Session Sommeil

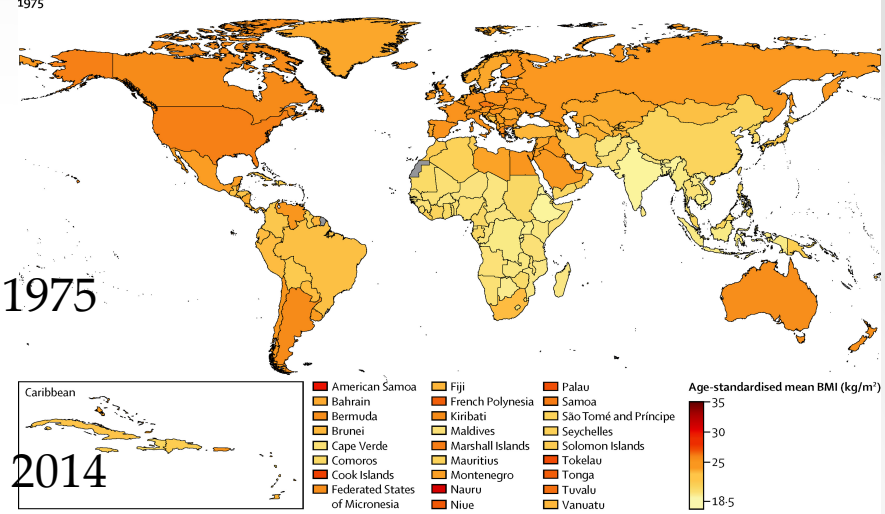
	Samedi 09 avril	
	Modérateur : V. JOUNIEAUX– P.ESCOURROU	
	SOMMEIL	
08H 00 – 08 H20	SAOS et chirurgie bariatrique	P.ESCOURROU (Clamart)
08H 20 – 08 H40	Le SAOS est-il responsable de coronaropathies ?	Y. PEKER (Istanbul et Suède)
08 H 40 – 09H00	Que reste-t-il de la servo-ventilation après SERVE-HF ?	M.IBRAHIMI (Casablanca)
09H 00 – 09H20	Bilan orthognatique du SAOS	C. FERRET (Montpellier)

Chirurgie Bariatrique pour le SAHOS

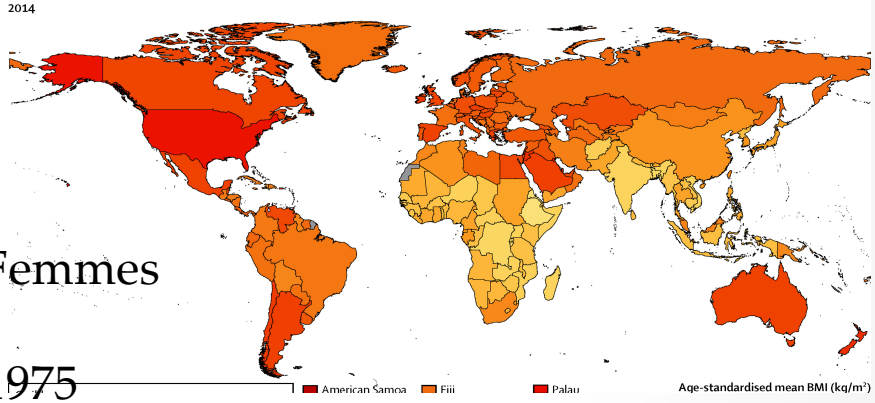
Pierre Escourrou
Hôpital Béclère,
Clamart
France

Prevalence de L'obésité: *Lancet 2016*

Hommes 1975

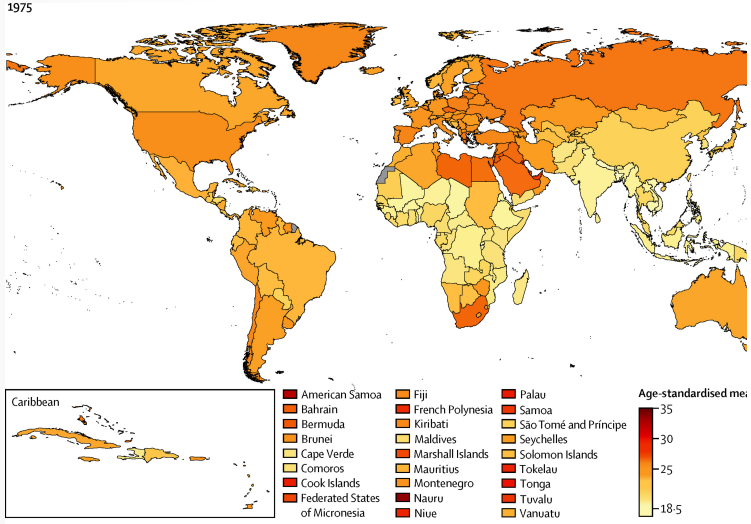


2014

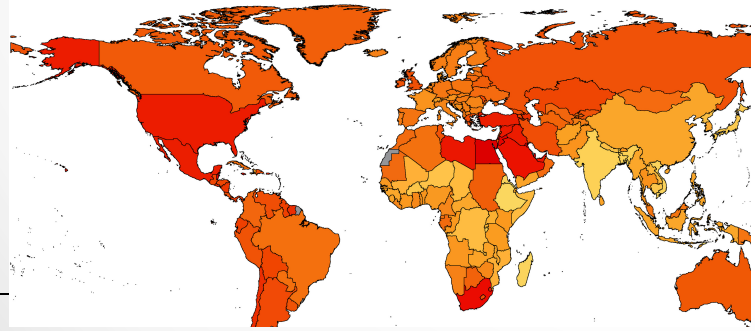


Femmes

1975



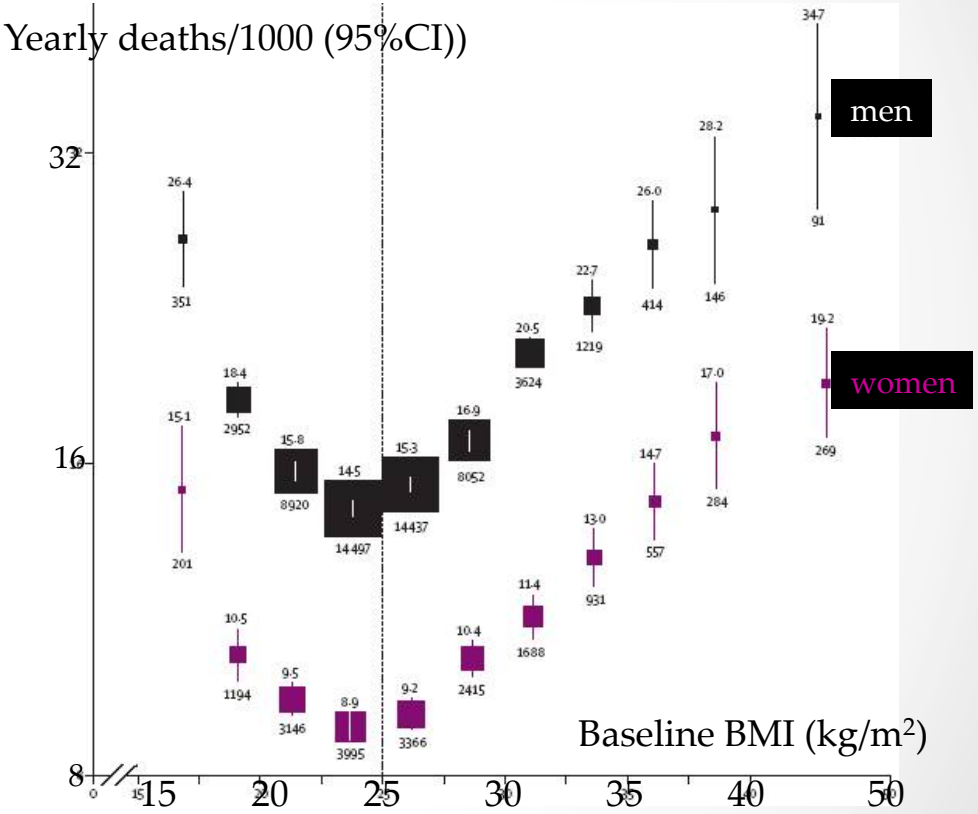
2014



Obésité:
augmentation de la mortalité

- 890.000 participants
- dans les 2 sexes
- mortalité minimum pour BMI **22.5-25 kg/m²**
- chaque augmentation de **5 kg/m²** est associée à une augmentation de **30% de la** mortalité

(adjusté pour l'age et le tabac)



Whitlock. Lancet 2009; 1096

Obésité:
augmentation de la morbidité

Associée à:

Diabète,

Hypertension

Dyslipidémie

Arthrose

dépression et troubles psychologiques

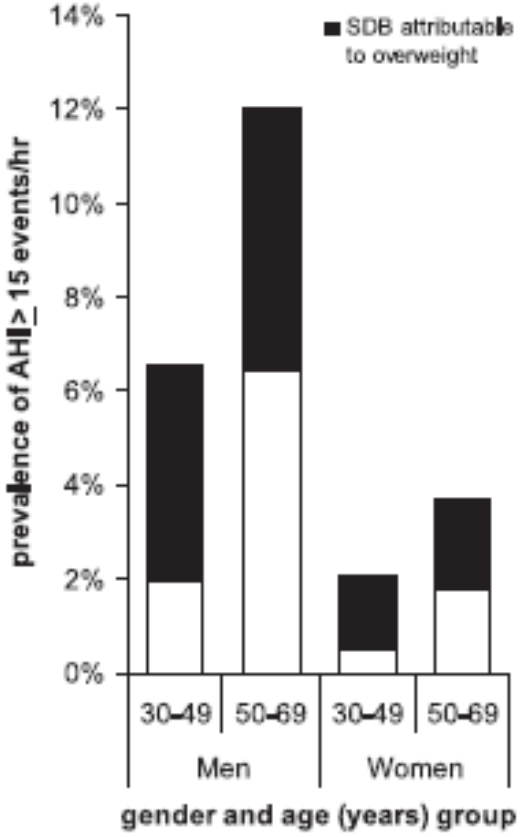
Dyspnée et asthme

SAHOS

…….

