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UNIVERSITE JOSEPH FOURIER
FACULTE DE MEDECINE DE GRENOBLE

Année 2014

**Obésité et complications des chirurgies de réduction
mammaire et des abdominoplasties. Etude prospective à
propos de 200 cas.**

THESE
PRESENTEE POUR L'OBTENTION DU DOCTORAT EN MEDECINE
DIPLOME D'ETAT

Juliette COUDURIER

Née le 17 mai 1985 à Chambéry

THESE SOUTENUE PUBLIQUEMENT A LA FACULTE DE MEDECINE DE
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Le 21 octobre 2014

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I. LISTE DES ABREVIATIONS

BMI : Body Mass Index

BBR : Bilateral Reduction Mammoplasty

ASA : American Society of Anesthesiologists

WLS : Weight Loss Surgery

ICU : Intensive Care Unit

SOFCPRE : Société Française de Chirurgie Plastique, Reconstructive et
Esthétique

SFAR : Société Française d'Anesthésie et de Réanimation

WHO : World Health Organization

ROC : Receiver Operating Characteristic

OR : Odds Ratio

CI : Confidence Interval

SD : Standard Deviation

**II. Obésité et complications des chirurgies de réduction
mammaire et des abdominoplasties. Etude
prospective à propos de 200 cas.**

The effect of body mass index on postoperative complications after reduction mammoplasty and abdominoplasty: a prospective study about 200 cases.

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ABSTRACT

Background: The purpose of this prospective study was to evaluate the incidence of Body Mass Index (BMI) on postoperative complications of reduction mammoplasty (BBR) and abdominoplasty. The goal was to set a cut-off BMI and propose guidelines for clinical practice.

Methods: 200 patients were enrolled from January 2012 to March 2014. Patients were separated into two groups: Group 1 (BMI < 27 kg/cm²) and Group 2 (BMI ≥ 27 kg). Complications were categorized according to the Clavien-Dindo international classification into minor (Grade I, II) or major (Grade III, IV). A biostatistician from the Grenoble Clinical Investigation Center performed statistical analysis.

Results: 128 BBR and 72 abdominoplasties were performed on 193 females and 7 males. The mean BMI was 26.8 kg/cm². The overall complication rate was 24.5% with 23% of minor and 4.5% of major complications. 113 patients were classified in Group 1 and 87 in Group 2. There was no statistical difference between groups for the overall complication rate (respectively 22.1% versus 27.6%, $p = 0.373$). There was no difference regarding minor and major complications ($p = 0.311$ and $p = 0.952$). It was not possible to set a cut-off BMI.

Conclusions: BMI, in this study, was not a risk factor for surgical complications after body contouring procedure. Considering the benefits of this surgery, non-smoker patients with a BMI lower than 40 should undergo the procedure after a preanesthesia evaluation.

INTRODUCTION

Bodycontouring procedures such as reduction mammoplasty and abdominoplasty are frequently performed in plastic and reconstructive surgery units. In France, these procedures can be funded by the French Health Service (Sécurité sociale). Patients requiring these surgeries can have physical symptoms (neck or back pain), psychological discomfort (low self-esteem, difficulty finding clothes) or difficulty exercising [1-4]. It has been proven that these procedures provide a real functional and psychological benefit and improve quality of life [1-4]. However, these surgeries have a high complication rate (33-53%) and several risk factors have been demonstrated (e.g., smoking, male gender, resection weight...) [5-7].

Patients requiring these procedures are often overweight or obese. In order to improve surgical outcomes in body contouring surgery, it is usual to wait for weight loss before proceeding to surgery and to use a cut-off Body Mass Index (BMI) as an exclusion criterion. For example, in the UK, the National Health Service Modernising Agency and the British Association of Plastic Reconstructive and Aesthetic Surgeons provided national guidelines setting the cut-off BMI to less than 30kg/cm² [9-10]. In France, there is no common policy. There are a few papers studying the correlation between obesity and surgical risk in those surgeries but the level of evidence is low. Most of the studies are retrospective and use poor methodology (e.g., multiple risk factor analysis, concomitant procedures, no multivariate models)[11,12]. Finally, these study results are difficult to analyze and it is hard to assess the impact of obesity on surgical complications.

The principal aim of this study was to evaluate prospectively BMI as a risk factor for surgical complications in both abdominoplasty and bilateral reduction

mammoplasty (BBR). The second aim was to set a cut-off BMI and propose guidelines for clinical practice.

