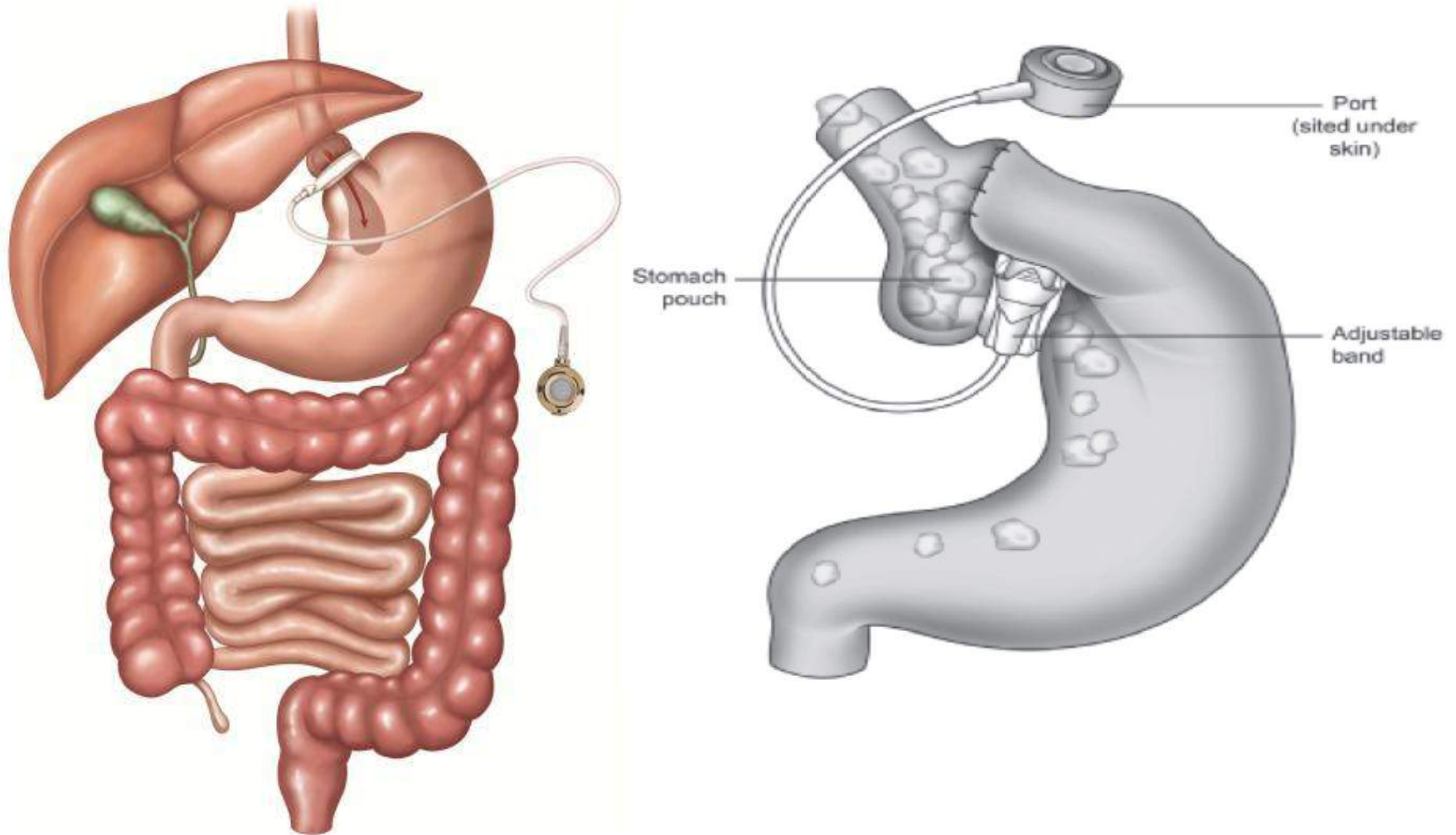


**After years of unsuccessful weight loss programs,
Burton lost 100 pounds on The Acupuncture Diet.**

Bariyatrik cerrahi: Potansiyel mekanizmalar

- Gastrik volüm restriksiyonu
- Santral sinir sisteminin enerji homeostazını kontrolü
 - Gıda alımı
 - Enerji harcanması
- Bağırsak hormonları
- Bağırsak mikrobiota

