

of microcurrent skin therapy (MCT) patch in the management of musculoskeletal pain may offer a new non pharmacological approach for post operative pain relief of total knee arthroplasty. The aim of this research is to study the effect of MCT patch on the fentanyl patient controlled analgesia (PCA) requirement for post operative pain relief after TKA arthroplasty.

**Methods:** 32 patients scheduled for TKA were studied, they were divided after consent into two groups: Group I: 16 patients had MCT patch and PCA with fentanyl. Group II: 16 patients had only PCA with fentanyl. Fentanyl PCA dose 1.5 ml (10 microgram/ml), lock out interval 6 minutes, no basal infusion or boluses was given.

**Measurements:** Fentanyl requirements and Visual analogue score was measured on both groups.

**Results:** Patients with microcurrent skin patch therapy had comparable low pain score and statistically significant low requirements of Fentanyl PCA.

**Conclusion:** MCT patch reduce the fentanyl PCA requirements for post operative pain relief after TKA.

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#### THE ANALGESIC EFFECTS OF FENTANYL, THIOPENTAL, MAGNESIUM AND LIDOCAINE ON PROPOFOL-INDUCED INJECTION PAIN ACCORDING TO TWO PAIN MEASUREMENT TOOLS

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**Background and Aims:** Propofol is well known for its association with pain on injection. We compared the analgesic effects of fentanyl, thiopental; magnesium and lidocaine for prevent propofol-induced pain according to Visual Analog Scale (VAS) and Four Point Scale (4PS).

**Methods:** After approval by the hospital ethics committee, 275 patients undergoing elective CABG surgery were randomly assigned into 5 groups. Group I (F) received fentanyl (150 µg.), Group II (T) received thiopental (0.5 mg/kg), Group III (M) received Magnesium sulphate (1 gr.), Group IV (L) received lidocaine 2%(40 mg) and Group V (NS) received normal saline, all in a volume of 2 mL and accompanied by venous occlusion for one minute. Induction with propofol 1.5 mg/kg was accomplished following the release of venous occlusion. Pain was assessed on both VAS (0–10 points) and 4PS (0: no pain, 1: mild pain, 2: moderate pain, and 3: severe pain) at the time of pretreatment and propofol injection. Results were analyzed by Kruskal-Wallis test ( $p < 0.001$ ).

**Results:** 16 patients who had poor data from all groups were excluded from the study. L group had no pain during pretreatment and much less pain scores (VAS: 2.22, 4PS: 0.69) than the others during propofol injection ( $p < 0.001$ ).

**Conclusions:** VAS was the more clearly numerical scale for determination of pain intensity than 4PS.

Lidocaine is the best choice in the use of pretreatment for attenuating pain associated with IV propofol in our study.

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#### EVALUATION OF TWO POSTOPERATIVE ANALGESIC REGIMENS IN THE ABDOMINAL LAPAROSCOPIC SURGERY

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**Aims:** This study evaluates the subjective efficiency and secondary effects of two analgesic protocols used in laparoscopic surgery and determines differences according to preoperative ASA class.

**Methods:** We analyzed 474 patients who underwent laparoscopy under general anesthesia. One group of patients (N=318, age 52±36; 140 ASA I/178 ASA II) was administered tramadol 300 mg + metamizol 12 g,

while another group (N=156, age 47±34; 89 ASA I/67 ASA II) was administered metamizol 12 g for 48 hours. We recorded the age, ASA class and analgesic efficiency according to four levels (excellent–good–regular–bad). Also, in order to be able to compare the obtained results controlling the effect of the age of the patients, we include this last information as a covariant. Two-way ANOVA were used for statistic and  $p < 0.05$  was accepted as significant.

**Results and Conclusions:** The results show a similarity between patients of both groups of analgesia and between the patients with different ASA. The variance analysis confirms that none of the factors plays a significant role in the patient's subjective evaluation about the effectiveness of the analgesia or secondary effects.

Also the subjective evaluation of the analgesic effectiveness perceived by the patients treated with tramadol + metamizol or with metamizol doesn't vary.

	ASA	Subjective valoration	Secondary effects
Tramadol + Metamizol	I	4.22	0.09
	II	4.21	0.05
Metamizol	I	4.26	0.05
	II	4.22	0.04

Neither the age nor the ASA status alters this uniform profile. The strength of these results should be considered to simplify and to economize the analgesic regimen in this surgery.

