

28. Post-surgical analgesia management with transdermal buprenorphine patch on a patient with compartment syndrome after tibia plateau fracture with multiple operations before the end of his rehabilitation

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Introduction: Buprenorphine is a semisynthetic opioid which is used as a therapeutic substitute of opioid drugs and as medium to strong painkiller in smaller doses for the management of chronic pain. It's first use goes back in 80's. The use of buprenorphine as therapeutic substitute was approved in 2002 in USA and 2006 in Europe. The administration of buprenorphine, in contrast to other opioids, does not provoke euphoria. It binds as an agonist/antagonist to μ and κ receptors of the brain and last up to 72 hours. Compartment syndrome is a serious pathological situation where we have increased pressures within a compartment. Compartment is a group of muscles, blood vessels and nerves which are surrounded by a strong membrane called fascia attached to bone. Fascia cannot be expanded therefore the oedema within a compartment can lead to increased pressures. As a result, it can create muscle, vessel and nerve damage. The increased compartment pressure can block the blood flow in the compartment and lead to lack of oxygen in tissue (ischemia) and cellular death. Patient feels an acute pain, unbearable as described and strong opioids provide moderate pain relief. Purpose of the current study is to evaluate the analgesia and efficiency of buprenorphine patch not only in patients with chronic pain but as post surgical analgesia in patients who suffered compartment syndrome and need multiple operation before the end of the rehabilitation.

Case presentation: A male patient, 36 y.o. with no past medical history attend A/E department after a fall from height and intense knee and proximal tibia pain. He suffered from a tibia plateau fracture. Neurovascularly was compromised with absence of pulses in posterior tibial artery, reduced sensation in the anterior compartment of the tibia and the passive movement of the toes triggered excruciating pain. Lower limb vein triplex was performed to exclude DVT. Clinical diagnosis of compartment syndrome was done and the patient was taken to OR where fasciotomy both sides was performed and all four compartments were released. Copious haematoma was evacuated, a bridging femur tibia ex fix was applied and the wound left open. The phased closure of the trauma was achieved in four stages within the next 30 days.

Outcome and follow-up: Spinal anaesthesia was the preferred method and for the post-op pain management was applied transdermic buprenorphine patch 70mcg in combination with 1 gr three times a day of IV paracetamol. Gradual decrease of buprenorphine dose lasted for the period the wound was open until the final closure and the reduction of the fracture. Acute and continuous pain is constant in the post op period in patients with long bone fractures complicated with compartment syndrome. Most of the times the pain can not be managed with routine analgesia, even with the additional use of opioids. With the application of buprenorphine patch on the specific patient, the pain was not only significantly reduced but also was not in need of any additional painkillers. The Visual Analog Scale (VAS) was 2 to 3 the first week and 1 to 2 the second.

Discussion: Anaesthetists are familiar with the pain management and their administration methods. Post op analgesia methods and their application is part of the ongoing perioperative pain management. The new semisynthetic opioids offer excellent challenges and opportunities to use and study their field of application not only for the chronic malignant pain but with also for post op analgesia under constant monitoring. It can provide sufficient and safe analgesia in difficult cases such as the tibia plateau fracture in combination with the compartment syndrome.

References

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