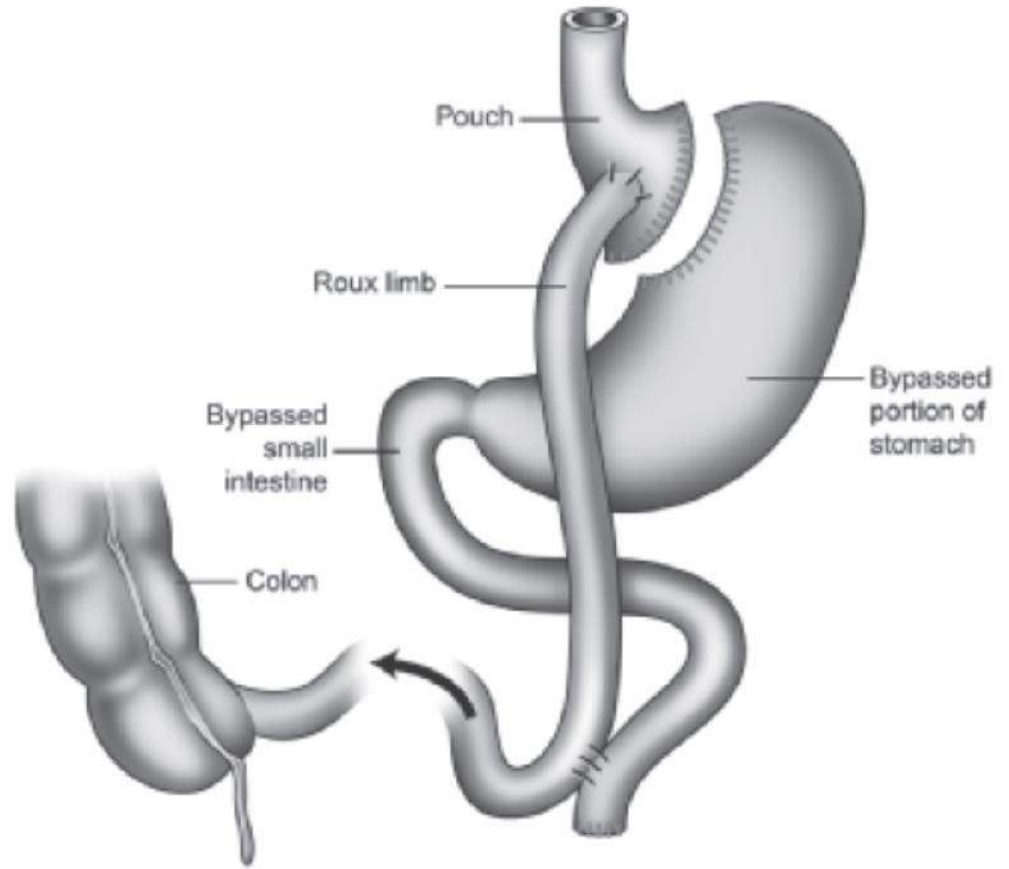
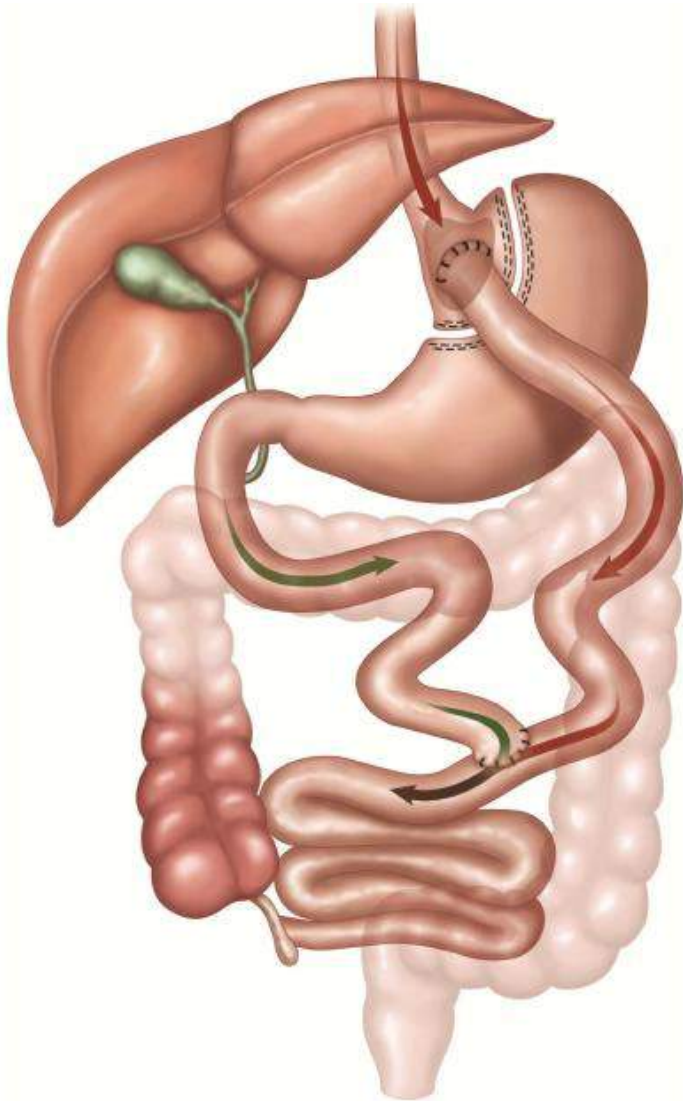
Gastrik band



