Factors affecting postoperative analgesic requirements in patients undergoing laparoscopic surgery for benign gynecological disease

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Background

- Despite small incisions, laparoscopic gynecological surgery can still cause severe postoperative pain in some patients.
- Little is known regarding anesthesia- and surgical procedure-related risk factors for postoperative pain.
- The goal of this retrospective study was to determine the factors affecting postoperative analgesic requirements in patients undergoing laparoscopic surgery for benign gynecological diseases.

Methods

1. Medical record review

Patients undergoing laparoscopic surgeries for benign gynecological diseases from Jan 2014-Dec 2016 were included in this study.
2. Data collection

- Patients' profiles
 - Intraoperative variables
 - The use of rescue-analgesics over 24h after surgery (See Table 1)
3. Data analyses

- Distribution of number of analgesics given**
 - Logistic regression analyses**
Univariate and multivariate logistic regression analyses were performed to explore predictive factors of using rescue-analgesics in patients who received ≥ 3 and ≥ 5 analgesics within 24h after surgery.
 - Independent variable: Number of rescue-analgesics given
 - Explanatory variables: See Table 2

Table 1. Analgesics used for postoperative pain management in our institution	
Basal analgesia:	IV fentanyl (20 µg/h) for 20h
Rescue-analgesia:	<ul style="list-style-type: none">A bolus dose of fentanyl (20 µg)FlurbiprofenDiclofenacAcetaminophenPentazocineIbuprofen
Rescue-analgesics were given on patients' request. Type of analgesic was selected at the attending gynecologists' discretion.	

Results

A total of 183 patients were included in the analysis

Fig. Number of analgesics given within 24h after surgery

Table 2. Explanatory variables used in the study

Patients characteristics	
Age (yr)	41.3 ± 9.6
BMI (kg/m²)	21.1 ± 3.3
ASA PS (I:II:III)	142:40:1
Duration of surgery (min)	147.1 ± 67.6
Intraoperative analgesics	
Intraoperative fentanyl dose (µg/kg/h)	2.5 ± 0.9
Remifentanyl dose (µg/kg/min)	0.2 ± 0.1
Use of acetaminophen	88 (48.1)
Use of diclofenac	17 (9.2)
Use of flurbiprofen	35 (19.1)
Wound infiltration of local anesthetics	60 (32.8)
Type of surgery	
Salpingo/oophorectomy	119 (65.0)
Including myomectomy	41 (22.4)
Including hysterectomy	55 (30.1)
Adhesiolysis	24 (13.1)

Values are expressed as mean ± SD or number (%)

Table 3. Results of univariate and multivariate logistic regression analyses in patients who received analgesics ≥ 3 times within 24h after surgery

Explanatory variables	P value	OR	95%CI
Univariate analysis			
Age (yr)	0.10	0.97	0.94-1.00
BMI (kg/m²)	0.03	1.12	1.02-1.25
ASA PS	0.88	1.05	0.54-2.07
Duration of surgery (min)	0.08	1.00	1.00-1.01
Intraoperative fentanyl dose (µg/kg/h)	0.03	0.68	0.47-0.96
Remifentanyl dose (µg/kg/min)	0.05	201.90	1.14-52404.71
Use of acetaminophen	0.03	0.53	0.29-0.95
Use of diclofenac	0.38	0.64	0.22-1.73
Use of flurbiprofen	0.45	1.33	0.64-2.84
Wound infiltration of local anesthetics	0.96	1.02	0.55-1.89
Salpingo/oophorectomy	0.73	0.90	0.49-1.65
Myomectomy	0.47	0.79	0.43-1.48
Hysterectomy	0.07	1.83	0.97-3.54
Adhesiolysis	0.56	0.77	0.32-1.83
Multivariate analysis			
Age (yr)	0.00	0.94	0.91-0.98
BMI (kg/m²)	0.02	1.15	1.04-1.31
Remifentanyl dose (µg/kg/min)	0.06	249.96	0.95-102178.10
Use of acetaminophen	0.01	0.42	0.22-0.80
Hysterectomy	0.02	2.67	1.22-6.08

Table 4. Results of univariate and multivariate logistic regression analyses in patients who received analgesics ≥ 5 times within 24h after surgery

Explanatory variables	P value	OR	95%CI
Univariate analysis			
Age (yr)	0.08	0.97	0.93-1.00
BMI (kg/m²)	0.00	1.17	1.06-1.30
ASA PS	0.86	1.07	0.48-2.25
Duration of surgery (min)	0.03	1.01	1.00-1.01
Intraoperative fentanyl dose (µg/kg/h)	0.03	0.61	0.38-0.93
Remifentanyl dose (µg/kg/min)	0.75	2.52	0.01-815.06
Use of acetaminophen	0.29	0.69	0.35-1.36
Use of diclofenac	0.46	0.61	0.14-1.99
Use of flurbiprofen	0.23	0.56	0.20-1.37
Wound infiltration of local anesthetics	0.45	0.75	0.35-1.36
Salpingo/oophorectomy	0.08	0.54	0.27-1.08
Myomectomy	0.13	1.71	0.85-3.41
Hysterectomy	0.50	0.77	0.35-1.60
Adhesiolysis	0.32	1.59	0.60-3.92
Multivariate analysis			
Age (yr)	0.02	0.95	0.91-0.99
BMI (kg/m²)	0.00	1.18	1.06-1.32
Duration of surgery (min)	0.07	1.01	1.00-1.01

Limitations

- ✓ Number of analgesics given was used as a surrogate of quantitative parameter such as total opioid dose.
- ✓ Several potential risk factors e.g. anxiety and preoperative pain were not included in the analyses.
- ✓ No pain scores.

Conclusions

More aggressive intra- and post-operative analgesia should be considered for patients with younger ages and higher BMI undergoing laparoscopic surgery for benign gynecological disease.