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#### USE OF KETAMINE TO REDUCE IMMEDIATE POSTOPERATIVE PAIN AFTER REMIFENTANYL + MIDAZOLAM ANAESTHESIA

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**Background and Aims:** remifentanyl for anaesthesia requires an appropriate pain strategy to prevent unacceptable immediate postoperative pain. Intraoperative Ketamine may be of value in giving better analgesia at the awakening. Aim of our study was to investigate the effect of single intraoperative dose of Ketamine on pain management after Remifentanyl+Midazolam anaesthesia.

**Methods:** 54 adult patients (ASA I-II) undergoing gynecological or general surgical operation in East Tallinn Central Hospital were prospectively studied. Anaesthesia was induced with Thiopentone and Fentanyl and maintained with Remifentanyl + Midazolam + N<sub>2</sub>O in all patients. Patients were randomized into two groups: 25 patients received racemic Ketamine 0.15 mg/kg as single IV bolus before the end of surgery, while 29 patients did not. Severity of pain was assessed at the awakening, the need for opioids and antiemetics during 24 hours postoperatively.

**Results:** 76% of patients in Ketamine group had no immediate pain, 20% had mild to moderate and 4% severe pain, while without Ketamine only 11% appeared to be painless, while 53% had mild to moderate and 36% severe pain ( $p < 0.001$ , ANOVA). No significant difference in need for opioids neither antiemetics during 24 hours postoperatively was observed. Confusional status was documented in 1 patient in non-Ketamine group.

**Conclusion:** Single intraoperative dose of Ketamine is effective in immediate pain relief after Remifentanyl + Midazolam anaesthesia, but has no significant impact on the total need of opioids after operation.

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#### COMPARISON OF TRAMADOL, TRAMADOL-METAMIZOL AND TRAMADOL-LORNOXICAM ADMINISTERED BY PCA IN THE MANAGEMENT OF POSTOPERATIVE PAIN

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**Background and Aims:** The aim of the present study was to compare the postoperative analgesic effects of tramadol and tramadol-metamizol

and tramadol-lornoxicam combinations administered by intravenous PCA in lower abdominal surgery.

**Methods:** The study has been approved by the ethic committee, sixty adult patients undergoing lower abdominal surgery were included in the study. Patients were randomly allocated into one of three groups. The solutions were prepared containing 500 mg tramadol in 50 ml saline (10 mg/ml tramadol) for Group I (n=20), 250 mg tramadol + 3000 mg metamizol in 50 ml saline (5 mg/ml tramadol + 60 mg/ml metamizol) for Group II (n=20) and 250 mg tramadol + 20 mg lornoxicam in 50 ml saline (5 mg/ml tramadol + 0.4 mg/ml lornoxicam) for Group III (n=20).

In all groups the loading dose (10 ml) was administered 40 minutes before the end of operation. PCA was started at the first complaint of pain. Pain was evaluated by VAS and VRS in every 15 minute intervals at the first hour and later at 2nd, 4th, 8th, 12th, 18th and 24th postoperative hours. Simultaneously, sedation scores, vital parameters, side-effects and total analgesic consumptions were recorded.

**Results:** There were no significant differences between the groups in terms of first analgesic requirement time, peripheral oxygen saturation and heart rates. Total tramadol and anti-emetic consumption, postoperative nausea and vomiting were significantly higher in group I as compared with other groups ( $p < 0.05$ ).

**Conclusions:** Tramadol-metamizol and tramadol-lornoxicam combinations administered by intravenous PCA provide efficient analgesia with less side effects.

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### EFFECT OF ORAL S(+) KETAMINE ASSOCIATED TO MORPHINE FOR POSTOPERATIVE ANALGESIA

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**Background and Objectives:** Morphine is one of the most important analgesics for postoperative pain relief; however, opioids may cause hyperalgesia. NMDA receptor antagonists such as ketamine may reduce hyperalgesia. The aim of this study was to evaluate the efficacy of S(+)-ketamine associated to morphine for postoperative pain.

**Methods:** Thirty patients have been evaluated in a double-blind study, allocated into 2 groups. G1 patients received 10 mg of morphine + 10 mg of S(+)-ketamine (0.5 ml); G2 received 10 mg of morphine + placebo (0.5 ml). Pain intensity was evaluated by a numerical scale at: 0, 15, 30, 60, 120, 240 minutes.