PATIENTS AND METHODS

This prospective single-center consecutive cohort study had included patients undergoing bilateral reduction mammoplasty or abdominoplasty in the plastic surgery department of the University Hospital of Grenoble, France. This study was approved by Medical Ethics Committee according to the World Medical Association Declaration of Helsinki and registered in the Institutional Review Boards under number 5891. Inclusion criteria were patients undergoing BBR or abdominoplasty in the Department from January 2012 to March 2014. Smokers were asked to stop smoking one month before and after surgery [13]. Preanesthesia evaluation, one month before surgery, controlled the non-smoking status, co-morbidities and the American Society of Anesthesiologists (ASA) physical status. Patients who refused to participate were excluded. Preoperative, operative and postoperative data (BMI, co-morbidities, smoking habits, weight loss surgery (WLS), surgical technique, resection weight, operating length, hospital stay, ASA physical status) were prospectively collected in a specific individual medical record. Current BMI was calculated by measuring the patient's current height and weight the day before the surgery. All complications and treatments needed were prospectively recorded in the same chart from the surgery date to postoperative month 3. Complications were divided into major and minor according to Clavien-Dindo international classification [8] (Annex 1). Major complications required revision surgery and/or intensive care unit (ICU) management (Grade III and IV) otherwise they were considered as minor complications (Grade I and II). Patients were followed postoperatively during one year as recommended by the French Plastic and Reconstructive Society (SOCPRE).

All surgical operations were made under general anaesthesia by a senior plastic surgeons. The reduction mammoplasty technique varied from superior pedicle technique to bipediced technique based on the surgeon's preference [14,15]. The abdominoplasty technique was the high superior tension abdominoplasty described by Lelouarn [16] associated with liposuction of the flanks or/and midline rectus plication when indicated. Suction drains were placed and removed when fluid collection was lower than 20ml/24h each. Drain removal would determine the day of discharge from the hospital. Antithrombotic prophylaxis was prescribed according to the recommendations of the French Anesthesia Society (SFAR)[17]. Breast and abdominal binders were used during 4 weeks postoperatively. The operative and peri-operative management was entirely standardized.

Sample size requirements were calculated during the planning stage of the research project. A BMI of 27 kg/cm² was chosen to separate population into two groups. It corresponded to the mean and median range of patients undergoing these surgeries from the past two years in the department. The data inputs were alpha=0.05 and power=0.80. 200 patients were required to demonstrate an absolute difference of 20% between the two groups (BMI < 27 kg/cm² and BMI ≥ 27 kg/cm²) assuming a mean complication rate of 40%. Secondary analysis was performed using the World Health Organization (WHO) obesity classification [18]. Patients were classified as the following: normal weight (BMI [18.5-25]), overweight (BMI [25-30]) and obesity (BMI ≥ 30).

Statistical analysis was performed using Stata IC 13.0 software (StataCorp, College Station, Texas, USA) under mac OS X by a biostatistician from the Clinical Investigation Center at the Grenoble University Hospital. Qualitative parameters were expressed as number and percentage and compared with the Chi-square or Fisher's

exact (for small samples). Quantitative parameters were expressed as means and standard deviation (SD) and compared with the t-test. To set a BMI cut-off, the receiver-operating characteristic (ROC) curve was used. Kaplan-Meier life-table analysis was used to compare the time at which an event occurs. Survival curves were compared using the log-rank test. Variables with a $p \leq 0.20$ in univariate analysis were used as independent variables in a multivariate logistic regression (to identify independent risk factor for complications, which were expressed as odds ratio (OR) with the associated 95% confidence interval (CI)). All statistical tests were two-sided. A P -value of less than 0.05 was considered statistically significant.

RESULTS

200 patients were enrolled from February 2012 to March 2014. 128 bilateral reduction mammoplasties and 72 abdominoplasties were performed on 193 females and 7 males with a mean age of 38.7 years \pm 12.8. The mean BMI at the time of surgery was 26.8 kg/cm² \pm 3.6. 27 patients (13.5%) were active smokers before the surgery. Only 27 patients (13.5%) had co-morbidities (hypertension, diabetes, dyslipidemia and/or thromboembolic disease). 31 patients (15.6%) had undergone WLS. Among abdominoplasty patients, 38.9% had liposuction of the flanks and 45.8% needed midline rectus plication. The mean length of the procedure was 130 min. The mean resection weight was 1 388 g. The mean hospital stay was 2.9 days \pm 1.2. No significant differences were reported regarding sex, co-morbidities and smoking status between the two categories. Patient demographics and clinical characteristics are resumed in Table I.