Gastrointestinal hormonlar

Gastrointestinal hormones	Origin	Behavioral brain effects		Other effects	Alterations after surgery	
		hunger	satiety		gastric bypass	gastric banding
Ghrelin	stomach	↑	↓	unknown	unclear	unclear
Glucagon-like peptide-1	ileum (L-cell)	↓	unknown	insulin secretion ↑ β-cell proliferation ↑ β-cell gene expression ↑ gastric acid secretion ↓ gastric emptying ↓ apoptosis ↓	↑	no change
Peptide YY	ileum (L-cell)	↓	↑	gastric acid secretion ↓ pancreatic and intestinal secretion ↓ gastrointestinal motility ↓	↑	no change
Gastric inhibitory polypeptide	duodenum and jejunum (K-cell)	unknown	unknown	fat deposition ↑ triglyceride accumulation ↑ insulin secretion ↑ β-cell proliferation ↑ apoptosis ↓ bone formation ↑	↓ (diabetics)	unknown
Cholecystokinin	duodenum and jejunum (I-cell)	↓	↑	gastric emptying ↓ pancreatic secretion ↑ gall bladder contraction ↑	no change	no change
Pancreatic polypeptide	pancreas	↓	unknown	gastric emptying ↓ leptin levels (white adipose tissue) ↓	no change	no change