Young *JAP* 99:1592–99, 2005

Influence du surpoids sur la prévalence du SAHOS (IAH≥15/h)



attribuable au surpoids

sur la base de plusieurs études longitudinales

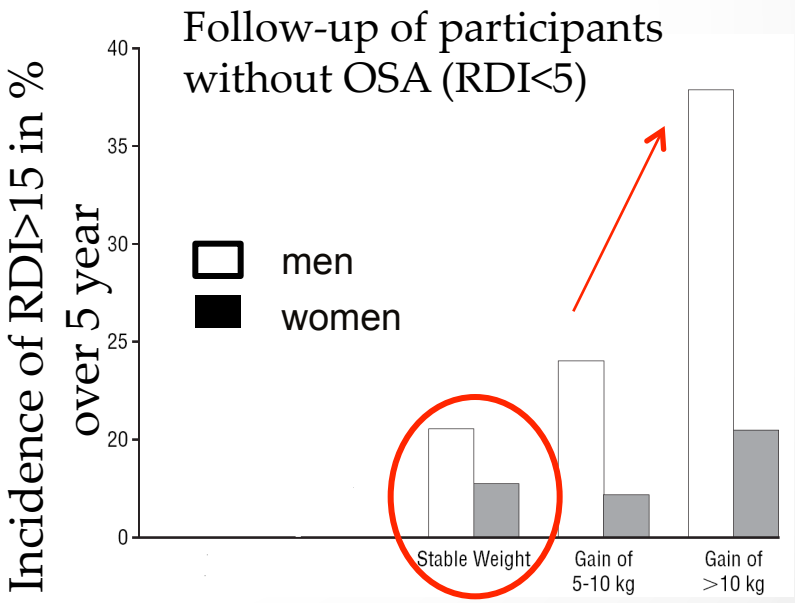
58% de la prévalence

Obésité:
et SAHOS

- Cohortes longitudinales: lien entre gain de poids et SAHOS

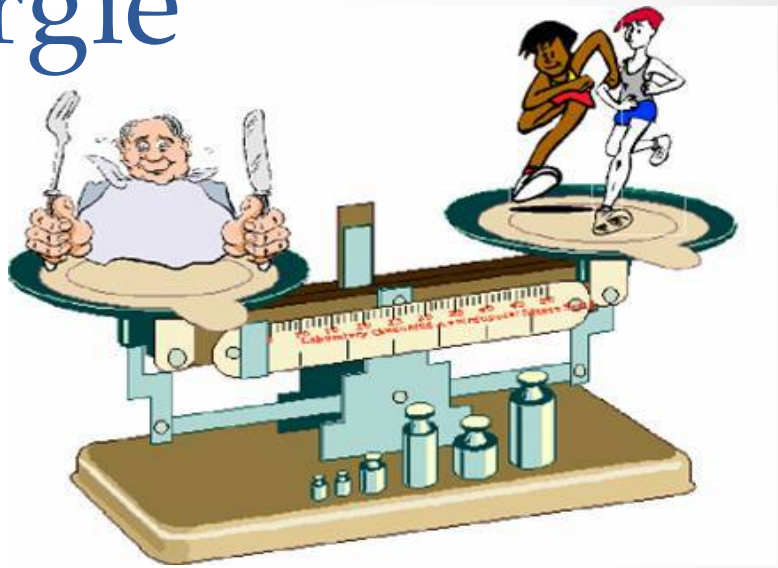
- Wisconsin Sleep Cohort Study
  Peppard. JAMA 2000; 3015
- Cleveland Family Study
  Redline. Sleep 2003; 703
  Tishler. JAMA 2003; 2230
- Sleep Heart Health Study
  Newman. Arch Intern Med 2005; 2408

the Sleep Heart Health Study



Newman. Arch Intern Med 2005; 2408

Pourquoi la chirurgie bariatrique?



•les traitements conservateurs diminuent le poids de 5-10% (avec un impact positif sur les comorbidités).

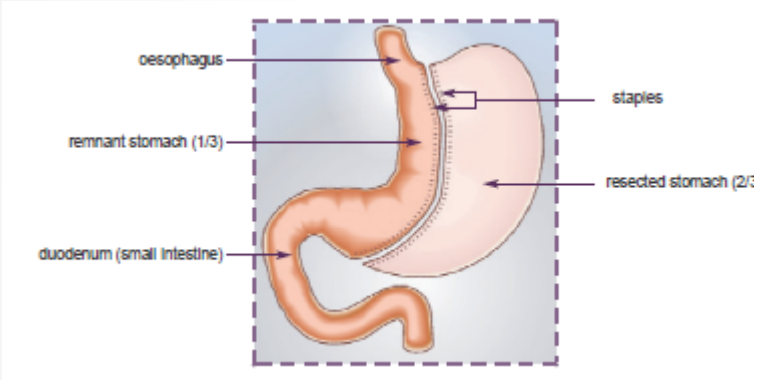
•Les médicaments anti-obésité permettent une perte additionnelle de seulement 2-3 kg.

•La chirurgie Bariatrique est le seul traitement qui produit une perte effective et durable de poids chez l'obèse sévère (évidence de niveau 1).

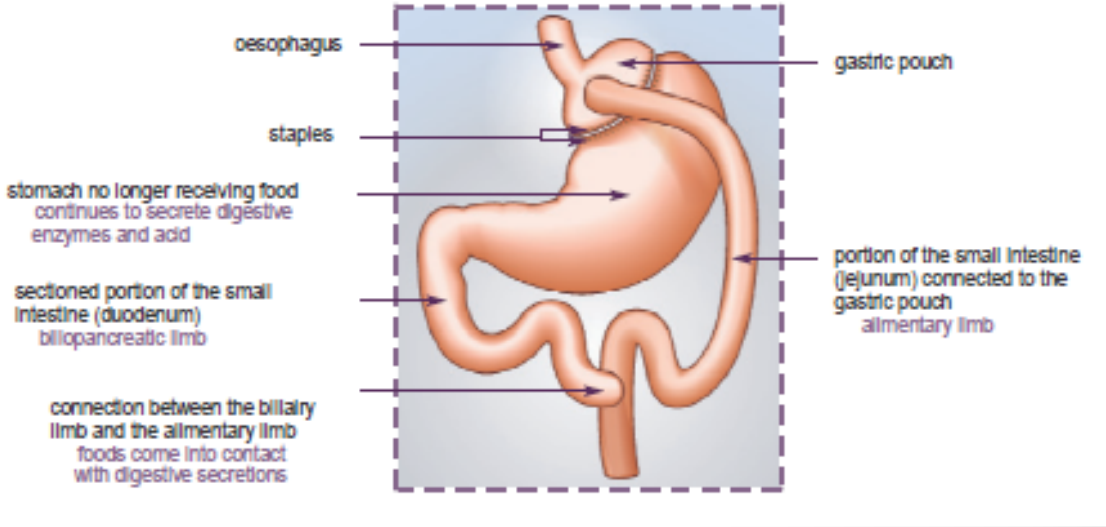
Colquitt. Cochrane Database of Systematic Reviews 2009

