

# Battelfield Acupuncture and Femoral Nerve Block for Treatment of Postoperative Pain in Major Orthopedic surgery

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## ABSTRACT:

**INTRODUCTION:** Postoperative pain after major orthopedic surgery is extremely severe and especially after revision surgery where bone destruction is extensive. The role of postoperative analgesia is very important. Opioid analgesics are commonly used for this purpose in continuous infusion in combination with the intravenous administration of paracetamol, metamizole and ketoprofen.

**MATERIALS AND METHODES:** The patient was admitted for revision surgery after a total hip endoprosthesis was installed. The patient is allergic to most analgesic medicines including fentanyl, alfentanil, tramadol, buprenorphine, paracetamol, piroxicam, propifenazone, codeine, caffeine, diclofenac, ibuprofen. Only Ketoprofen and Oxycodonum are allowed analgesics.

In this case, postoperative analgesia was difficult because of the very narrow choice of analgesics. Researchers applied a regional femoral nerve block in combination with battlefield ear acupuncture, which has a pronounced analgesedative effect.

Pain was measured with an audio visual scale and allowed analgesics were added as needed

**RESULTS:** The patient was satisfied with achieved analgesia and the side effects of analgesics were avoided.

**CONCLUSIONS:** Battelfield ear acupuncture in combination with nerve block is a very effective method in the treatment of postoperative pain in major orthopedic surgery.

**KEYWORDS:** Major orthopedic surgery, Analgesia, Battelfield ear acupuncture, Nerve block

## SAŽETAK:

AKUPUNKTURA BOLNOG POLJA I BLOKADA BEDRENOG ŽIVCA ZA LIJEČENJE POSTOPERATIVNE BOLI U VELIKOJ ORTOPEDSKOJ KIRURGIJI

**UVOD:** Postoperativna bol nakon velike ortopedске kirurgije izuzetno je jaka, posebno nakon revizijske operacije, gdje je uništavanje kostiju opsežno. Uloga postoperativne analgezije vrlo je važna. U tu se svrhu obično koriste opioidni analgetici u kontinuiranoj infuziji u kombinaciji s intravenskom primjenom paracetamola, metamizola i ketoprofena.

**MATERIJALI I METODE:** Pacijent je primljen na revizijsku operaciju nakon ugradnje totalne endoproteze kuka. Pacijent je alergičan na većinu analgetskih lijekova uključujući fentanil, alfentanil, tramadol, buprenorfin, paracetamol, piroksikam, propifenazon, kodein, kofein, diklofenak, ibuprofen. Samo su Ketoprofen i Oxycodonum dopušteni analgetici. U ovom je slučaju postoperativna analgezija bila teška zbog vrlo uskog izbora analgetika. Istraživači su primijenili regionalni bedreni bedreni živac u kombinaciji s akupunkturom uha na bojnopolju, koja ima izražen analgesedativni učinak. Bol se mjerila audiovizualnom skalom i dodavali dopušteni analgetici po potrebi

**REZULTATI:** Pacijent je bio zadovoljan postignutom analgezijom i izbjegnute su nuspojave analgetika.

**ZAKLJUČCI:** Akupunktura uha Battelfield u kombinaciji s blokadom živaca vrlo je učinkovita metoda u liječenju postoperativne boli u velikim ortopedskim operacijama.

**KLJUČNE RIJEČI:** Velika ortopedska kirurgija, analgezija, akupunktura uha Battelfield, blok živca

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## INTRODUCTION

After revision surgery of the total hip endoprosthesis, moderate to severe postoperative pain occurs due to severe bone destruction. It is very important to control postoperative pain because inadequate analgesia can delay adequate rehabilitation, prolong hospital stay and increase treatment costs<sup>1,2,3</sup>.

Opioid analgesics are commonly used in the treatment of postoperative pain, which is known to have a large number of side effects. They are often combined with other analgesics (paracetamol, methamizole, NSAIDs) which also have numerous side effects. Therefore, it is necessary to determine the optimal dose that will suppress the pain while causing as few side effects as possible<sup>4,5,6</sup>.

The National Institutes of health and the World Health Organisation approved acupuncture as a safe and effective method of treating pain<sup>7,8</sup>.