Gastrik by-pass



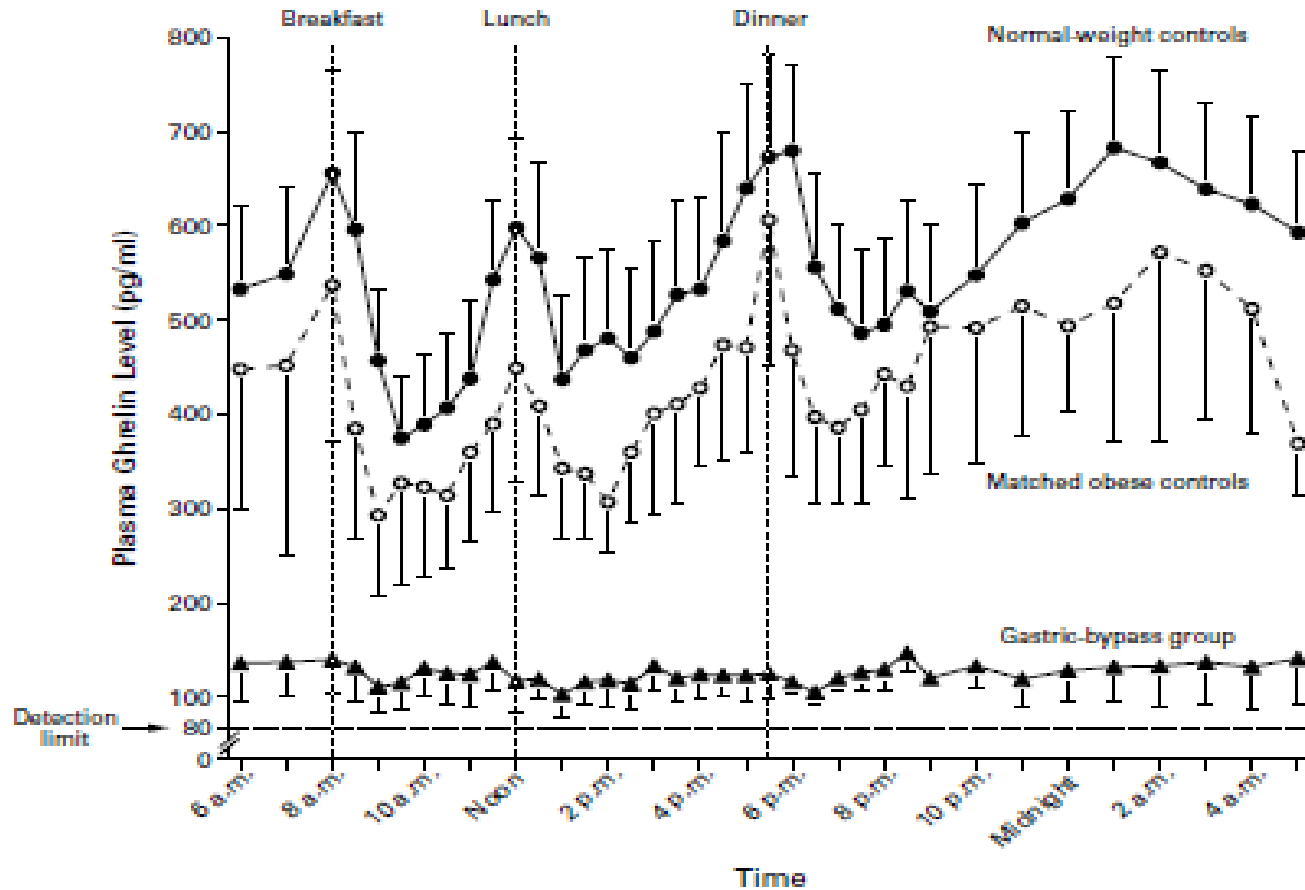
GHRELIN AND REGULATION OF BODY WEIGHT

**PLASMA GHRELIN LEVELS AFTER DIET-INDUCED WEIGHT LOSS
OR GASTRIC BYPASS SURGERY**

DAVID E. CUMMINGS, M.D., DAVID S. WEIGLE, M.D., R. SCOTT FRAYO, B.S., PATRICIA A. BREEN, B.S.N., MARINA K. MA,
E. PATCHEN DELLINGER, M.D., AND JONATHAN Q. PURNELL, M.D.