Chirurgie bariatrique : techniques

Sleeve-gastrectomy



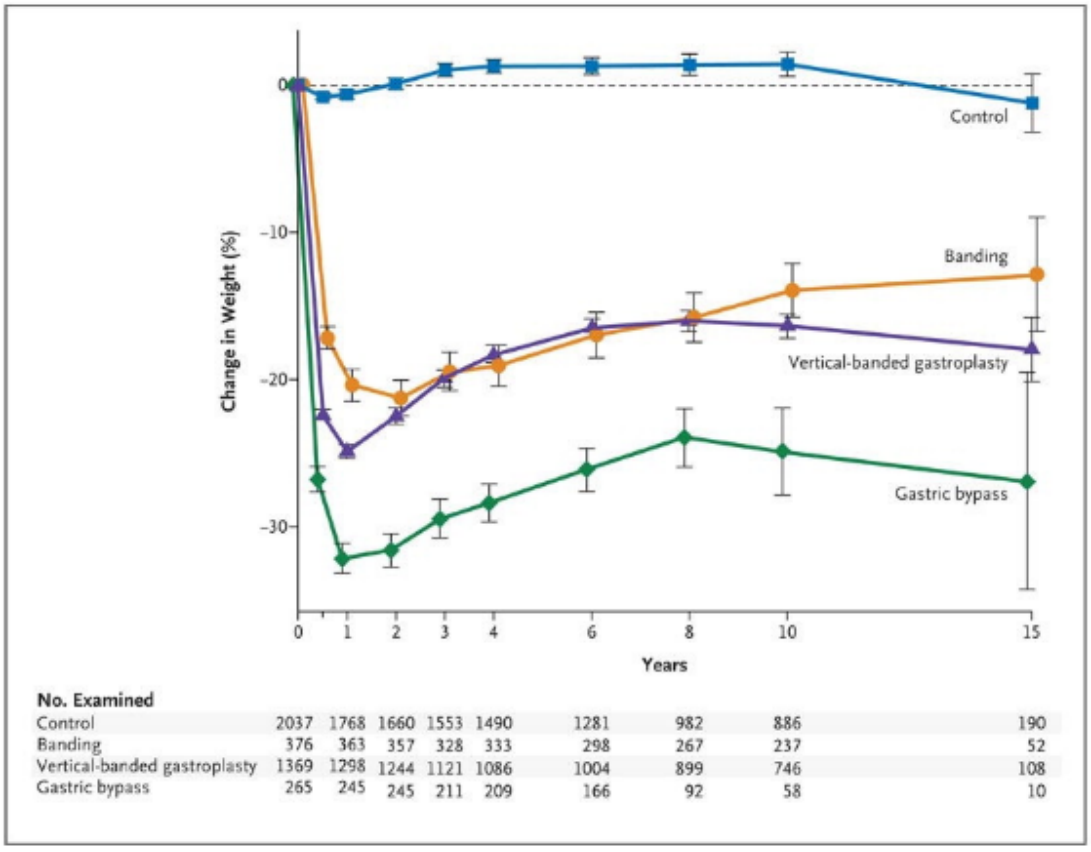
Gastric Bypass



objectifs: **réduire l'apport calorique** et modifier les réponses hormonales et endocrines (Ghréline, Leptine) impliquées dans l' **absorption des nutriments**

La chirurgie bariatrique réduit la **mortalité**, les maladies **cardiovasculaires** et le **cancer** Swedish Obese Subjects **(SOS study)** (prospective, controlée)

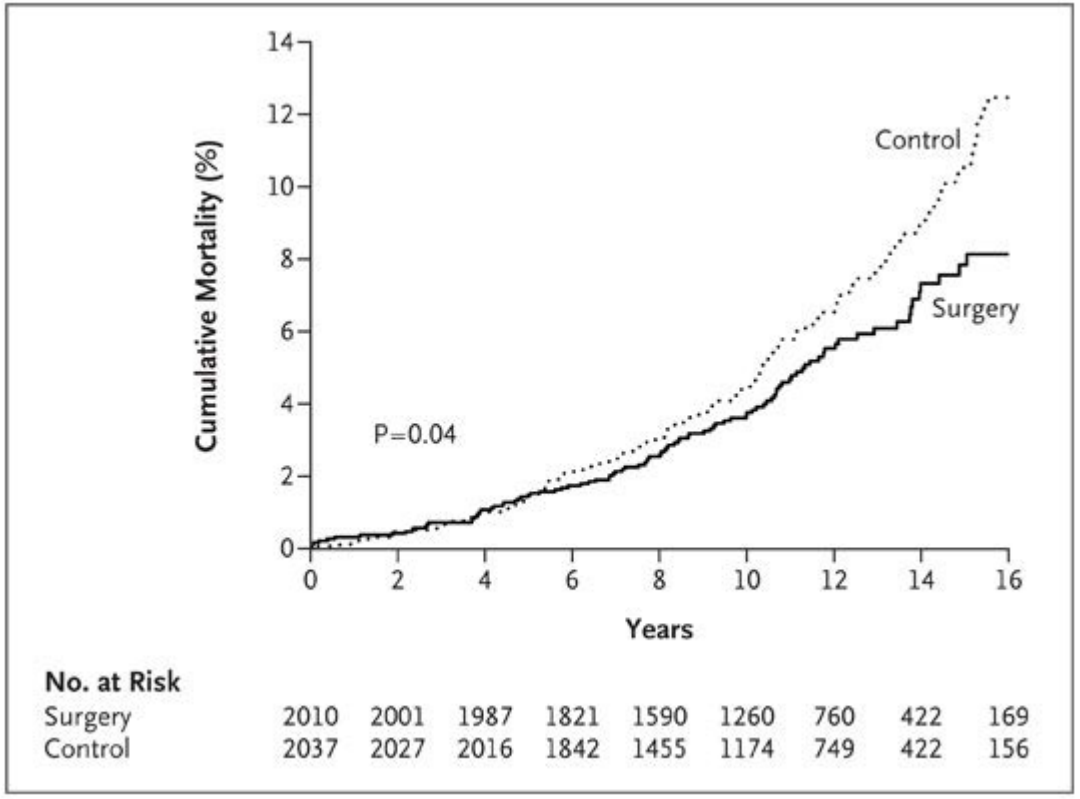
SOS Swedish cohort: perte de poids



No. Examined									
Control	2037	1768	1660	1553	1490	1281	982	886	190
Banding	376	363	357	328	333	298	267	237	52
Vertical-banded gastroplasty	1369	1298	1244	1121	1086	1004	899	746	108
Gastric bypass	265	245	245	211	209	166	92	58	10

Sjostrom, NEJM 2007

SOS Swedish cohort : Difference de mortalité



Recommandations HAS pour la chirurgie bariatrique:

- **IMC ≥40 kg.m^{-2},**

Ou ≥ 35 avec des facteurs de comorbidité.

- après un ou plusieurs échecs du traitement **conventionnel** combinant plusieurs approches: régime diététique, thérapeutique comportementale, activité physique.

- Une **évaluation globale** personnalisée non chirurgicale doit être réalisée sur le plan nutritionnel

- la **durée de prise en charge médicale** au moins égale à **un an** avant d'envisager une indication chirurgicale.

PRÉVALENCE DU SAHOS EN CHIRURGIE
Zaremba S, 2016

Reference	Population studied	Age [yrs.]	Gender	Sample size	Method	Definition of OSA	OSA rate
Fidan, H. *et al.* 2006[64]	All surgical patients		both	433	PSG	AHI > 5/h	3.2%
Finkel, K.J. *et al.* 2009[65]	All surgical patients	43–68	both	2877	questionnaire/sleep study (n=217)	AHI > 5/h	5.9% (23.7%)
* Ramachandran, S.K. *et al.* 2010[139]	All surgical patients	> 18	both	3884	Chart review	Diagnosis of OSA	7.2%
* D'Apuzzo, M.R. *et al.* 2010[166]	Orthopedic surgery patients		both	258,455	Chart review	Diagnosis of OSA	6.4%
Weingarten, T.N. *et al.* 2010[14]	Bariatric surgery patients	> 18	both	797	PSG	AHI > 5/h	77.5%
* Mokhlesi, B. *et al.* 2013[54]	Bariatric surgery patients	44.2 ± 11.8	both	91,028	Chart review	Diagnosis of OSA	36.0%
* Griffin, J.W. *et al.* 2013[14]	Orthopedic surgery patients	68.8 ± 11.6	both	22,988	Chart review	Diagnosis of OSA	5.9%
Amra, B. *et al.* 2014[167]	CABG surgery patients	58.6 ± 11.1	both	61	BERLIN questionnaire	High OSA risk	40.9%
Uchôa, C.H. *et al.* 2015[66]	CABG surgery patients	57.4 ± 7.5	both	67	PSG	AHI > 15/h	56.0%
* Wong, J.C. *et al.* 2015[168]	CABG surgery patients		both	545	Chart review	Diagnosis of OSA	13.0%
Foldvary-Schaefer, N. *et al.* 2015[55]	Cardiac surgery patients		both	107	PSG	AHI > 5/h	73.8%

* = retrospective analysis; OSA = obstructive sleep apnea; AHI = apnea hypopnea index; w = women; m = men; NHANES = National Health and Nutrition Examination Surveys; PSG = polysomnography; CABG = coronary artery bypass graft

Complications de la chirurgie bariatrique

- **décès** postopératoires précoces: 0,1 % pour les anneaux à 0,35 % gastroplasties et 0,5 % pour les bypass.

- **Complications spécifiques**:
  - *Pour les anneaux* : perforation gastrique, hémorragie, suppuration ou migration ou rupture de l'anneau, dilatation de la poche suivi de volvulus aigu, de nécrose gastrique et de perforation.
  - *Pour la gastroplastie* : fistules gastriques, et désunion de la ligne d'agrafes
  - *Pour le bypass*: hémorragies sévères et des abcès profonds.

