

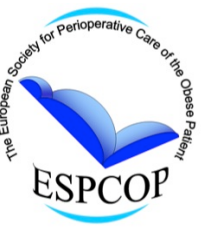
# Opioid free (OFA) versus opioid (OA) and low opioid anesthesia (LOA) for the laparoscopic gastric bypass surgery. Immediate post operative morbidity and mortality in a single center study on 5061 consecutive patients from March 2011 till June 2015



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## Background

Opioid free general anesthesia is possible, but does it change outcome? A prospective database, kept in agreement with the hospital ethical committee of all the patients undergoing gastric bypass surgery since May 2004, contains more than 10 000 consecutive cases.

All major and minor complications were recorded and classified in three groups: first surgical problems like obstruction or leak excluding gastro intestinal bleeding, second gastro intestinal bleeding problems, extra luminal and intraluminal, requiring blood transfusion, gastroscopic or surgical intervention and thirdly all other non surgical complications including those related to anesthesia like wound infection, pneumonia, respiratory and pulmonary problems, cardiac and hemodynamic difficulties. The minor complications like PONV, pain and recovery quality were not systematically recorded in every patient and therefore not used for analysis.

OFA started in March 2011 and all consecutive cases (5061) from March 1st 2011 till June 31st 2015 are analyzed.

## Methods

In 2011 total opioid free anesthesia was given by using Clonidine and from 2012 by using dexmedetomidine in a multimodal approach. Around half of the patients were selected for opioid free anesthesia (OFA: 2337), based on the attending anesthesiologist from March 2011. A small group got a low opioid anesthesia (LOA: 264) by adding one additive combined with maximum 10 ug Sufentanyl mostly during a transition period. The remaining patients got an opioid anesthesia. (OA: 2451) using Sufentanyl. (missing info: 9) All major complications up to one month were recorded.

The OFA protocol consisted first of 2-4 ug/kg Clonidine later 0,5-1,0 ug/kg Dexmedetomidine, 1,5 mg/kg Lidocaine, 40 mg/kg Magnesium sulphate, Ketamine less than 50 mg, A procaine 0,1% infusion with 5 mg/kg/h Mg, 0,2 ug/kg/h Clonidine or Dexmedetomidine was continued postoperative for the first 10 hours. The OA protocol used Sufentanyl 25-75 ug. The LOA group got maximum 10 ug Sufentanyl at induction and maximum 10 mg Morphine at extubation in combination with one bolus dose of 0,5-1,0 ug/kg Dexmedetomidine or 150 ug Clonidine.

Induction with Propofol and maintained with inhalation and moderate to deep NMB. Paracetamol, NSAIDS and opioids, if needed were given as analgetics in all patients.

### Today OFA protocol for lap RNY:

10 min before anesthesia induction:

Dexmedetomidine 20 mcg iv; Infusion bag 1000 ml + 1 gr Procaine + 150 mg Clonidine + 5 gr Magnesiumsulphate: 100 ml/h

Anesthesia induction and intubation after:

Lidocaine 1,5 mg/kg iv; Propofol 2,5 mg/kg iv; Rocuronium 1 mg/kg iv; Magnesiumchloride 2,5 gr slowly iv

Before surgery starts:

Dexmedetomidine 20 mcg iv; Dexamethasone 10 mg iv; Ketamine 25 mg; droperidol 1,25 mg; Diclofenac 150 mg iv/30 min; Cefazoline 2 gr

Anesthesia maintenance:

Inhalation at 0,8 – 1 MAC; proceed with Procaine infusion bag at 100 ml/h.

Awakening from anesthesia:

Paracetamol 1 gr

Post operative analgesia:

Paracetamol loading with 1-2 gr extra followed by 4 gr/24h; Diclofenac 75 mg/12h; if pain run infusion at 200 ml/h if not sedated; Clonidine 75 mcg iv/8h if HR >50 and SAP >100 mmHg and last: Oxynorm 10 mg sublingual.

## Results and discussion

There was no difference between the groups for gender, age and BMI. Patients in OFA group had more conversion procedures and suffered more from OSAS. (table )

OA+LOA vs OFA	coef	p value
<b>conversion surgery</b>	<b>0,311</b>	<b>0,000</b>
BMI	0,002	0,589
age	0,002	0,358
<b>OSAS</b>	<b>0,216</b>	<b>0,006</b>
gender: male	-0,078	0,294

Non surgical complications and bleeding complications were higher in OA and very high in LOA compared to OFA while surgical complications were higher in OFA and LOA. (table 1)

table 1	number of procedures	all complications	percentage	Non surgical complications	percentage	bleeding complications	percentage	surgery related complications excluding bleeding	percentage
OA	2451	80	3,26%	40	1,63%	33	1,35%	7	0,29%
OFA	2337	57	2,44%	21	0,90%	24	1,03%	12	0,51%
LOA	264	14	5,30%	9	3,41%	3	1,14%	2	0,76%
missing	9								
total	5061	151	2,98%	70	1,38%	60	1,19%	21	0,41%

Logistic multivariate analysis shows that OFA (57) had less major complications compared to LOA (14) and OA (80) while age, male and conversions increased it. (table 2)

logistic regression	coef	p value
OFA	-0,392	<b>0,037</b>
age	0,026	<b>0,001</b>
gender: male	0,413	<b>0,031</b>
Re intervention	0,634	<b>0,003</b>
OSAS	0,23	0,222
OSAS in OA group		<b>0,001</b>
OSAS in OFA group		0,196
BMI	0,009	0,321

	no OSAS	OSAS
OA	2,19%	5,46%
OFA	2,16%	3,05%

BMI and OSAS had no impact except in the OA group where OSAS increased complications. (table 3)

OFA patients had less hospitalization days but no difference in readmission, first week re operation or unplanned high dependency unit admission. (table 4)

table 4	OA (2451)	OFA (2337)	LOA (264)	p value	
hospitalisation nights mean (SD)	2.738 (0.04)	2.53 (0.04)	2.86 (0.15)	0.001	Kolmogorov-Smirnov
unplanned HDU admission	14	7	1	0.378	chi-square
first week revision	9	3	1	0.255	chi-square
Readmission within 30 days	22	24	5	0.288	chi-square

OFA and LOA needed less postoperative morfine on day 0 (6 mg, 15 mg) compared to OA (26 mg). (table 5)

No patient had a leak and the one month death rate was zero for all groups.

table 5	OA	OFA	LOA	p value
morphine equivalents post op	21,13 (0,99)	6.043 (0.48)	15.144 (1.96)	< 0.001

The LOA group was too small and includes the learning phase explaining the higher complications.

## Conclusion

OFA only surgery reduces non surgical and bleeding complications. Age or conversion procedures increase the complications for all groups while OSAS is not a risk factor anymore if OFA is used for gastric bypass surgery.