N Engl J Med, Vol. 346, No. 21 · May 23, 2002

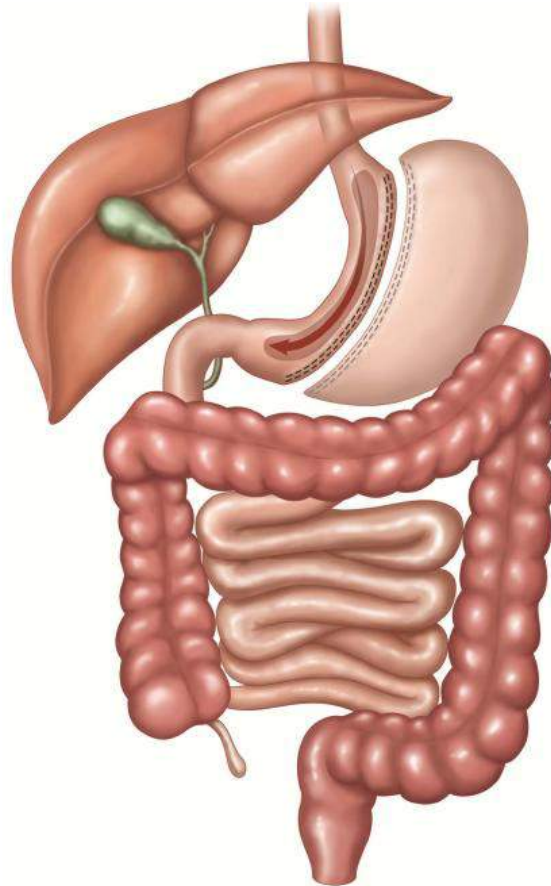
Ghrelin düzeylerinde değişiklik



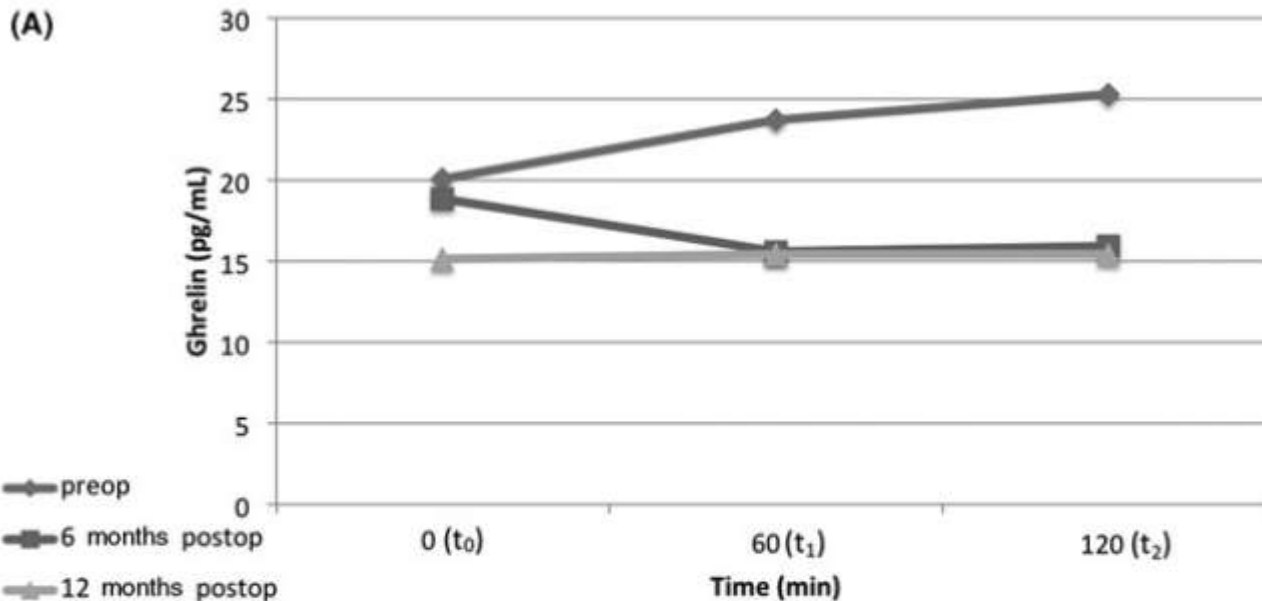
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Sleeve gastrektomi



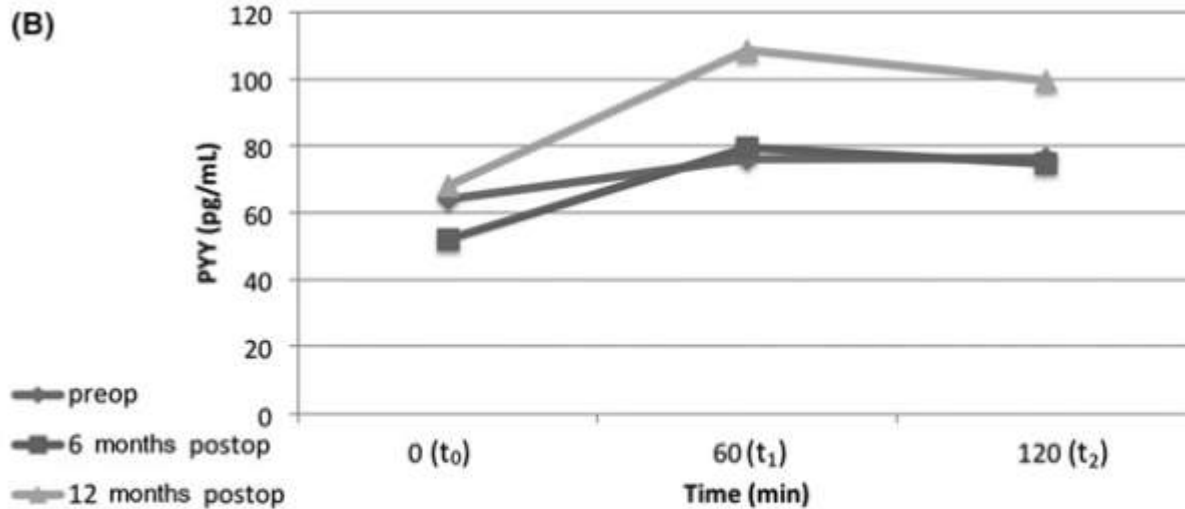
Ghrelin



Preop	20.03 (14.83–36.50)	23.69 (15.13–38.00)	25.25 (14.83–57.61)
6m postop	18.83 (14.68–36.50)*	15.58 (14.83–22.96)*	15.88 (15.13–18.55)*
12m postop	15.13 (14.83–16.45)*	15.43 (14.83–17.73)**	15.45 (14.88–17.03)*