Inserting needles into acupuncture points releases endorphins, enkephalins and dynorphins, which are important substances in the mechanisms of analgesia. Many studies prove this<sup>9,10,11</sup>.

Analgesic sedation protocol Battlefield ear acupuncture is used to treat many pain conditions. Author Niemtow start to use it in 2001. Needles are inserted on ear five specific spots. It cause changes the processing of pain in the central nervous system. Release of beta-endorphins allows short-term analgesia and release of anti-inflammatory cytokines allows long-term analgesic effects. This therapy reduces headaches, neuropathic pain and musculoskeletal pain<sup>12,13</sup>.

Meta-Analysis and systematic review analysed Battlefield ear acupuncture studies. Pain scores were significantly reduced, there were no significant side effect and patients were satisfied<sup>14</sup>. Femoral 3-in-1 nerve block discontinue sensation and motor power in 3 nerve distributions (femoral nerve, lateral femoral cutaneous nerve, obturator nerve). It is useful for treatment of postoperative pain on hip area.

Regional nerve blocks have a benefit in reducing pain after procedures on hip area and significantly reduce need for opioids.<sup>15</sup>

## MATERIALS AND METHODES

The participant was admitted to the department of orthopedics for revision surgery after the total hip endoprosthesis was installed. The participant was allergic to most analgesic drugs including fentanyl, alfentanil, tramadol, buprenorphine, paracetamol, piroxicam, propofenazone, codeine, caffeine, diclofenac, ibuprofen. Only Ketoprofen and Oxycodone were allowed analgesics. Spinal anesthesia was performed for surgery. Pain was postoperatively measured by a visual analogue scale (VAS) in which 0 indicates the pain-free status and 10 the strongest pain possible. Analgesia was determined based on the VAS scale. Postoperative analgesia was difficult to perform because of the narrower choice of analgesics. The investigators first choice was 3 in 1 femoral nerve regional block in combination with Battlefield ear acupuncture that has a strong analgesic sedative effect.

Femoral block 3 in 1 was performed with ultrasound control, 10 ml of 2% Lidocaine and 10 ml of 0.5% Levobupivacaine were administered around the nerve. Battlefield ear acupuncture was performed with disposable sterile needles that were placed at five points of the ear (Omega2, ShenMen, Zero point, Thalamus, and Gyrus cinguli) on both ears and left for 30 minutes and then removed.

During the 24h postoperative period, the patient additionally received Ketoprofen 2 x 100 mg iv and Oxycodone 20 mg iv for analgesia. The strongest pain was recorded after spinal anesthesia was weakened and just before the application of nerve block and acupuncture, and the VAS scale was 8 and 9. Thereafter, the pain gradually decreased to VAS 5 and 4 and overnight to 3 and 2.

## RESULTS

The participant was very satisfied with achieved analgesia. The use of a large amount of analgesics was avoided and also a number of potential side effects. Conclusion is that the combination of nerve block and Battlefield acupuncture is very effective in treating pain after extensive orthopedic surgery.

## DISCUSSION

Battlefield ear acupuncture was developed by Niemtow who investigated a model of ear acupuncture for effective analgesia. Battlefield ear acupuncture provides a significant analgesic effect in a very short period after administration<sup>16</sup>.

MRI studies suggest that hypothalamus, thalamus, gyrus cinguli, and cerebral cortex are involved in the modulation of pain in the central nervous system by the Battlefield method<sup>17</sup>.

The analgesic effect of acupuncture has been proved in many controlled clinical trials on large samples of participants. This effect is mainly caused by increased release of endorphins (endogenous opioid neuropeptides)<sup>18</sup>.

Acupuncture causes an increase in beta-endorphin levels from the pituitary-hypothalamic region in the cerebrospinal fluid. The use of opiate antagonists abolishes analgesia achieved by acupuncture<sup>19</sup>.

Acupuncture affects the sympathetic system and the opioid receptors of the spinal cord<sup>20</sup>.

Very fast, effective and long-lasting analgesia is achieved by femoral nerve block 3 in 1 for severe pain in the hip area. The method is very simple and safe<sup>21</sup>.

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