- **complications nutritionnelles et métaboliques**: carence en fer, en vitamine B12 et en folates, des anémies (plus pour le bypass que pour les techniques de réduction gastrique pures.

RISQUE PÉRI-OPÉRATOIRE DU SAHOS
Zaremba S, 2016

Table 2. Effect of obstructive sleep apnea on the risk for postoperative complication after non-upper-airway surgery.

Consequence	Reference	Sample	N Total (OSA pos.)	Effect size OR (95% CI)
1) Reintubation	Memtsoudis, S. *et al.* 2011[32]	Orthopedic surgery patients General surgery patients	234,152 (58,538) 182,186 (45,545)	OR 1.95 (1.91 to 1.98) OR 5.20 (5.05 to 5.37)
	Mokhlesi, B. *et al.* 2013[34]	Bariatric surgery patients	91,028 (33,196)	OR 4.35 (3.97 to 4.77)
	Mokhlesi, B. *et al.* 2013[35]	Orthopedic surgery patients Prostate surgery patients Abdominal surgery patients Cardiovascular surgery patients	783,723 (43,502) 67,848 (2779) 79,101 (2633) 128,036 (6006)	OR 14.3 (13.3 to 15.3) OR 10.3 (8.0 to 13.3) OR 2.01 (1.7 to 2.4) OR 1.80 (1.65–1.95)
	Abdelsattar *et al.* 2015[36]	Gen. and vascular surgery patients; *untreated vs. treated OSA*	2,646 (1181)	OR 2.5 (n. reported)
2) Unplanned ICU admission	Kaw *et al.* 2012[28]	Non-cardiac surgery patients	471 (189)	OR 4.4 (n. reported)
	Chia, P. *et al.* 2013[170]	Elective surgery patients	5,432 (338)	OR 2.2 (1.1 to 4.6)
3) Hypoxemia	Kaw *et al.* 2012[28]	Non-cardiac surgery patients	471 (189)	OR 7.9 (n. reported)
4) Pneumonia	Mokhlesi, B. *et al.* 2013[35]	Orthopedic surgery patients Prostate surgery patients Abdominal surgery patients Cardiovascular surgery patients	783,723 (43,502) 67,848 (2779) 79,101 (2633) 128,036 (6006)	OR 1.06 (0.94 to 0.19) OR 1.3 (0.74 to 2.30) OR 0.71 (0.56 to 0.92) OR 0.85 (0.72 to 1.01)
	Memtsoudis, S. *et al.* 2011[32]	Orthopedic surgery patients General surgery patients	234,152 (58,538) 182,186 (45,545)	OR 1.37 (1.33 to 1.41) OR 1.41 (1.35 to 1.47)
5) Delirium	Flink B. *et al.* 2012[31]	Orthopedic surgery patients; ≥ 65 yrs.	105 (15)	OR 4.3 (1.2 to 15.8)
	Roggenbach, J. *et al.* 2014[171]	Elective cardiac surgery patients	92 (9)	OR 6.8 (2.6 to 15–4) *for AHI ≥ 19/h*
6) Myocardial infarction	Abdelsattar *et al.* 2015[36]	General and vascular surgery patients; *untreated vs. treated OSA*	2646 (1181)	OR 2.6 (n. reported)
7) Atrial fibrillation	Mokhlesi, B. *et al.* 2013[34]	Bariatric surgery patients	91,028 (33,196)	OR 1.25 (1.11 to 1.41)
8) Pulmonary embolism	Memtsoudis, S. *et al.* 2011[32]	Orthopedic surgery patients General surgery patients	234,152 (58,538) 182,186 (45,545)	OR 0.90 (0.84 to 0.97) OR 1.22 (1.15 to 1.29)
7) Longer LOS	Kaw *et al.* 2012[28]	Non-cardiac surgery patients	471 (189)	OR 1.7 (n. reported)
	Memtsoudis, S.G. *et al.* 2014[33]	Orthopedic surgery patients	530,089 (44,246)	OR 1.1 (1.1 to 1.2)
8) Mortality	Griffin, J.W. 2013[15]	Shoulder arthroplasty patients	22,996 (1983)	OR 1.083 (n. reported)
	Mokhlesi, B. *et al.* 2013[34]	Bariatric surgery patients	91,028 (33,196)	OR 0.34 (0.23 to 0.50)
	Mokhlesi, B. *et al.* 2013[35]	Orthopedic surgery patients Prostate surgery patients Abdominal surgery patients Cardiovascular surgery patients	783,723 (43,502) 67,848 (2779) 79,101 (2633) 128,036 (6006)	OR 0.65 (0.45 to 0.95) OR 1.04 (0.25 to 4.34) OR 0.38 (0.22 to 0.65) OR 0.54 (0.40 to 0.73)
	D'Apuzzo *et al.* 2012[155]	Orthopedic surgery patients #	359 (19)	OR 1.9 (1.3 to 2.8)

OR = odds ratio; 95% CI = 95% confidence interval; ICU = intensive care unit; AHI = apnea hypopnea index; LOS = length of hospital stay; # = not controlled for obesity; OSA = obstructive sleep apnea

(Systematic review of 622 references published later than 2009 retrieved using MedLine search term "sleep apnea postoperative complications" – www.pubmed.org)

L'hypoxémie post-opératoire est fréquente après chirurgie bariatrique

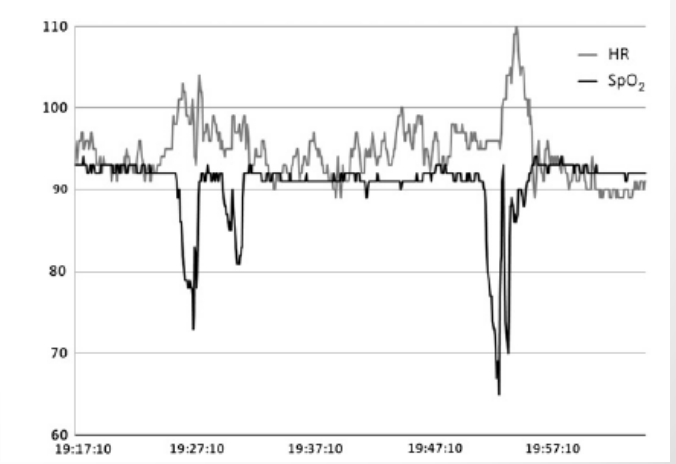
« Previous

Journal of Surgical Research
Volume 159, Issue 2 , Pages 622-626, April 2010

Postoperative Hypoxemia: Common, Undetected, and Unsuspected After Bariatric Surgery[1]

Scott F. Gallagher, M.D., F.A.C.S., Krista L. Haines, M.A., Lynette G. Osterlund, M.D., Matt Mullen, B.S., John B. Downs,

Every patient (n = 15) had more than one episode with SpO2<90% for longer than 30s undetected by routine monitoring;
Nadir SpO2 averaged **75% ± 8%.**
Mean duration of desaturation below 90% averaged **21 ±15min**.



Bariatric surgery for whom ?

Therapy	BMI: ≥ 25 kg/m^2 =overweight	BMI: ≥ 30 kg/m^2 =obesity type I	BMI: ≥ 35 kg/m^2 =obesity type II	BMI: ≥ 40 kg/m^2 =morbid obesity or obesity type III	BMI: ≥ 50 kg/m^2 =super obesity
Diet, Exercise,…	+	+	+	+	
Medication	+ if comorbidity	+	+	+	
Surgery			+ if failure of other strategies and comorbidity	+ if failure of other strategies	+ first line option

adapted from the NIH guidelines. Ann Intern Med 1991; 956

Obesity Surgery, 13, 58-61

Gastric Bypass is an Effective Treatment for Obstructive Sleep Apnea in Patients with Clinically Significant Obesity

Sowsan Rasheid, MD; Magdalena Banasiak, MD; Scott F. Gallagher, MD; Anna Lipska, MD; Shadi Kaba, MD; Daniel Ventimiglia, RRT, RPGST[1]; W. McDowell Anderson, MD[1]; Michel M. Murr, MD, FACS

Departments of Surgery and [1]Medicine, Interdisciplinary Obesity Group, University of South Florida, College of Medicine, Tampa, FL, USA

Background: We have demonstrated that obstructive sleep apnea (OSA) is prevalent in 60% of patients undergoing bariatric surgery. A study was conducted to determine whether weight loss following bariatric surgery ameliorates OSA.

Methods: All 100 consecutive patients with symptoms of OSA were prospectively evaluated by polysomnography before gastric bypass. Preoperative and postoperative scores of *Epworth Sleepiness Scale* (ESS), *Respiratory Disturbance Index* (RDI), and other parameters of sleep quality were compared using t-test.