Preop vs postop values: * $P < 0.05$; ** $P < 0.01$

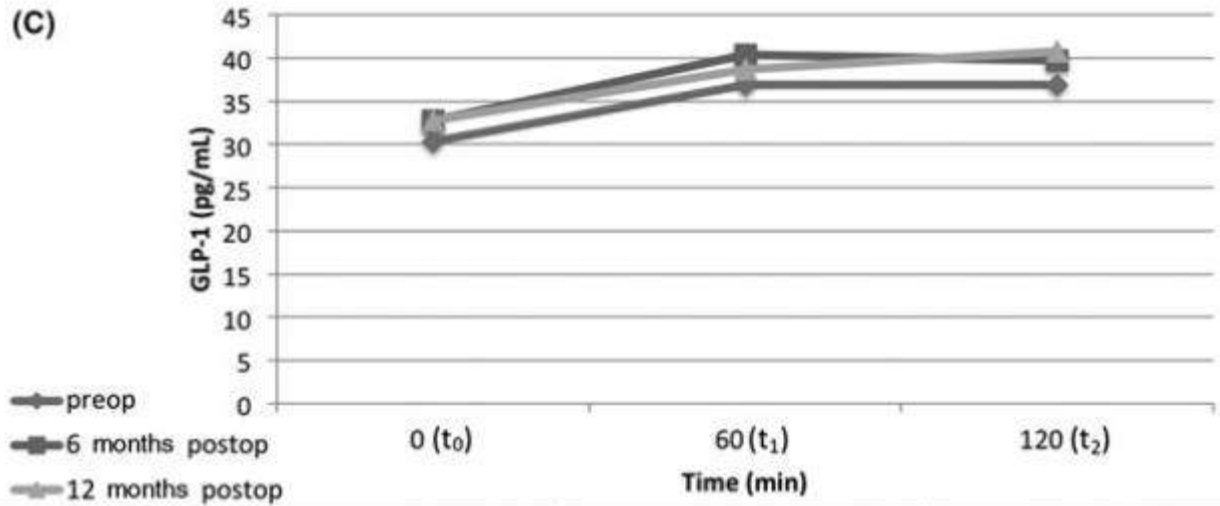
Peptid-YY



Preop	63.88 (9.63–141.67)	76.16 (29.38–106.03)	76.37 (18.97–115.27)
6m postop	52.03 (9.63–97.45)	79.56 (43.43–129.70)*	74.75 (49.62–109.38)*
12m postop	68.13 (25.54–106.03)	108.65 (37.54–140.00)**	99.60 (20.31–158.78)*

Preop vs postop values: * $P < 0.05$; ** $P < 0.01$

GLP-1



Preop	30.35 (13.75–42.01)	36.87 (20.24–43.05)	36.87 (12.24–50.50)
6m postop	32.75 (13.75–32.75)	40.35 (20.24–46.38)*	39.72 (20.24–51.42)*
12m postop	32.75 (13.75–48.99)	38.70 (24.38–47.71)**	40.75 (14.75–91.98)**

Preop vs postop values: * $P < 0.05$; ** $P < 0.01$

Evidence-based interventions

Female prisoners are often obese



Bariyatrik cerrahi sonrası fizyolojik değişiklikler

	RYGB	VSG	AGB
Appetite	↓	↓	↓
Plasma ghrelin	↑/↓/↔	↓	↑
Plasma GLP-1	↑	↑	↔
Plasma PYY	↑	↑	↔
Plasma Oxyntomodulin	↑	?	?
Plasma CCK	↔	↔/↑	?
Plasma leptin	↓	↓	↓
Gastric emptying	↑/↓	↑	↔
Caloric malabsorption	Minimal for fat only	?	?
Energy expenditure	↑/↓/↔	↔	?
Food preferences	↓ Consumption of fat and sugar	↓ Consumption of fat and sugar	↔ Or ↑ consumption of fat and sugar
Glycaemic improvements	Early and sustained, weight-dependent and -independent	Early and sustained, weight-dependent and -independent	Gradual and sustained, weight-dependent
Early postprandial insulin release	↑, Early and sustained	↑, Early and sustained	↔
Insulin resistance	↓	↓	↓
Plasma bile acids	↑	↑	↔
Gut microbiota	Significant changes	?	?

