

# Does increasing the arterial blood pressure at the end of a laparoscopic gastric bypass relates to the number of postoperative haemorrhages?

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## Introduction

From 2004 till 2008 <sup>(1)</sup> a large number of gastric bypass patients have had postoperative haemorrhages (92 haemorrhages on 2903 pt or 3,2%) requiring frequent surgical revision (29 revisions or 0,9%).

In 2009 we instructed to increase the systolic arterial blood pressure (SAP) to 140 mmHg in every patient and reduced dramatically the number of haemorrhages (3.2% -> 1%) and surgical revisions (0.9% -> 0,1%) in 2010. Other surgical mesures have also been taken over the years (staplers, surgical protocols,...)

The following years some postoperative haemorrhages remained.

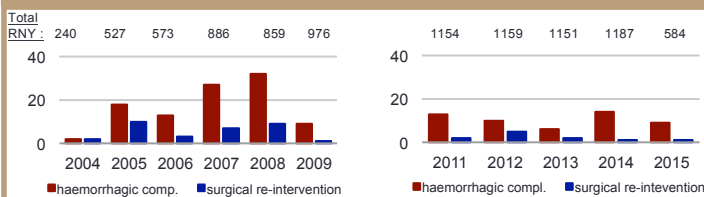
## Questions

Did these patients with haemorrhage have an insufficient increase regarding intraoperative blood pressure, did we treat their postoperative hypertension sufficiently, or was it related to other factors ?

## Methods

- Retrospective study of all gastric bypass operations in AZ Sint Jan.
- 5237 consecutive patients are included between 2011 until mid 2015
- The highest Systolic Arterial Pressure (SAP) reached before the end of the procedure and the highest SAP reached in the PACU is recorded. The ethical committee validated the retrospective analysis.
- A multivariate linear regression analysis is used to find the bleeding-related factors; or insufficient SAP-increase or higher SAP-value in the PACU.

## Total haemorrhagic complications and surgical revisions



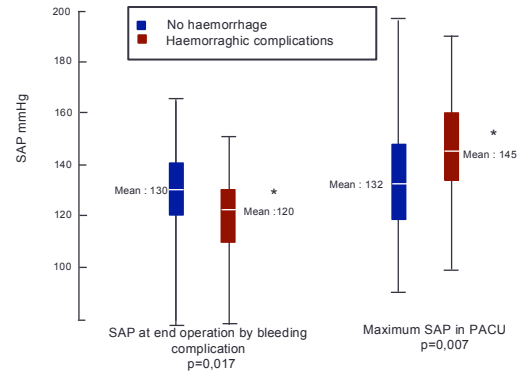
year	Nb	Total bleeding	% bleeding	Intra luminal	Clipping	Surg rev	Extra luminal	Surg rev.	Transfusion
2011	1154	13	1%	10	4	0	3	2	12
2012	1159	10	0,86%	6	3	2	4	1	9
2013	1151	6	0,52%	4	2	1	2	1	5
2014	1187	14	1,18%	6	5	1	5	0	5
2015	584	9	1,54%	8	6	0	1	1	2
<b>Total</b>	<b>5232</b>	<b>52</b>	<b>0,99%</b>			<b>4</b>		<b>7</b>	<b>33</b>

## Demographic differences between patients with and without haemorrhagic complication

Demographic differences			Logistic regression analysis		
	Non bleeder : 5182 patients	Bleeder 57 patients	Variable	Coefficient	p-value
Age	41,563 ± 0,34	46,845 ± 2,8	Age (years)	0,033	0,008
BMI	40,987 ± 0,154	40,765 ± 1,751	BMI (kg/m <sup>2</sup> )	- 0,001	0,953
Diabetes	673 (12,99%)	7 (12,8%)	Diabetes (yes =1)	- 0,388	0,368
Hypertension	1595 (30,78%)	18 (31,58%)	Hypertension (yes =1)	- 0,496	0,220
OSAS	2336 (45,08%)	29 (50,88%)	OSAS (yes=1-)	0,196	0,481
Gender (male)	1436 (27,71%)	28 (49,12%)	Gender (male=1)	1,018	<0,001 *
Xarelto-Asaflow	154 (2,9%)	4 (7%)	Xarelto - Asaflow (yes=1)	- 0,216	0,770

## Maximum blood pressure at end-operation and PACU in patients with or without haemorrhagic complications

Only 30% of the patients reached 140 mmHg or more and 20 % did not reach 120 mmHg!



In a linear regression analysis

## Profile of patients with a higher SAP in the PACU

### Demographic differences

	Postop normotension ≤130mmHg	Postop hypertension > 130mmHg
Age (years)	41,7 ± 0,325	42,81 ± 1,441
Total morphine equivalent post op (mg)	6,218 ± 0,349	17,868 ± 1,752
BMI (kg/m <sup>2</sup> )	41,5 ± 4,629	40,478 ± 1,795
Sufenta (mcg)	6,637 ± 0,425	15,583 ± 1,507
Diabetes (yes =1)	641 (11,36%)	43 (13,60%)
Hypertension (yes=1)	1514 (26,84%)	106 (33,54%)
OSAS (yes =1)	2103 (37,29%)	163 (51,58%)
Gender (male=1)	1511 (26,79%)	107 (33,86%)
<b>Total :</b>	<b>5640 patients</b>	<b>316 patients</b>

### Logistic regression analysis

Variable	Coefficient	P-Value
Age (years)	- 0,005	0,949
Sufenta per op (mcg)	0,609	<0,001 *
Total morphine equivalent post op (mg)	0,254	0,001 *
Hypertension (yes=1)	4,899	0,011 *
Gender (male=1)	4,292	0,019

## Conclusion

The aim to increase the SAP to 140 mmHg at the end of a laparoscopic gastric bypass is not achieved for all patient. More haemorrhages happen persistent low intra operative blood pressure and high postoperative blood pressure. Opioids use intra and post operative reduces optimal SAP, so it increases haemorrhagic complications.

1. Standardization of the Fully Stapled Laparoscopic Roux-en-Y Gastric Bypass for Obesity Reduces Early Immediate Postoperative Morbidity and Mortality: A Single Center Study on 2066 Patients. B Dillemans et al 2009 Obes Surg.

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