

**TITLE:** COMPARISON OF PCA ALONE AND PCA WITH CONTINUOUS INFUSION ON PAIN RELIEF AND QUALITY OF SLEEP  
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Separate lines of investigation suggest that patient-controlled analgesia (PCA) may provide post-operative pain relief that is superior to more traditional pain therapy. PCA, however, requires a responsive patient. While asleep, patient drug levels can become suboptimal and lead to increased nociception with disrupted sleep patterns.

Following IRB approval and written informed consent, 40 PS1 or PS2 patients scheduled for abdominal hysterectomy were assigned randomly to a PCA only (PCA-O, n=20) or PCA plus infusion (PCA+I, n=20) condition. All patients used the Abbott Lifecare 4100 PCA Plus Infuser connected to the intravenous cannula. We hypothesized PCA+I patients compared to PCA-O patients should have: (1) better pain control, (2) fewer sleep disturbances, and (3) less nausea and vomiting.

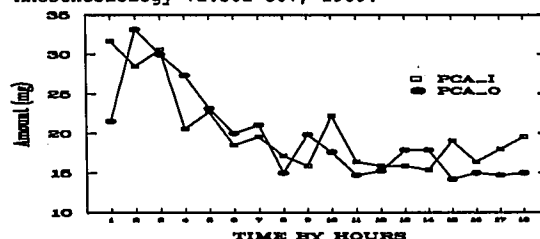
All patients were loaded to a comfort state in the recovery room at their first complaint of pain. PCA+I patients received meperidine 10 mg/ml by continuous infusion set at 10 mg/h plus PCA set at 10 mg increments with a 6 min lockout and a 4 h limit of 300 mg, also the administration parameters for PCA-O patients. Besides PCA data, comprehensive physician and patient data (e.g., pain ratings, nausea levels, side effects) were collected in the recovery room and 4, 8, and 24 h post-surgery, using standardized instruments. Also, the 10-item General Sleep Quality Scale<sup>1</sup> was administered the morning following surgery.

Mixed-model ANOVAs, t-tests, regression, and Fisher exact analyses were computed to test for group differences. PCA+I patients, compared to PCA-O patients, reported fewer sleep disturbances (2.9 vs. 4.6, P<.05), particularly in terms of the frequency of awakening (P<.001) and awakening because of pain (P<.007). PCA+I patients also reported lower pain scores at 4 h (P<.03) and 8 hr (P<.02) post-surgery, lower levels of nausea (P<.05), greater satisfaction with the pain treatment received (P<.004), and vomited less frequently (P<.05). These differences were not confounded by significant group differences for the duration of time on PCA, total amount of meperidine received (Fig 1), or demographic measures.

These findings suggest that PCA+I, compared to PCA-O, provides better pain control, improved sleep, and increased patient satisfaction and comfort than PCA alone in post-surgery hysterectomy patients. These findings can be compared to those of other investigator<sup>2</sup> who also found better pain control with PCA+I, however, at the expense of increased side effects, which were not observed in the present study.

#### References

1. Appl Psychol Meas 6:417-430, 1982.
2. Anesthesiology 71:502-507, 1989.



**TITLE:** CLONIDINE SUPPRESSES POSTEPIDURAL SHIVERING - A DOUBLE BLIND STUDY  
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**Introduction:** Shivering is a common complication in the perioperative period. It has been shown recently (1) that i.v. clonidine effectively suppresses postoperative shivering after general anesthesia. Shivering after epidural anesthesia appears to be different from that observed during emergence from general anesthesia (2), occurs in up to 40 % of all patients and does not react to i.v. meperidine (2). We therefore investigated if i.v. clonidine suppresses postepidural shivering.

**Methods:** Following Institutional Review Board approval and after obtaining informed consent, 20 adult patients (ASA I-III), who required therapy for postepidural shivering were randomly allocated to two treatment groups. In group PC treatment began with saline i.v., followed by 150 µg clonidine i.v. 5 min later, if the initial therapy showed no improvement. Group CP was initially treated with 150 µg clonidine i.v., followed by saline i.v. 5 min later if the initial treatment failed. Inhibition of shivering was classified as no, partial and complete. BP, HR and oxygen saturation were documented in 2 min intervals during the study period. Data were statistically evaluated with Chi-Square-test and ANOVA.

**Results:** None of the patients initially treated with saline improved. Therefore, all 10 patients in the PC group received a second injection, after which nine improved. In contrast, all patients in the CP group improved after the first injection, none of them needed a second injection (p < 0.01).

Inhibition	PC		CP	
	Placebo	Clonidine	Clonidine	Placebo
no	10	1	0	-
partial	0	3	4	-
complete	0	6	6	-

The onset of action was  $143 \pm 64$  sec after injection of clonidine. No significant changes of HR and oxygen saturation occurred during the study period. MAP decreased significantly only after clonidine (mean  $14 \pm 13$  mmHg, range 0 - 32 mmHg).

**Conclusion:** Clonidine inhibits postepidural shivering with only minor hemodynamic changes. It seems to be superior to meperidine for the treatment of postepidural shivering (2).

#### References

1. Goldfarb G et al, Anesthesiology 71:A650, 1989
2. Harris MM et al, Reg Anesth 14:13-18, 1989