Farmakoterapi sonrası fizyolojik değişiklikler

	<i>Orlistat</i>	<i>Lorcaserin</i>	<i>Phentermine/ topiramate</i>	<i>GLP-1 agonists</i>	<i>DPP-4 inhibitors</i>	<i>SGLT-2 inhibitors</i>	<i>Pramlintide</i>
Appetite	↔/↑	↓	↓	↓	↔	?	↓
Plasma ghrelin	↔/↑	?	?	↓	↔	?	↔
Plasma GLP-1	↔/↑	?	?	↑	↑	?	↓
Plasma PYY	↔/↓	?	?	↓ fasting levels	↓ PYY ₂₋₃₆ ↔/↔	?	↔/↓
Plasma Oxyntomodulin	?	?	?	?	?	?	?
Plasma CCK	↔/↓	?	?	?	?	?	↔/↓
Plasma leptin	↓	?	?	↓	?	?	↓
Gastric emptying	↑	?	?	↓	↔	?	↓
Caloric malabsorption	↑	?	?	?	?	?	?
Energy expenditure	↓	↓	?	?	?	?	↑/↔
Food preferences	↓	?	?	↓	?	?	↔/ ↓ consumption of fat
Glycaemic improvements	Consumption of fat necessary Gradual	Gradual	Gradual	consumption of fat and sugar Early and gradual alongside weight loss	Early and sustained	Early and sustained	Early and gradual alongside weight loss
Early postprandial insulin release:	↑, Gradual	?	?	↑	↔/↑	?	↓
Insulin resistance	↓	↓	↓	↓	↔	↓	↓
Plasma bile acids	?	?	?	?	?	?	?
Gut microbiota	?	?	?	?	?	?	?

Gut. 2011 September ; 60(9): 1214–1223. doi:10.1136/gut.2010.234708.

Metabolic Surgery Profoundly Influences Gut Microbial-Host Metabolic Crosstalk

Jia V. Li^{1,2,5}, Hutan Ashrafian^{2,3,5}, Marco Bueter³, James Kinross^{1,2}, Caroline Sands¹, Carel W le Roux³, Stephen R. Bloom³, Ara Darzi², Thanos Athanasiou², Julian R. Marchesi⁴, Jeremy K. Nicholson^{1,2}, and Elaine Holmes¹

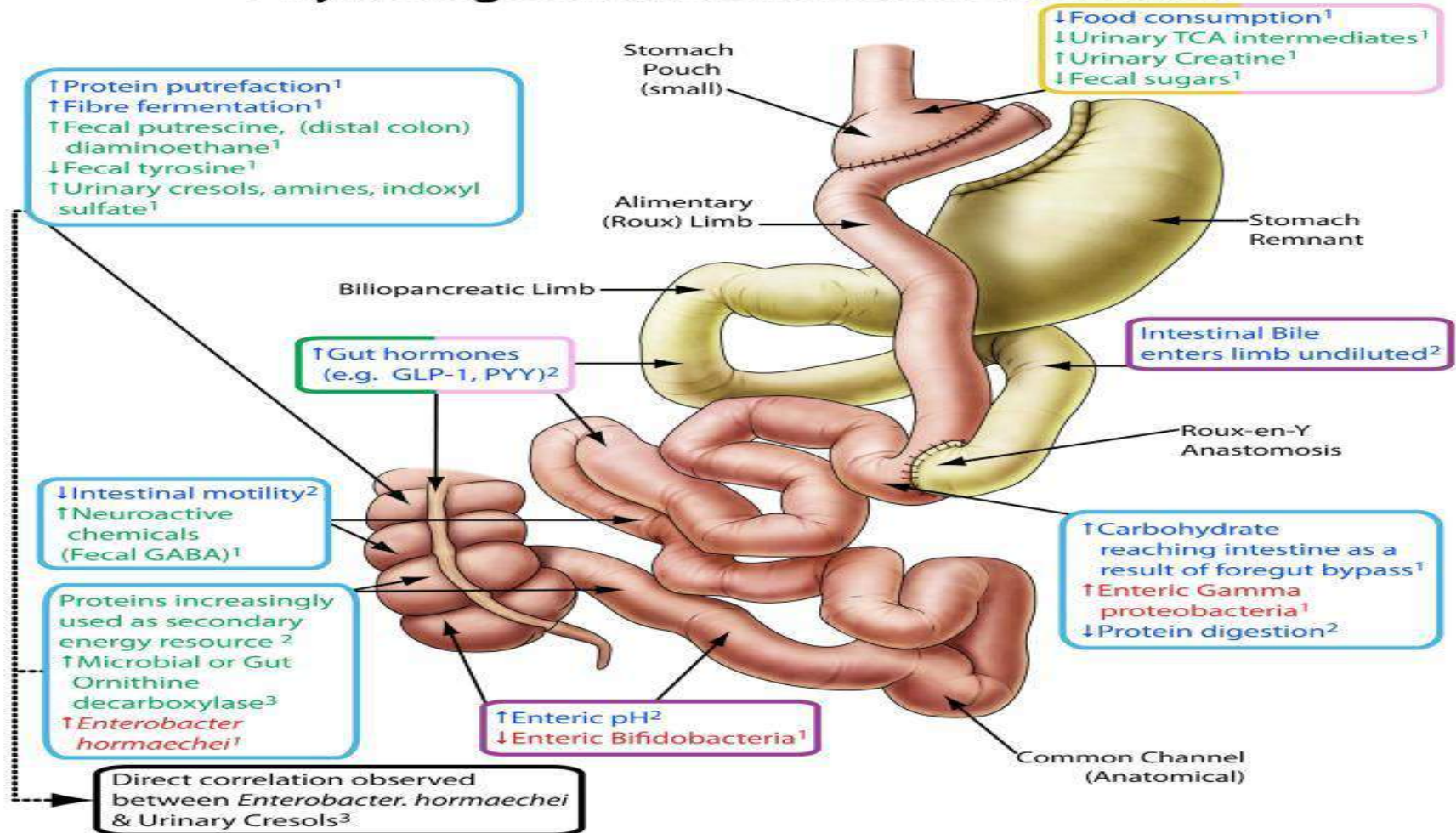
¹Sections of Biomolecular Medicine, Imperial College London, SW7 2AZ, UK