Results: Preoperative RDI was 40±4 (normal 5 events/hour, n=100). 13 patients had no OSA, 29 had mild OSA, while the remaining 58 patients were treated preoperatively for moderate-severe OSA. At a median of 6 months follow-up, BMI and ESS scores improved (38±1 vs 54±1 kg/m², 6±1 vs 12±0.1, *P*<0.001, postoperatively vs preoperatively). To date, 11 patients have completed postoperative polysomnography (3-21 months) after losing weight (BMI 40±2 vs 62±3 kg/m², *P*<0.001). There was significant improvement in ESS (3±1 vs 14±2), minimum O_2 saturation (SpO_2 86±2 vs 77±5), sleep efficiency (85±2% vs 65±5%), all *P*<0.001, postop vs preop; and RDI (56±13 vs 23±7, *P*=0.041). Regression analysis demonstrated no correlation between preoperative BMI, ESS score and the severity of OSA; and no correlation between % excess body weight loss and postoperative RDI.

Conclusion: Weight loss following gastric bypass results in profound improvement in OSA. The severity of apnea cannot be reliably predicted by preoperative BMI and ESS; therefore, patients with symptoms of OSA should undergo polysomnography.

Key words: Morbid obesity, bariatric surgery, gastric bypass, obstructive sleep apnea, polysomnography

Presented at the 19th Annual Meeting of the American Society for Bariatric Surgery, Las Vegas, NV, June 28, 2002.

Reprint requests to: Michel M. Murr, MD, FACS, University of South Florida, C/o Tampa General Hospital, PO Box 1289, Tampa, FL 33601, USA. Fax: 813 844-7396; e-mail: mmurr@hsc.usf.edu

Introduction

Obstructive sleep apnea (OSA) is frequently unrecognized by physicians and patients. Excessive daytime sleepiness and fatigue are the most common manifestations of sleep apnea in obese individuals.[1] Similarly, snoring or gasping are common complaints indicative of disturbances in sleep.[2] Although no individual sign or symptom can be used to accurately predict the presence or severity of OSA, recognition and diagnosis of OSA remain important.[3,4]

Recognizing OSA is particularly important in patients who are to undergo bariatric surgery, we have demonstrated that OSA is prevalent in 60% of patients with clinically significant obesity.[5] Moreover, postoperative mortality is dramatically increased in patients with respiratory insufficiency secondary to OSA.[6] Our aim in undertaking this study was to determine whether weight loss following bariatric surgery ameliorates OSA.

Journal of Surgical Research
Volume 159, Issue 2 , Pages 622-626, April 2010

Postoperative Hypoxemia: Common, Undetected, and Unsuspected After Bariatric Surgery[☆]

Scott F. Gallagher, M.D., F.A.C.S., Krista L. Haines, M.A., Lynette G. Osterlund, M.D., Matt Mullen, B.S., John B. Downs, M.D., F.C.C.M., F.C.C.P.

Received 9 July 2009 published online 27 September 2009.

Background

Patients undergoing gastric bypass are at greater than ordinary risk for postoperative respiratory insufficiency, presumably related to obstructive sleep apnea (OSA) and patient-controlled analgesia (PCA). This study was proposed to quantify the magnitude of the problem.

Methods

Fifteen patients undergoing gastric bypass had oxygen saturation (SpO_2) recorded continuously, but not displayed, for 24h postoperatively; eight also had arterial blood analysis every 4h. All received narcotic PCA. SpO_2 < 90% lasting more than 10 s was reviewed. Results are mean ± SEM.

Results

Mean age was 44 ± 4 y, and mean BMI was 48 ± 2kg/m^2; 77% had OSA. Every patient had more than one episode with SpO_2 < 90% for longer than 30s undetected by routine monitoring; most had multiple episodes. Nadir SpO_2 averaged 75% ± 8%. Mean longest duration of desaturation below 90% averaged 21 ±15min. Mean $PaCO_2$ was 37 ± 3mm Hg; maximum $PaCO_2$ was 47mm Hg.

Conclusions

Severe and prolonged episodes of hypoxemia were a consistent finding, despite aggressive preoperative diagnosis and treatment of OSA, including use of CPAP postoperatively. Although some postoperative hypoventilation was expected, the degree and frequency of desaturation were surprising. No patient exhibited arterial $PaCO_2$ evidence of hypoventilation. No patient experienced cardiopulmonary arrest/instability, in spite of severe, repeated episodes of hypoxemia. In no instance was a significant hypoxemic episode suspected or detected. Continuous pulse oximetry monitoring, with an audible alarm set for a saturation less than 90% for 10 s, would have alerted providers to 100% of significant hypoxemic episodes. Our recommendation is routinely monitoring (with alarm capability enabled) every bariatric surgical patient, to prevent such occurrence.

Chirurgie bariatrique : bypass

- Mr NAY. K.