Table I. Patients' demographics and clinical characteristics

	BMI < 27 (n=113)		BMI ≥ 27 (n=87)		Total (n=200)		<i>p</i>	
	No.	%	No.	%	No.	%		
Sexe							0,459	
	Female	110	97.3	83	95.4	193	96.5	
	Male	3	2.7	4	4.6	7	3.5	
Age (years ± SD)		36.5 ± 13.6		41.7 ± 1.2		38.7 ± 12.8		0.003
Active smoking		14	12.4	13	14.9	27	13.5	0.600
BMI (kg/cm ² ± SD)								
	Current BMI	24.3 ± 1.8		30.1 ± 2.5		26.8 ± 3.6		<0.001
	Max BMI	28.0 ± 5.6		37.9 ± 9.9		32.3 ± 9.2		<0.001
Comorbidities								
	Any	11	9.7	16	18.4	27	13.5	0.076
	Hypertension	4	3.5	11	12.6	15	7.5	0.015
	Diabetes	2	1.8	1	1.1	3	1.5	0.720
	Dyslipidemia	5	4.4	4	4.6	9	4.5	0.953
	Thromboembolic disease	2	1.8	4	4.6	6	3.0	0.245
ASA								<0,001
	1	83	73.4	38	43.7	121	60.5	
	2	28	24.8	45	51.7	73	36.5	
	3	2	1.8	4	4.6	6	3.0	
WLS		8	7.1	23	26.7	31	15.6	<0.001
Type of surgery								0.022
	BBR	80	70.8	48	55.2	128	64.0	
	Abdominoplasty	33	29.2	39	44.8	72	36.0	
	Lipoaspiration (n=72)	7	9.7	21	29.2	28	38.9	0.005
	Diastasis (n=72)	15	20.8	18	25.0	33	45.8	0.953
Resection weight (g ± SD)		1031 ± 429		1850 ± 1154		1388 ± 920		<0.001
Operating length (min ± SD)		120.1 ± 28.6		143.0 ± 46.4		130.1 ± 39.0		<0.001
Hopital stay (days ± SD)		2.6 ± 1.0		3.3 ± 1.3		2.9 ± 1.2		<0.001
Healing time (days ± SD)		22.4 ± 22.5		22.7 ± 15.0		22.5 ± 19.6		0.890

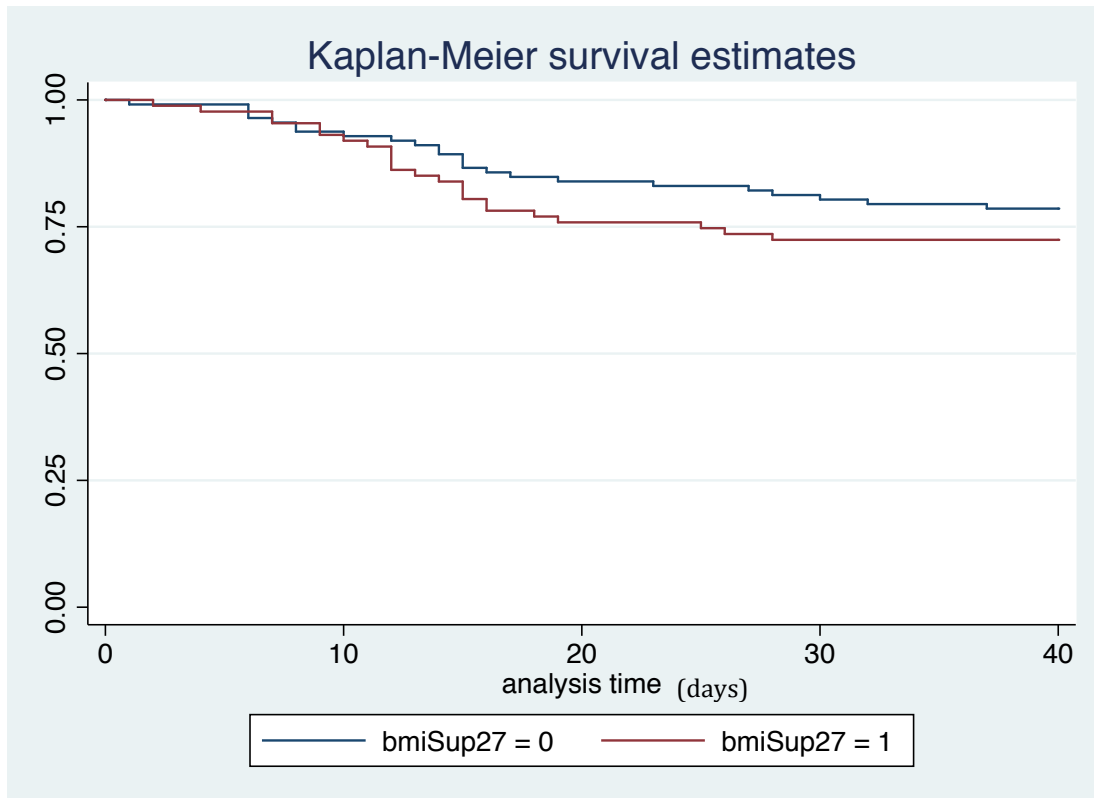
The overall complication rate was 24.5% of cases (49 patients). Major complications (Grade III and IV) occurred in 4.5% of the cases (9 patients). Minor complications were seen in 23% of the cases (46 patients). 6 patients had major and minor complications. The most common minor complication was wound dehiscence with 35 events (17.5%). The incidence of multiple complications was 7.5% (15 patients). Details and treatment of complications are listed in Table II. According to Clavien-Dindo classification, one patient was classified in Grade IV, 8 patients in Grade III, 5 patients in Grade II and 35 patients in Grade I.