**Results:** There was no significant difference on pain intensity between groups (G1=7; G2=6.8 at T0; G1=6.2; G2=6.0 at T15; G1=3.6; G2=3.6 at T30; G1=2.0; G2=1.7 at T60; G1=1.8; G2=1.2 at T120; G1=0.7; G2=1.4 at T240; Mann-Whitney test). There was no difference on the time for first analgesic supplementation (G1=208.2 min; G2=215.3 min; Mann-Whitney test). The number of patients not requiring analgesic supplementation in G1 (26.7%) was higher than in G2 (6.7%), chi-square McNemar test.

**Conclusions:** There was no significant difference on pain intensity with the association of 10 mg of S(+)-ketamine to 10 mg of morphine for postoperative pain. There was a significant decrease of patients not requiring analgesic supplementation.

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### EFFECT OF MICROCURRENT SKIN PATCH ON THE EPIDURAL FENTANYL REQUIREMENTS FOR POST OPERATIVE PAIN RELIEF OF TOTAL HIP ARTHROPLASTY

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**Background and Aims:** Major orthopedic surgery like total hip arthroplasty requires postoperative optimal pain management. Systemic opioids, epidural opioids and or local analgesics and other modalities have been tried. Recent reports on the efficacy of microcurrent therapy (MCT) patch

in the management of musculoskeletal pain may offer a new non pharmacological approach for post operative pain relief of total hip arthroplasty (THA).

**Methods:** 36 patients scheduled for THA were studied, they were divided into two groups 18 patients each, Group I had microcurrent skin patch attached above the site of operation just away from the wound and also receive epidural fentanyl by patient controlled epidural analgesia (PCEA) in a dose 1 ml (10 microgram/ml) lock out interval 12 minutes and basal infusion of 25 microgram/hour. Group II patients had analgesia with only PCEA without MCT patch.

**Measurements:** (1) Mean dose of epidural fentanyl in both groups. (2) pain scores in both groups. (3) Side effects and complications.

**Results:** there was statistically significant low mean dose of the epidural fentanyl in group I (MCT group) than group II with comparable pain scores.

**Conclusion:** microcurrent skin patch reduce the epidural fentanyl requirements for post operative pain relief of total hip arthroplasty.

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### PERFALGAN REDUCES CONSUMPTION OF MORPHINE AFTER ABDOMINAL GYNAECOLOGICAL SURGERY

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**Background and Aims:** The purpose of our study is to find a method with better analgesic results and fewer side effects in gynaecology.

**Methods:** After institutional approval, 60 ASA I-II patients, undergoing to elective gynaecological surgery, were randomised in two groups – groups A (n=30) and B (n=30). The groups are similar for demographic data and type of surgery. All patients had standard general anaesthesia. Group A received 1 g Perfalgan 4 times for 24 hours and the first application was 30 minutes before the end of the operation. After extubation and transfer to the postoperative care unit for the two groups started PCA i.v. for 24 hours with morphine: loading dose 2 mg, demand dose 1 mg and 20 min lockout period. VAS was used for the postoperative pain degree (0–10). The sedation level was checked with Ramsay's scale. Hemodynamic and respiratory parameters and the side effects were monitored. The statistics analysis was done by Student's and Kolmogorov-Smirnov test.

**Results:** A satisfactory analgesia, definite for VAS < 3, was obtained for all patients. The consumption of morphine in group A was with 30% less than in group B. In both groups there were not cases of respiratory depression and hemodynamic was stable during the whole study. Sedation level was ≤ 4. There were not significant differences between the two groups as far as periods of vomiting and nausea are concerned.

**Conclusions:** Combination PCA i.v. with morphine with Perfalgan 1 g x 4 times is effective and safe for postoperative analgesia in gynaecology.

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### TREATMENT OF ACUTE NEUROPATHIC PAIN FOLLOWING IATROGENIC SPINAL ROOT AVULSION

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Patients with neuropathic pain conditions are in general difficult to treat and may suffer from polypharmacy and reduced quality of life. It is often postulated that early recognition and aggressive treatment of acute neuropathic pain may prevent the establishment of a severe chronic pain condition. We describe the successful multimodal treatment of a patient with an iatrogenic spinal root injury.

**Case report:** 48 yr old male with right-sided L5/S1 retractor, operated in general anesthesia. During microsurgery an iatrogenic avulsion of parts of the S1 dorsal nerve root was recognized. Immediately upon waking, the patient complained of extreme pain and burning in the S1 dermatome of the foot. The neuromotoric functions were intact. Clinical investigation confirmed a neuropathic pain condition with allodynia, hyperalgesia, dysaesthesia and sudophoresis.