38 yrs

BMI 56

205kg

AHI 90/h

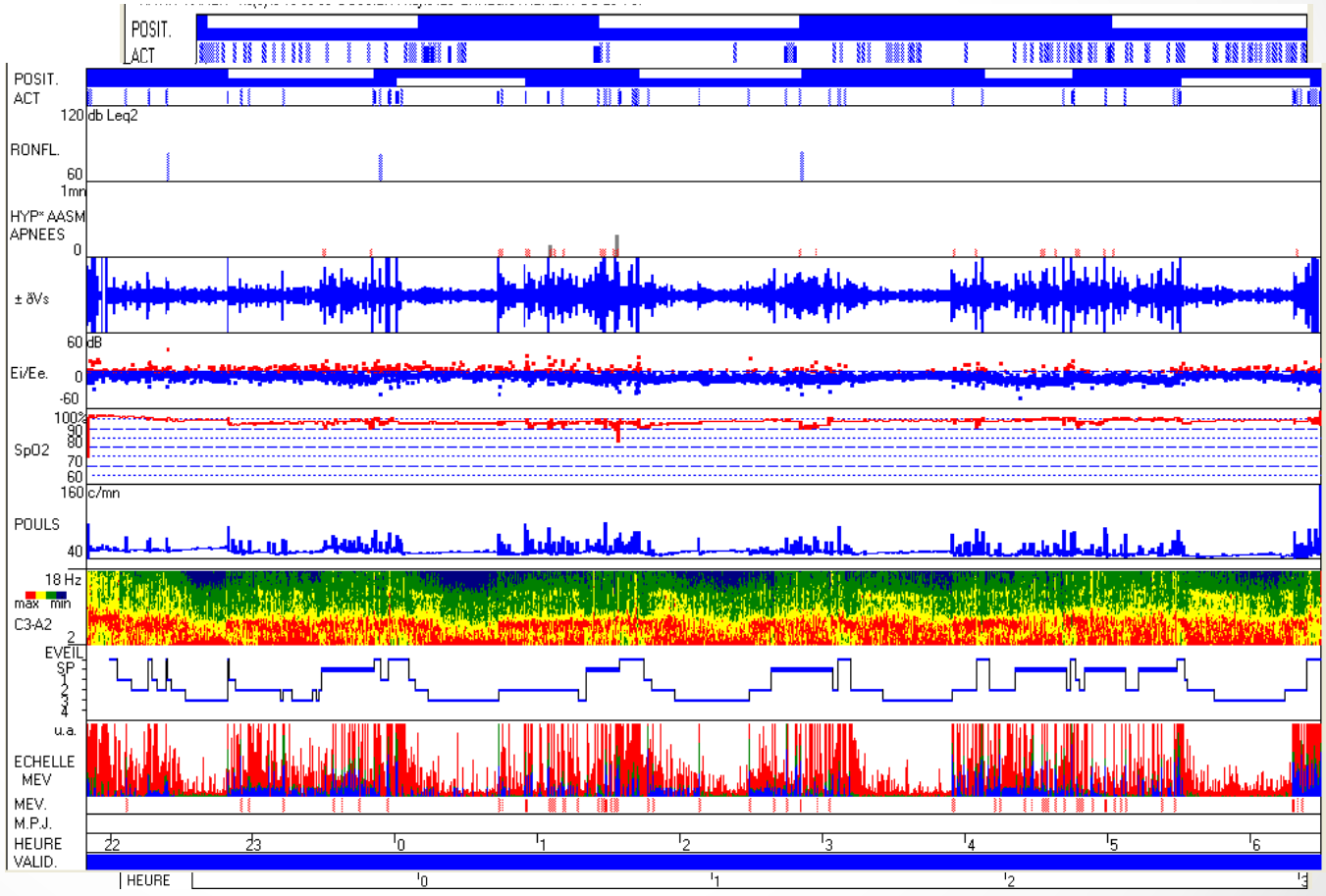
Bypass Surgery

At 12 months

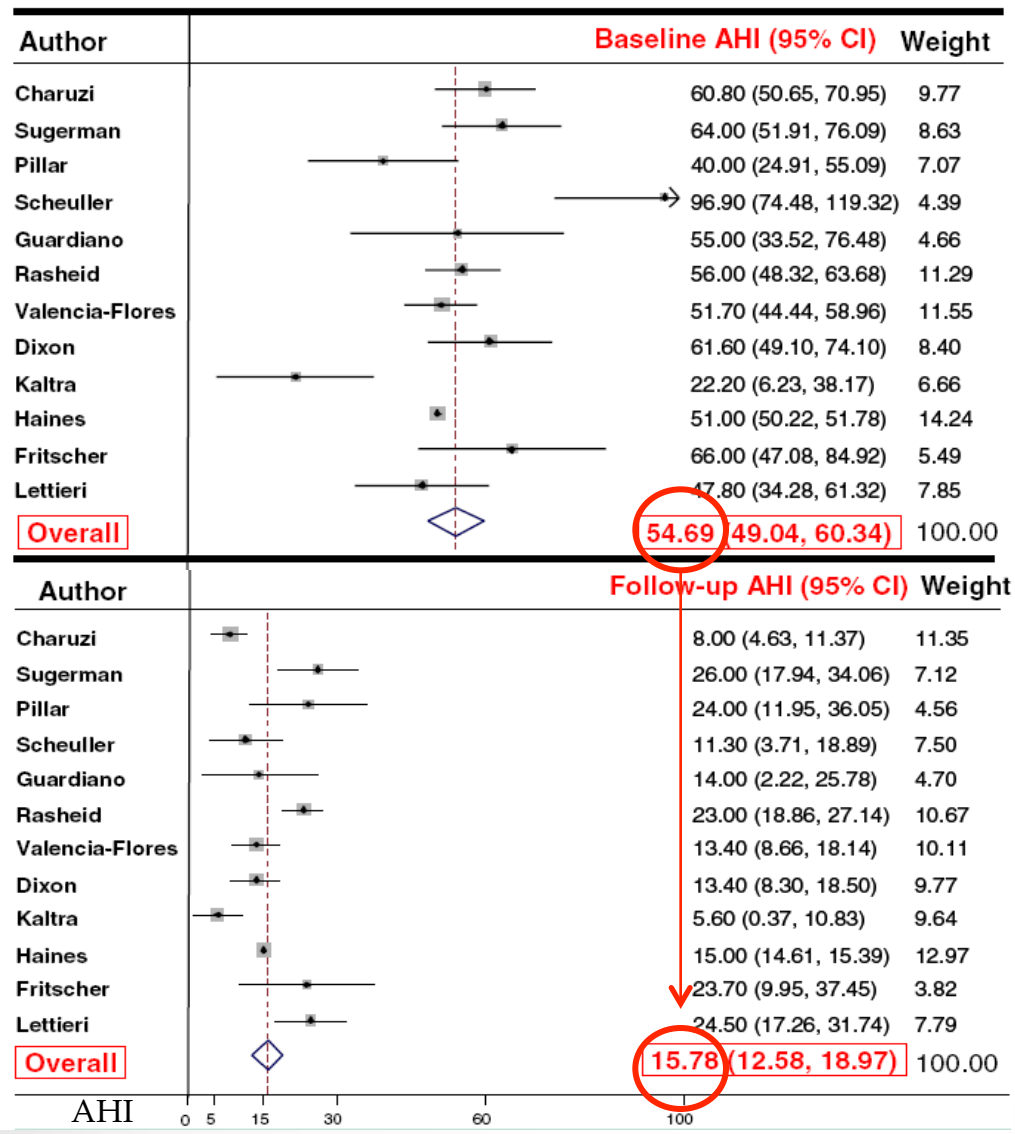
120kg

BMI 32

AHI 3/h



Une baisse spectaculaire de l'IAH



Meta-analysis
Greenburg Am J Med 2009; 535

Baseline BMI
55 (95%CI 53-57) kg/m^2

Most studies are retrospective,

Follow-up BMI
38 (95%CI 37-39) kg/m^2

Etudes prospectives sur chirurgie bariatrique et SAHOS

Table 2. Prospective studies evaluating the effect of bariatric surgery on obstructive sleep apnoea

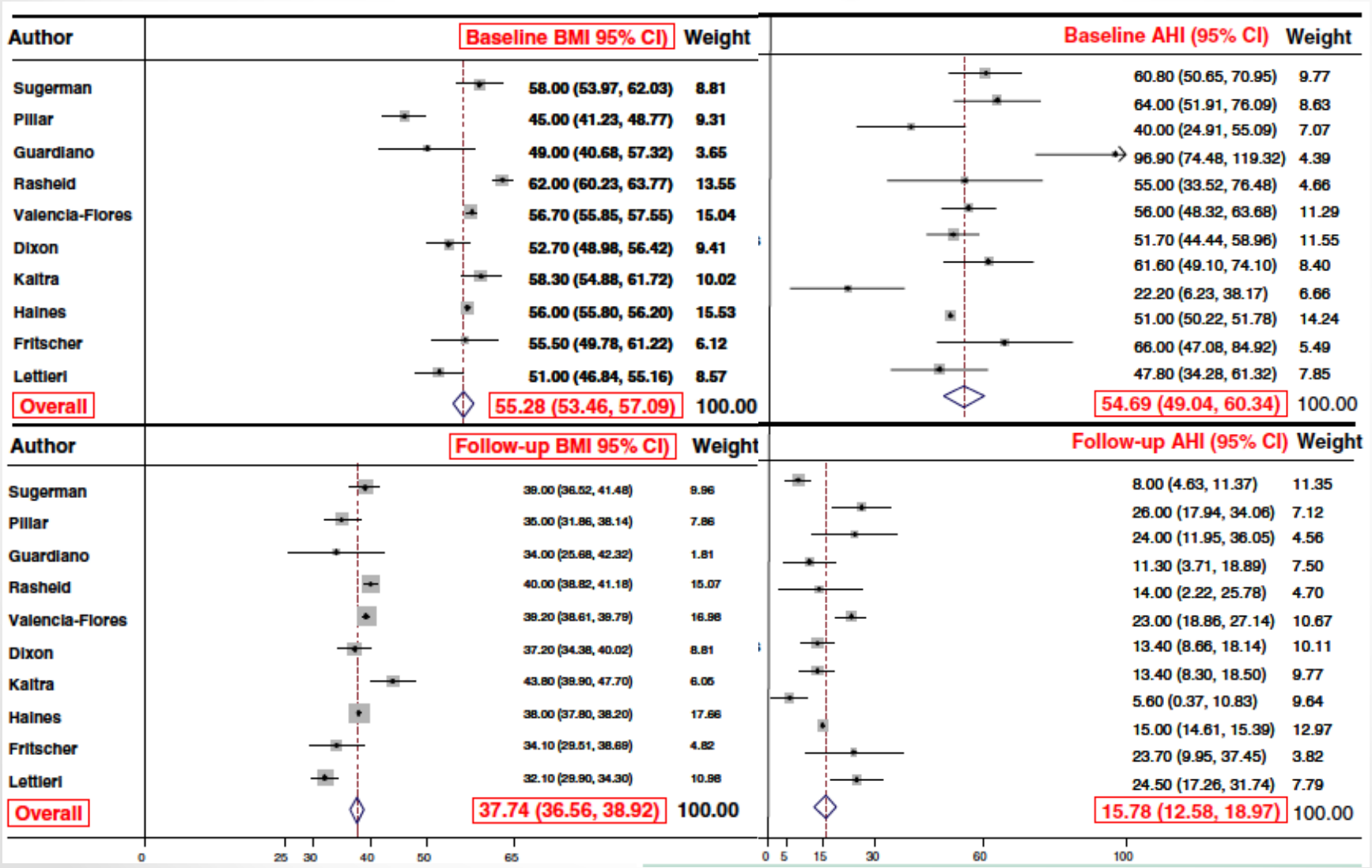
First author [Ref.]	Year	Initial recruitment	Final sample size	Type of surgery	Follow-up months	Pre-operative			Post-operative			Change	
						BMI kg·m^{-2}	Weight kg	AHI events·h^{-1}	BMI kg·m^{-2}	Weight kg	AHI events·h^{-1}	BMI kg·m^{-2}	AHI events·h^{-1}
Rashid [107]	2003	100	11	Gastric bypass	Not stated (3–11)	62±3	Not stated	56±13	40±2	Not stated	23±7	-22	-33
Dixon [105]	2001	49	25	LAGB	17.7 (12–42)	53±9.5	154±35.0	62±31.9	37±7.2	105±22.0	13±13	-16	-48
Haines [111]	2007	349	101	LYGB	11 (6–42)	56±1.0	Not stated	51.0±4.0	38.0±1.0	Not stated	15.0±2.0	-18	-36
Fritscher [113]	2007	13	12	LYGB	24.2 (18–30)	56±10.1	152±22.6	66±33.4	34±8.1	101±18.9	24±24.3	-21	-42
Lettier [114]	2008	25	24	LAGB	13.7 (10.8–22.2)	51±10.4	147±29.0	48±33.8	32±5.5	93±18.5	25±18.1	-19	-23
Rao [106]	2009	228	46	LAGB	12.6 (12–40)	45	111	38	30	71	13	-15	-17

Data are presented as n, mean±SD or mean (range), unless otherwise stated. BMI: body mass index; AHI: apnoea/hypopnoea index; LAGB: laparoscopic adjustable gastric banding; LYGB: laparoscopic Roux-en-Y gastric bypass.