Primary endpoint analysis: 113 patients were classified in Group 1 (BMI < 27 kg/cm²) and 87 patients in Group 2 (BMI ≥ 27 kg/cm²). The overall complication rate in Group 1 was 22.1% versus 27.6% in Group 2; the difference was not significant ($p = 0.373$). There was no difference between minor and major complications (Table II). Kaplan-Meier survival curves for the time of the first event occurrence were similar for both groups ($p = 0.292$) (Figure 1).

Table II. Complications and treatments

		BMI <27 (n=113)		BMI > 27 (n=87)		Total (n=200)		<i>p</i>
		No.	%	No.	%	No.	%	
Complications								
	Yes	25	22.1	24	27.6	49	24.5	0.373
	No	88	77.9	63	72.4	151	75.5	
	Major	5	4.4	4	4.6	9	4.5	0.953
	Minor	23	20.3	23	26.4	46	23	0.311
	Multiple	8	7.08	7	8.05	15	7.5	0.797
Date of occurrence (days ± SD)		15.2±9.7		13.7±6.5		14.4 ± 8.2		0.546
All events		37	-	36	-	73	-	
	Hematoma	6	5.3	3	3.4	9	4.5	0.298
	Seroma	0	0	1	1.1	1	0.5	
	Wound dehiscence	17	15.0	18	20.7	35	17.5	
	Areolar necrosis	2	1.8	3	3.4	5	2.5	
	Skin necrosis	4	3.5	2	2.3	6	3.0	
	Fat necrosis	1	0.9	1	0.9	2	1.0	
	Infection	5	4.4	5	5.7	10	5.0	
	Haemorrhage	2	1.8	3	3.4	5	2.5	
	Thrombophlebitis	0	0	0	0	0	0	
	Pulmonary embolism	0	0	0	0	0	0	
Treatments								
	Local care	22	19.5	24	27.6	46	23.0	0.176
	Antibiotics	5	4.4	7	8.0	12	6.6	
	Puncture aspiration	3	2.6	0	0	3	1.5	
	Blood transfusion	1	0.9	3	3.4	4	2.0	
	Reoperations	5	4.4	4	4.6	9	4.5	
	ICU-management	0	0	1	1.1	1	0.5	

Figure 1. Kaplan-Meier survival curves ($p = 0.292$)



Secondary endpoints analysis: a ROC curve is presented in Figure 2 with an area under the curve of 56.1%. Below 80%, it is inappropriate to set a cut-off BMI. A Box plot resumed BMI distribution according to complications (Figure 3). Boxes are similar in both groups. Several analysis were made using the WHO classification: Group 1: BMI [18.5-25[($n = 64$), Group 2: BMI [25-30[($n = 99$) and Group 3: BMI ≥ 30 ($n = 37$). There was no statistical difference in the overall complication rate (respectively 21.9%, 23.2% and 32.4%, $p = 0.453$). No significant correlation was demonstrated in the surgical procedure (BBR, $p = 0.560$ and abdominoplasty, $p = 0.548$) or the type of complication (major, $p = 0.810$ and minor, $p = 0.310$). Univariate analysis of peri-operative risk factors compared patients who experienced complications with those who did not. Results showed male gender as the only significant factor of complications ($p = 0.003$) (Table III). It was impossible to include male gender in the multivariate model because the population was insufficient. A multivariate regression analysis was performed using variables with a $p \leq 0.20$ in univariate analysis (resection weight and operating length). Resection weight appeared significant with an Odds Ratio (OR) of 1.2 [1.17;1.42] for every 500gr removed ($p = 0.032$).

