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Non-pharmacological relief of acute pain following total abdominal hysterectomy

To the Editor:

Transcutaneous electrical nerve stimulation (TENS) has been used effectively to reduce postoperative pain.^{1,2} Unfortunately, TENS is seldom available to the anesthesiologist in the operation theatre. We undertook a study to observe the efficacy of peripheral nerve stimulator (PNS) induced electrical stimulation in comparison to TENS as a mode of postoperative pain relief in patients undergoing elective total abdominal hysterectomy for the first 24 hr after surgery since both devices can deliver a similar configuration of current intensity and frequency.^{3,4} Forty-five ASA I and II patients (mean age 50.6 ± 5.03 yr, mean weight 50.21 ± 6.39 kg) were selected for this study. The patients were randomly divided into three groups of 15 patients each. Group I received Sham TENS (with reversed electrodes), Group II received conventional TENS (frequency 100 Hz, intensity 40–60 mA) and Group III received electrical stimulation by PNS (frequency 100 Hz, intensity 10–20 mA) for pain relief. Each period of monophasic rectangular pulsed electrical stimulation^{3,4} lasted for 20 min. This was administered on arrival in the recovery room and then eight and 16 hr later in the ward. Twenty minutes of TENS stimulation administered every eight hours has been reported earlier for relief of postoperative upper abdominal pain.¹ All patients received a uniform premedication, general anesthetic technique and postoperative care. Before applying the

dressing, para-incision electrodes were applied to deliver electrical stimulation.

Pain relief was graded as good = no pain, satisfactory = bearable pain not requiring rescue analgesia, unsatisfactory = unbearable pain requiring rescue analgesia (tramadol 2 mg·kg⁻¹). It was observed that 66.66% and 73.33% patients of Groups II and III respectively had good postoperative analgesia during the study period (Table). On the contrary, 86.66% of the patients in the Sham TENS group had unsatisfactory pain relief. The mean doses of tramadol per kilogram body weight in the first 24 hr was 1.193 mg·kg⁻¹ and 0.828 mg·kg⁻¹ in Groups II and III respectively, compared to 3.680 mg·kg⁻¹ in Group I patients. This difference between Groups II and III, compared to Group I was statistically significant (unpaired t test, $P < 0.05$). 73.33% and 80% of patients in Groups II and III respectively expressed their willingness to opt for a similar technique for postoperative pain relief in the future. We conclude that electrostimulation delivered with a PNS can provide good pain relief in the postoperative period in patients undergoing open abdominal hysterectomy. Pain relief was comparable to conventional TENS.

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TABLE Duration of satisfactory analgesia (hr)

Time (hr)	0–6		6–12		12–18		18–24	
	No. of Pts	%	No. of Pts	%	No. of Pts	%	No. of Pts	%
Group I (n = 15) (Sham)	0	0.00	0	0	0	0	0	0
Group II (n = 15) (TENS)	2	13.33	1	6.66	2	13.33	10	66.66
Group III (n = 15) (PNS)	2	13.33	1	6.66	1	6.66	11	73.33

No. = number; Pts = patients; TENS = transcutaneous electrical nerve stimulation; PNS = peripheral nerve stimulator.

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