- Chang ERS Monography 2010

amélioration mais pas de guérison

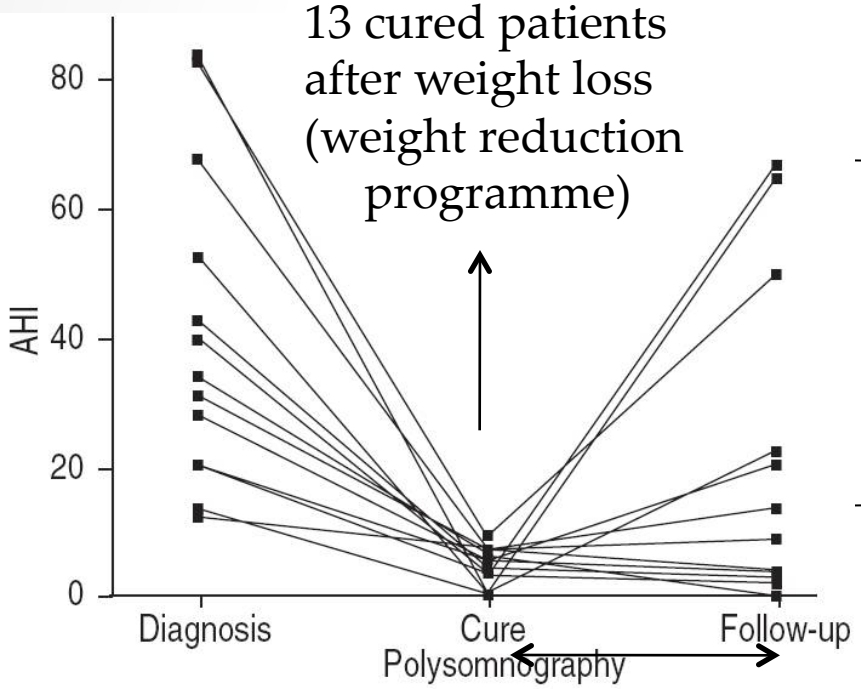
Meta-analyse Greenburg 2009



Récurrence du SAOS

les apnées peuvent réapparaitre aprés quelques années, même sans prise de poids

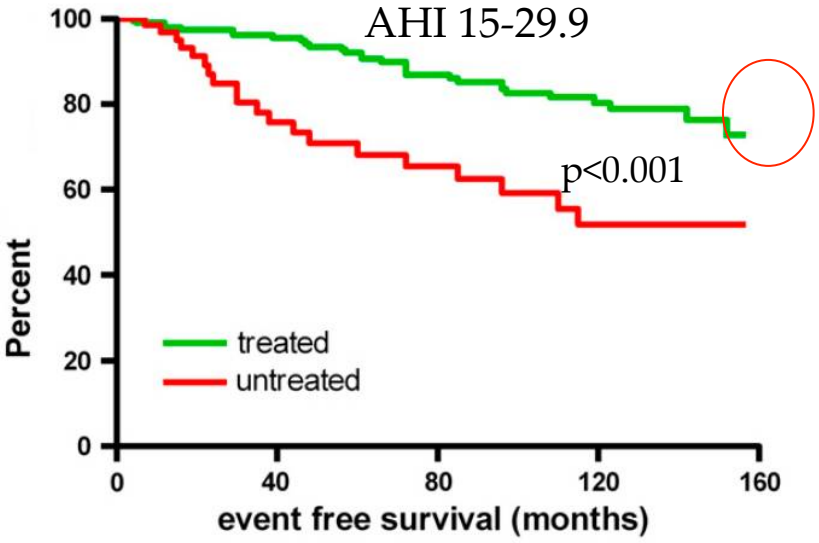
BMI 33 → 27 → 27



7.8+/-2.2 years later

Sampol. ERJ 1998; 1156

Morbidité cardio-vasculaire du SAHOS



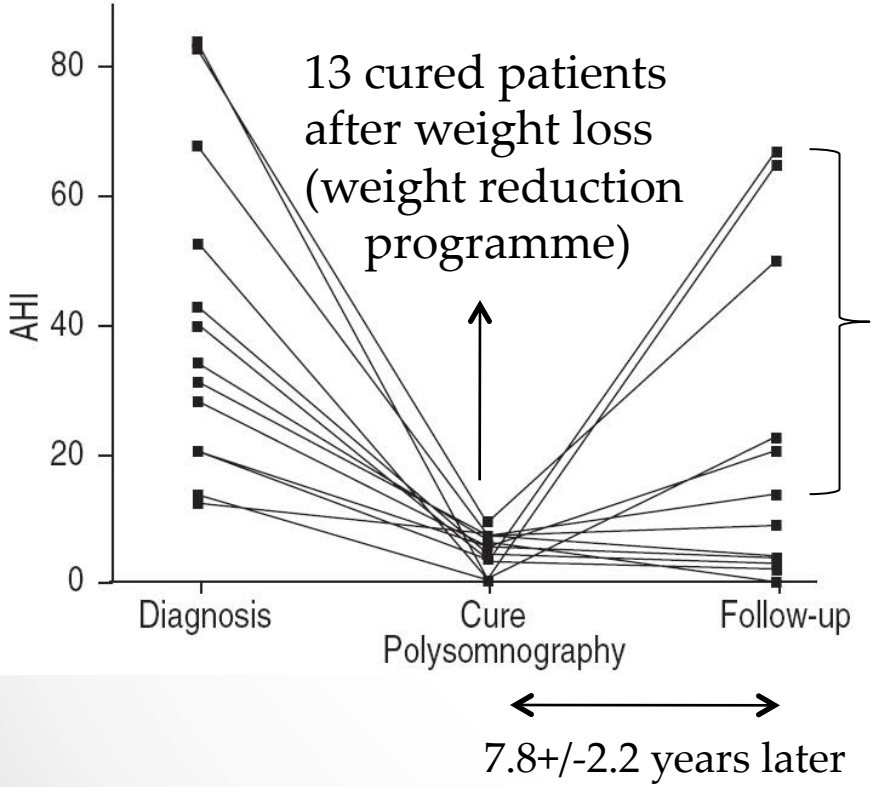
Buchner. AJRCCM 2007; 1274

IAH = 24 /h est une sévérité modérée **qui contribue au risque cardiovasculaire**

Récurrence du SAOS

les apnées peuvent réapparaitre aprés quelques années, même sans prise de poids

BMI 33 → 27 → 27



Sampol. ERJ 1998; 1156

BMI 45 → 33 → 35

14 morbidly obese patients after weight loss (bariatric surgery))

preoperative AI	40+/-29
4.5 mo postoperative	11+/-16
7.5 yrs postoperative	24+/-23

($p<0.05$)

Pillar. Chest 1994; 1702

Suivi de la chirurgie bariatrique

- Quand arréter la PPC?

- Comment maintenir la compliance?

Post-bariatric surgery

	number of pat	number CPAP compliant
AHI<5	1	
AHI 5-14.9	6	0
AHI 15-29.9	10	3
AHI ≥ 30	7	3

Lettieri. JCSM 2008; 333

How can we explain this reoccurrence of OSA without weight gain?

1- Obesity is **not a single causative** factor for OSA, as not all morbid obese subjects demonstrate OSA.
Obesity constitutes a risk factor only to certain individuals who are likely to have OSA.

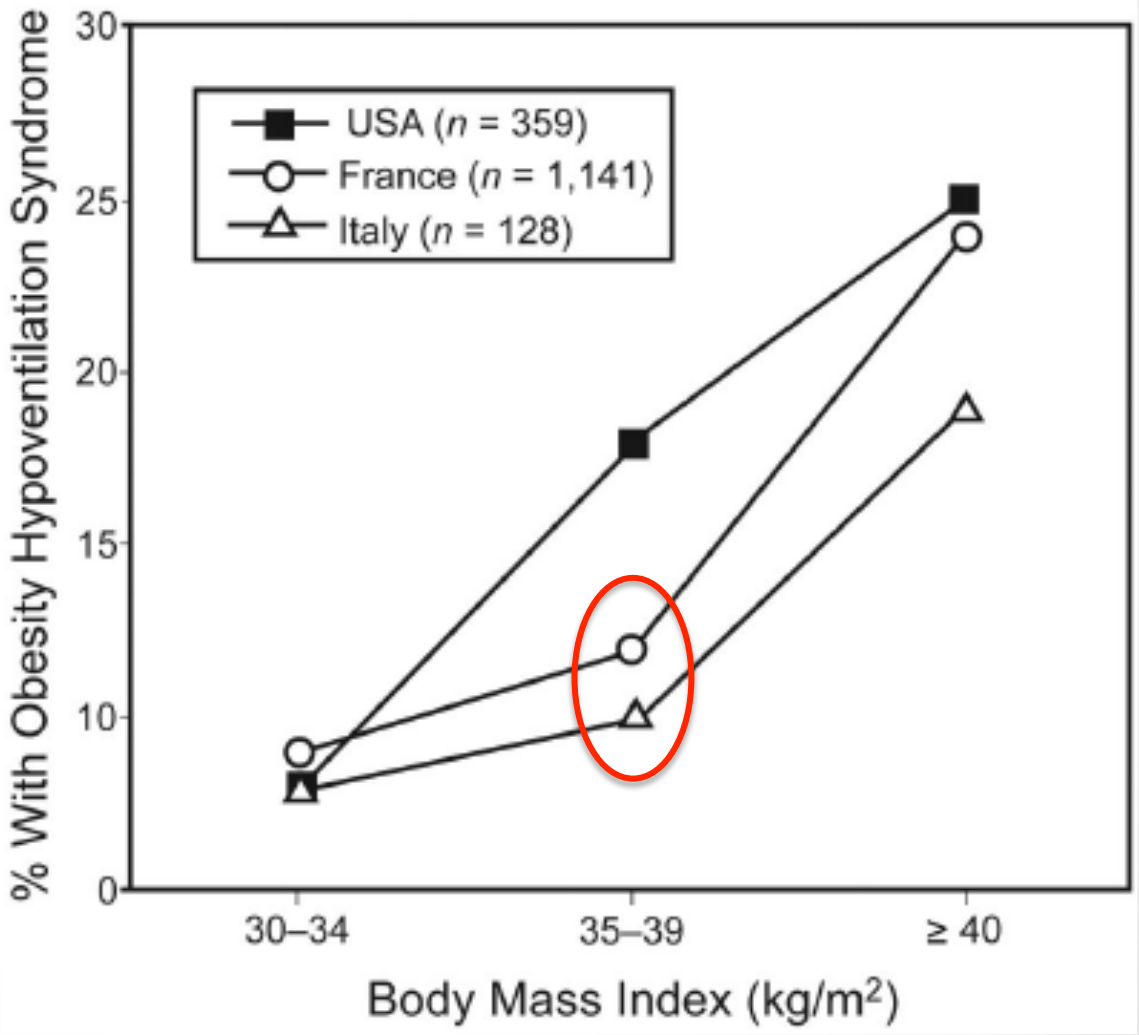
2- **Age is another risk factor**. In some individuals there might be over time a shift in the relative risk of aging versus obesity on the development of OSA.