Figure 2. ROC analysis

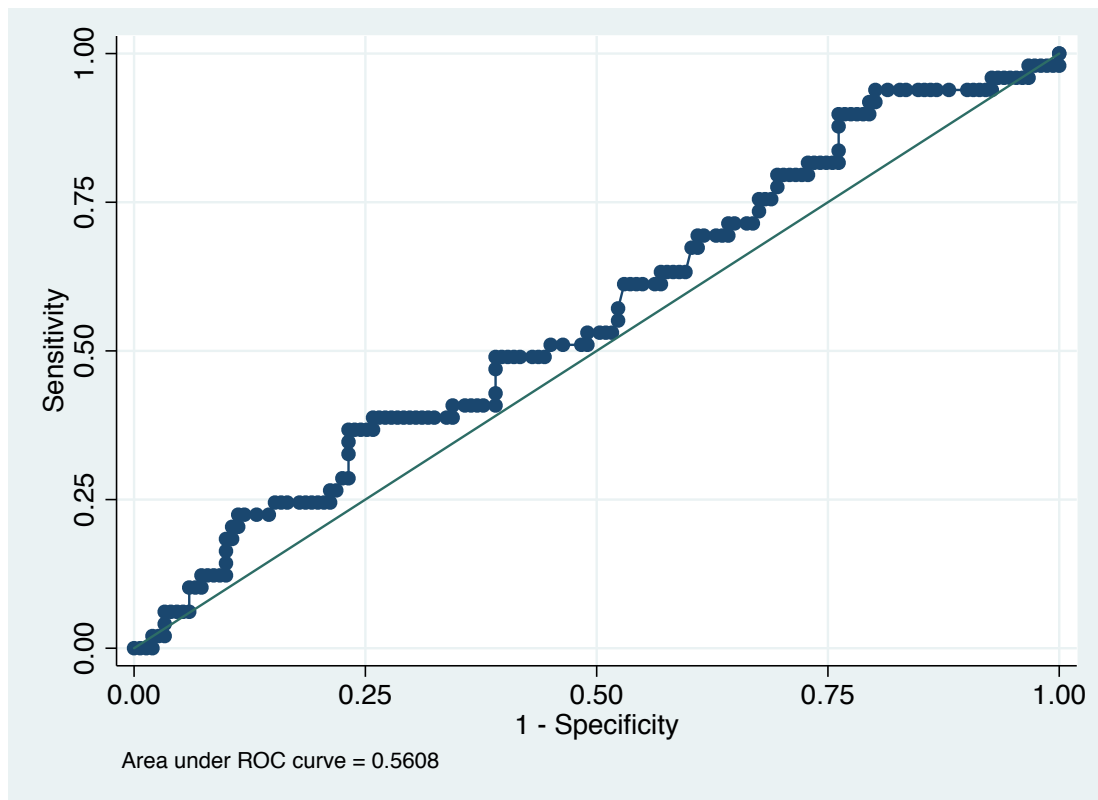


Figure 3. BMI Box plot by complications

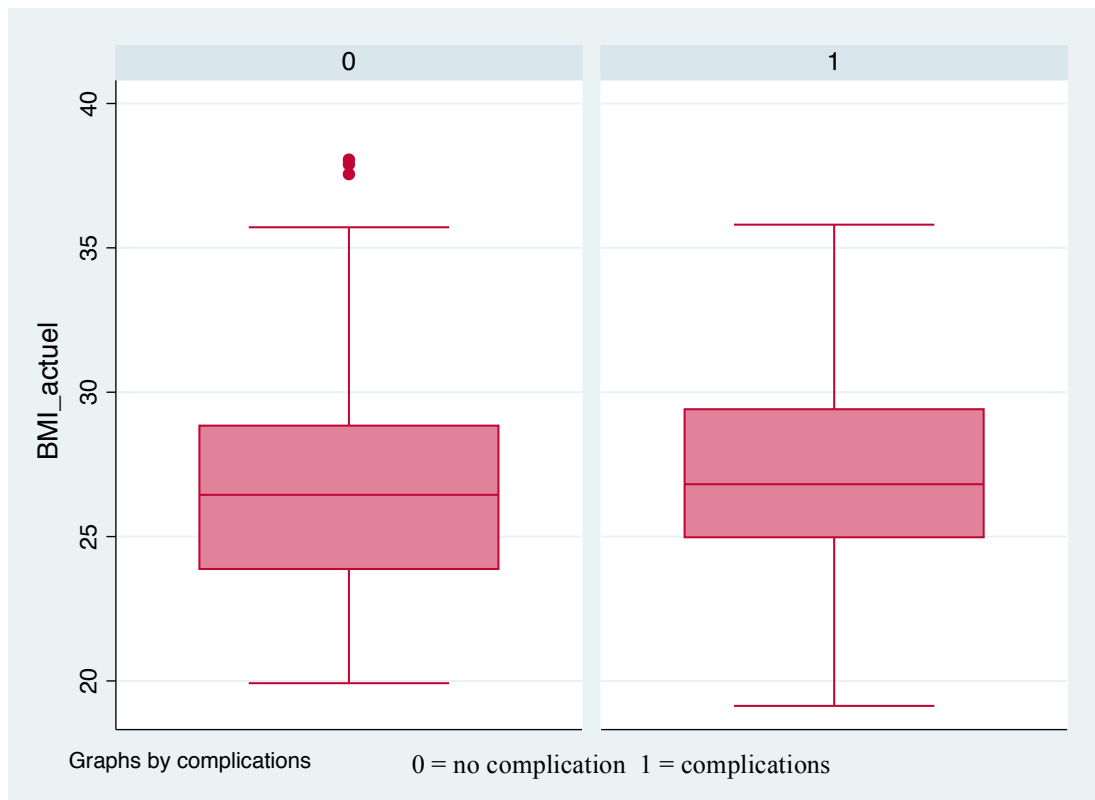


Table III. Univariate analysis

	Complications (n=49)		No complication (n=151)		<i>p</i>	
	No.	%	No.	%		
Sex					0.003	
	Female	44	89.8	149	98.7	
Age (years ± SD)		38.8 ± 13.0		38.7 ± 12.7	0.967	
Smoking		6	12.2	21	13.9	0.767
BMI ≥ 27		24	49.0	63	42.1	0.373
Max BMI (kg/cm ² ± SD)		33.2 ± 9.2		32.0 ± 9.2	0.426	
Delta BMI (kg/cm ² ± SD)		5.8 ± 6.9		5.3 ± 7.1	0.661	
Delta weight (kg± SD)		16.9 ± 20.8		14.1 ± 18.9	0.380	
Comorbidities		6	12.2	21	13.9	0.767
WLS		8	16.3	23	15.3	0.868
Resection weight (g ± SD)		1650 ± 1227		1302 ± 781	0.067	
Operating length (min ± SD)		139 ± 52		127 ± 34	0.157	
ASA					0.698 (Fischer)	
	1	28	57.1	93	61.6	
	2	19	38.8	54	35.8	
	3	2	4.1	4	2.6	
Surgeons					0.270 (Fischer)	
	1	10	20.4	28	18.5	
	2	9	18.4	32	21.2	
	3	11	22.5	49	32.5	
	4	18	36.7	42	27.8	
	5	1	2.0	0	0	