²Biosurgery & Surgical Technology, Department of Surgery and Cancer, Imperial College London, SW7 2AZ, UK

³Section of Investigative Medicine, Division of Diabetes, Endocrinology & Metabolism, Department of Medicine, Faculty of Medicine, Imperial College London, SW7 2AZ, UK

⁴School of Biosciences, Cardiff University, Museum Avenue, Cardiff, CF10 3AT, UK.

The Roux-en-Y Gastric Bypass in Relation to Physiological and Microbial Activities



COLOR CODE KEY FOR BRAVE EFFECTS

- B-Bile Flow alteration
- R-Reduction of gastric size
- A-Anatomical gut rearrangement and altered flow of nutrients
- V-Vagal manipulation
- E-Enteric gut hormone modulation

LABEL KEY

1. Direct observation
2. Literature
3. Hypothesis

COLOR KEY OF ASSOCIATIONS

- Physiology
- Biochemistry
- Microbiology

Bariyatrik cerrahi sonrası bağırsak hormonları

	RYGB	AGB	VSG
Ghrelin	Reduced total ghrelin; Controversial, but no change in acyl-ghrelin levels	Increased circulating ghrelin	Reduced total ghrelin; Controversial, but no change in acyl-ghrelin levels
CCK	No change	No change	Not measured
GLP-1 (postprandial)	Weight loss-independent postprandial increase	Increased circulating GLP-1 but much less than RYGB or VSG	Weight loss-independent increase comparable to RYGB
PYY (postprandial)	Increased postprandial PYY levels; Reduced body weight loss in PYY knockout mice	No change	Increased postprandial PYY levels, comparable to levels after RYGB
Bile acids	Increased plasma bile acids	Not reported	Increased plasma bile acids
Diet Change	Decreased fat intake, more fruits and vegetables	Decrease bread intake and increase in caloric liquids; Greater fat intake and fewer fruits/vegetables than RYGB	Decreased fat intake, similar to RYGB
Food Intolerance	Some dumping syndrome, usually well-tolerated	More persistent and problematic than RYGB; Mainly vomiting	Little or none

*“They say
he’s good!”*

DIETITIAN

IN

OUT





IFSO
European Chapter

3rd European Obesity Medico-Surgical Workshop
'Physicians & Surgeons as the piece of the puzzle: Metabolic Surgery'
Jointly organised by IFSO-EC and EASO
30 April 2014
Brussels, Belgium



TÜRK DİABET VE OBEZİTE VAKFI

VI. ULUSAL OBEZİTE KONGRESİ

27-29 KASIM 2014 Radisson Blu Şişli/İstanbul



BİLİMSEL SEKRETERYA



Türkiye Obezite Araştırma Derneği

Prof. Dr. Cezai Öler SA, No:10 Kartlıye-İstanbul

Tel : 0 212 230 49 00

Faks : 0 212 248 55 23

E-posta : info@obezitearastirma.org

Web : www.obezitearastirma.org

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Tel : 0 212 280 66 11

Faks : 0 212 280 66 49

E-posta : obezitekongresi@consensusistanbul.com

Web : www.obezitekongresi.org

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