Possibly, as a result of operation, the patients's weight was reduced to levels which did not constitute any risk of sleep apnea for that particular age. Eight years later, although there was no significant change in weight, the amount of extra weight that remained, combined with the increased age, might be sufficient to induce OSA again.

Pillar. Chest 1994; 1702

Chirurgie bariatrique et Syndrome obésité hypoventilation

Patients SAHOS:
prévalence du SOH
en fonction de l'IMC



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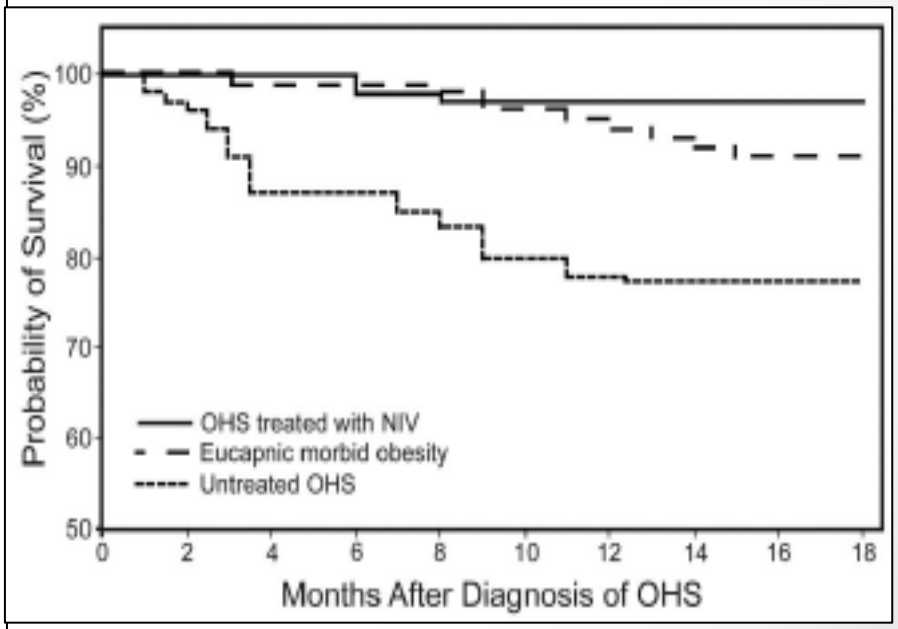
SOH

Critères diagnostiques:

Required Conditions	Description
Obesity	Body mass index ≥ 30 kg/m^2
Chronic hypoventilation	Awake daytime hypercapnia (P_{aCO_2} ≥ 45 mm Hg and P_{aO_2} < 70 mm Hg)
Sleep-disordered breathing	Obstructive sleep apnea (apnea-hypopnea index ≥ 5 events/h, with or without sleep hypoventilation) present in 90% of cases
	Non-obstructive sleep hypoventilation (apnea-hypopnea index < 5 events/h) in 10% of cases
Exclusion of other causes of hypercapnia	Severe obstructive airways disease
	Severe interstitial lung disease
	Severe chest-wall disorders (eg, kyphoscoliosis)
	Severe hypothyroidism
	Neuromuscular disease
	Congenital central hypoventilation syndrome

Pronostic:



Effets de la chirurgie bariatrique dans l'OHS

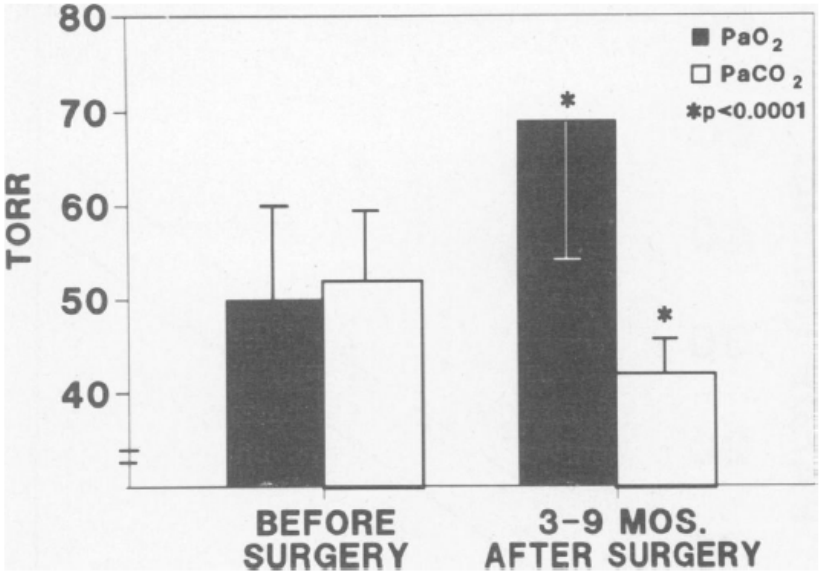


FIG. 4. Significantly improved PaO_2 and $PaCO_2$ in 18 patients 4–9 months after gastric surgery-induced loss of 42 ± 19% excess weight.

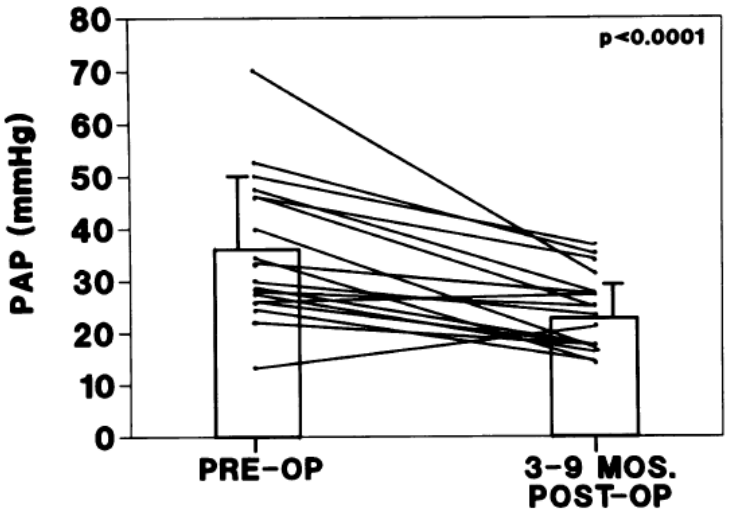


FIG. 5. Significantly improved mean pulmonary artery pressure (PAP) in 18 patients 4–9 months after gastric surgery-induced loss of 42 ± 19% excess weight.

Conclusion 1

- La chirurgie bariatrique est justifiée chez les patients obèses sévères.

L'impact sur les co-morbidités comme le diabète est important et la mortalité est réduite.

- Pourtant l'impact de la chirurgie bariatrique sur les TRS n'est pas optimum ni définitif.

Conclusion 2

Il faut maintenir un suivi aprés la chirurgie bariatrique

- L'IAH aprés chirurgie bariatrique ne diminue pas toujours suffisamment pour arréter sans risque la PPC en raison des comorbidités chez cette population encore souvent en surpoids.
- Si l'IAH est encore dans une catégorie sévère le clinicien doit **convaincre et stimuler les patients pour continuer la PPC.**
- Même le patient normalisé doit être **suivi**. Il reste vulnérable au risque de SAHOS même s'il ne reprend pas de poids