DISCUSSION

The principal goal of this prospective study was to assess the impact of BMI on surgical complications after BBR and abdominoplasty. Among our 200 patients, increased BMI wasn't associated with a higher surgical complication rate. It was impossible to provide a BMI cut-off. These findings corroborated other studies that didn't correlate BMI and complications [5,9,21,23,24] (Annex 2).

Patients undergoing body contouring procedures have a real physical and psychological symptoms improvement despite the high complication rate in those surgeries [1,2,3,4,5,12]. It is important to have preoperative risk stratification and careful patient selection to minimize the risk and maximize the outcomes. Several risk factors have been already identified but some factors remain uncertain. Most of the studies are retrospective and didn't use international classification of surgical complications [6,7,19].

Patient selection was very tight thanks to our anaesthetic department policy. From 2011, after reviewing SFAR recommendations and literature, a protocol was established to designate patients allowed to undergo these surgeries. As a result, active smoking was not tolerated; patients with BMI higher than 40 and ASA physical status of 3 and 4 were excluded. Regarding patients with a BMI between 30 and 40 kg/cm², a weight loss was required to reduce co-morbidities. This protocol was based on medical and anaesthetic risk factors but surgical point of view was not considered.

The population in this study was particularly healthy with a low rate of co-morbidities (13.5 %) and an ASA physical status under or equals 2 for 97% of patients. Smokers were highly limited (13.5%) and they stop smoking one month before and after surgery. BMI was evaluated as an independent risk factor.

An overall complication rate of 24.5% with few major complications (4.5%) is the lower limit seen in the literature [19-20]. The attention paid to grade complication was unique to our study. Every event was collected prospectively and classified into minor or major using the Clavien-Dindo international classification of surgical complications. In a retrospective study, Momeni et al., with a high rate of major complications (11.5%), demonstrated a significant increase among obese patients. 34.5% of patients were active smokers and 15.1% had hypertension [11]. Classification into major complication could easily have been overestimated. Neaman et al., in a 1008 patients review, showed an increase of major complications in patients suffering from morbid obesity ($\text{BMI} \geq 40 \text{ kg/cm}^2$) but no increased risk of any complication with patients having a BMI between 30 and 39.9 kg/cm^2 [20].

Minor complications occurred in 23%, a small rate relative to literature [21-22]. Co-morbidities had been described as a risk factor of minor wound complications in various studies [19,20,23]. Increasing BMI is a major risk factor for cardiovascular diseases (hypertension, heart disease, stroke...) metabolic diseases (diabetes, dyslipidemia) and respiratory disorders (Obstructive sleep apnea, chronic hypoxemia). A 5 to 10% weight loss can improve co-morbidities like diabetes, hypertension and dyslipidemia [25]. It revealed the strength of the correlation between obesity and co-morbidity. The low rate of patient having co-morbidity in our study can explain why BMI, as an independent factor, was not a risk of complication.

As other studies, the univariate model showed that male gender had a strong correlation with complication rate [11,20,21].

In the multivariate model, resection weight seemed to be the only significant factor of complications with a risk increased by 1.2 every 500 g removed, corroborating several studies [7,19,20]. Larger mass resection implies greater

deformities and involves extensive incisions, longer operative time and therefore is contributing to complications.

Multiple elements can explain our results. It was a prospective study using an international classification of surgical complication. It allowed consistent definitions of minor and major complications and proper analysis. Patient selection was very stringent and enabled BMI evaluation as the only factor not adjustable (vs. male gender).

A BMI of 27 kg/cm² was chosen to separate patients into two categories. It would have been wiser to choose 30 as the cut-off according to the WHO classification of obesity. In France, however, population consulting for body contouring procedures is often overweight and less obese. It should be therefore difficult to have homogeneous groups separating obese and non-obese patients in a prospective study. The power of the study would have been affected.

Complication rate seemed to linearly increase with BMI. No correlation was demonstrated but, as stated above, a larger sample size could have increased the statistical power. Even if this study didn't show a difference while it existed, this difference between obese and non-obese patients would have been minimal and didn't challenge the requirement and benefits of the surgery. A proposal would be to have a national plastic surgery online database to collect prospectively information about patient characteristics, surgeries, complications and outcomes. It already exists in the US as the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database and has been used for clinical study [23,26].

An overall complication rate of 25% with a major complication rate around 5% is inherent to these surgeries.

Reaching an arbitrary BMI cut-off is not the best way to select patients. Guidelines should be proposed to optimize patient selection and outcomes. In order to minimize medical and anaesthetic risk, patients with morbid obesity should be contraindicated. Active smokers should stop one month before and after the surgery. An obese patient with co-morbidities should lost 5 to 10 % of weight before the surgery. Patient with an ASA 3 or 4 should be excluded at the preoperative anaesthetic evaluation.

CONCLUSION

BMI, in this study, was not a predictor of complications in body contouring procedures. Patient selection has to be done carefully in order to minimize complications and maximize outcomes. We propose guidelines for clinical practice: active smokers and patients with morbid obesity should be contraindicated. Indication for obese patients should be discussed after the preoperative anaesthetic assessment taking into account the co-morbidities, the ASA physical status and the heaviness of surgery.

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III. ANNEXES

APPENDIX A. Classification of Surgical Complications

Grades	Definition
Grade I:	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic and radiological interventions. Acceptable therapeutic regimens are: drugs as antiemetics, antipyretics, analgetics, diuretics and electrolytes and physiotherapy. This grade also includes wound infections opened at the bedside.
Grade II:	Requiring pharmacological treatment with drugs other than such allowed for grade I complications. Blood transfusions and total parenteral nutrition are also included.
Grade III:	Requiring surgical, endoscopic or radiological intervention
Grade III-a:	intervention not under general anesthesia
Grade III-b:	intervention under general anesthesia
Grade IV:	Life-threatening complication (including CNS complications) [‡] requiring IC/ICU-management
Grade IV-a:	single organ dysfunction (including dialysis)
Grade IV-b:	multi organ dysfunction
Grade V:	Death of a patient
Suffix 'd':	If the patient suffers from a complication at the time of discharge (see examples in Appendix B, http://Links.Lww-.com/SLA/A3), the suffix "d" (for 'disability') is added to the respective grade of complication. This label indicates the need for a follow-up to fully evaluate the complication.

[‡] brain hemorrhage, ischemic stroke, subarachnoidal bleeding, but excluding transient ischemic attacks (TIA); IC: Intermediate care; ICU: Intensive care unit
www.surgicalcomplication.info

Type of surgery	Author [Reference]	Journal	Year of publication	Type of study	Number of patients	Duration (years)	Total complications		Major complications		Minor complications		Other significant Risk factors
							%	BMI significant	%	BMI significant	%	BMI significant	
BBR	Roehl et al. [9]	Plast Reconstr Surg.	2008	Retrospective (R)	179	96-06	50	No	-	-	-	-	No
	Setala et al. [24]	J Plast Reconstr Aesthet Surg	2009	R	273	98-03	52	No	-	-	-	-	No
	Henry et al. [19]	Plast Reconstr Surg	2009	R	485	98-08	52	No	10,7	No	27,8	Yes	HTA, Resection weight on minor
	Shah et al. [7]	J Plast Reconstr Aesthet Surg	2010	R	306	99-04	53,9	Yes but not in multivariate model	14,1	No	-	-	Resection Weight, Smoking for infection in obese
Abdominoplasty	Neaman et al. [20]	Ann Plast Surg	2007	R	206	95-05	37,4	Yes	16	Yes	26,7	No	HTA, Diabetes, Resection weight, Smokers for minor, Trend in male
	Greco et al. [11]	Ann Plast Surg	2008	R	222	01-06	-	-	-	-	34	Yes on wound complications, not in multivariate model	WLS in univariate model, ASA, % of weight loss
	Momeni et al. [22]	J Plast Reconstr Aesthet Surg	2009	R	139	94-04	40,3	No	11,5	Yes	28,8	No	Trend in male
	Zueller et al. [5]	Ann Plast Surg	2010	R	122	03-08	51	No	10,7	No	41	No	No
	Neaman et al. [21]	Plast Reconstr Surg	2013	R	1008	98-08	32,6	No	18,1	Yes with BMI>40	3,9	No	Men, liposuction for seroma
Body contouring procedures	Coon et al. [12]	Ann Surg	2009	Prospective (P)	449 (171)	03-07	41,8 (25,4)	No (Yes with only one procedure)	-	-	-	-	Multiple procedures, operating length, Max BMI, Delta BMI
	Fisher et al. [23]	Plast Reconstr Surg	2013	R	1797	05-10	-	-	6,8	No (functional status)	6,3	No (Multiples comorbidities, bleeding disorder, albumine)	BMI on medical complications

Obésité et complications des chirurgies de réduction mammaire et des abdominoplasties. Etude prospective à propos de 200 cas.

Thèse soutenue par Juliette COUDURIER

CONCLUSION

Introduction : L'objectif de cette étude a été d'évaluer de manière prospective l'incidence de l'Indice de Masse Corporelle (IMC) sur les complications de la chirurgie de réduction mammaire et de l'abdominoplastie. Le but était de déterminer un IMC cible et de proposer des recommandations pour la pratique clinique.

Méthodes : 200 patients ont été inclus entre Janvier 2012 et Mars 2014. Ils ont été répartis en deux groupes en fonction de leur IMC : Groupe 1 ($IMC < 27 \text{ kg/cm}^2$) et Groupe 2 ($IMC \geq 27 \text{ kg}$). Les complications ont été définies selon la classification internationale de Clavien-Dindo et divisées en mineures (Grade I et II) et majeures (Grade III et IV). Les analyses statistiques ont été effectuées par un biostatisticien du Centre d'Investigation Clinique de Grenoble.

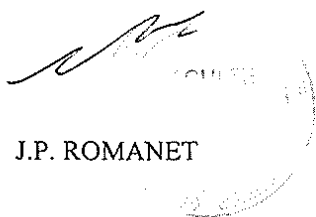
Résultats : Les 128 réductions mammaires et les 72 abdominoplasties ont concernées 193 femmes et 7 hommes. Le Groupe 1 a été composé de 113 patients et le Groupe 2 de 87. L'IMC moyen était de $26,8 \text{ kg/cm}^2$. Le taux de complications total était de 24,5 % avec 23 % de complications mineures et 4,5 % de majeures. Pour le taux de complication total, il n'y avait aucune différence statistique entre les deux groupes (22,1 % et 27,6 %, respectivement, $p = 3,373$). La distinction entre complications mineures et majeures n'a pas fait apparaître de différence entre les groupes ($p = 0,311$ et $p = 0,952$). Il n'a pas été possible de déterminer un IMC cible.

Conclusions : L'IMC, dans cette étude, n'a pas été un facteur de risque de complications de la chirurgie de réduction mammaire et de l'abdominoplastie. Etant donné les bénéfices apportés par ces chirurgies, les patients non fumeur ayant un IMC inférieur à 40 devraient pouvoir être opérés après une évaluation par les anesthésistes.

VU ET PERMIS D'IMPRIMER

Grenoble, le 24/09/2014

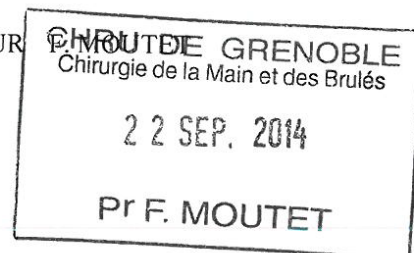
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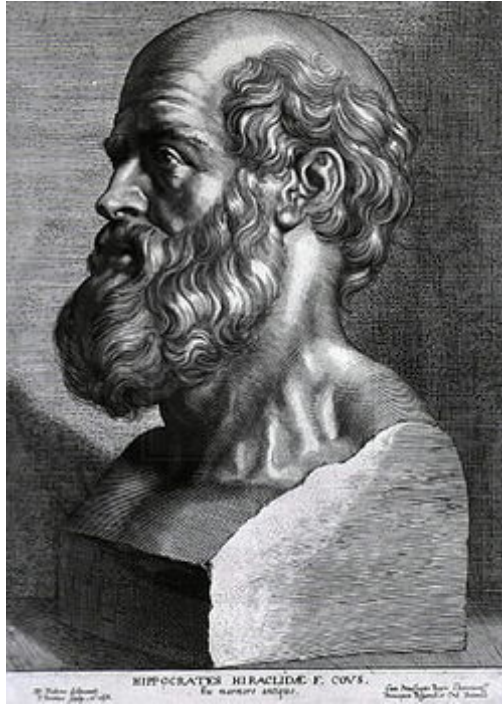

J.P. ROMANET

LE PRESIDENT DE LA THESE

PROFESSEUR







SERMENT D'HIPPOCRATE

En présence des Maîtres de cette Faculté, de mes chers condisciples et devant l'effigie d'HIPPOCRATE,

Je promets et je jure d'être fidèle aux lois de l'honneur et de la probité dans l'exercice de la Médecine.

Je donnerai mes soins gratuitement à l'indigent et n'exigerai jamais un salaire au dessus de mon travail. Je ne participerai à aucun partage clandestin d'honoraires. Admis dans l'intimité des maisons, mes yeux n'y verront pas ce qui s'y passe ; ma langue taira les secrets qui me seront confiés et mon état ne servira pas à corrompre les mœurs, ni à favoriser le crime.

Je ne permettrai pas que des considérations de religion, de nation, de race, de parti ou de classe sociale viennent s'interposer entre mon devoir et mon patient.

Je garderai le respect absolu de la vie humaine.

Même sous la menace, je n'admettrai pas de faire usage de mes connaissances médicales contre les lois de l'humanité.

Respectueux et reconnaissant envers mes Maîtres, je rendrai à leurs enfants l'instruction que j'ai reçue de leurs pères.

Que les hommes m'accordent leur estime si je suis fidèle à mes promesses.

Que je sois couvert d'opprobre et méprisé de mes confrères si j'y manque.