

of the ILMA versus the Airtraq would allow a more adjusted comparison. In fact, it is a device similar to Airtraq since it has a guide channel and a fiberoptic system with LCD screen that provides a view of the larynx and tracheal tube as it passes through the vocal cords.<sup>4</sup> It also combines a supra-glottic airway device with the described structure allowing to perform intubation after securing the airway and establishing optimal ventilation limiting the period of apnea.<sup>5</sup> This is especially advantageous in obese patients since they have reduced physiological reserves.<sup>5</sup> Similar clinical trials are necessary to determine the most reliable and safe airway method for this population.

## Conflicts of interest

The authors declare no conflicts of interest.

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## Medicinal cannabis: new challenges for the anesthesiologist



Dear Editor,

Recent years have witnessed a growing debate on using medicinal Cannabis for the treatment of several medical conditions, given its wide-range therapeutic effects and some research having shown favorable results for its use, such as for difficult control epilepsy disorders, patients with nausea and vomiting resulting from chemotherapy, some psychiatric disorders as anxiety, and for controlling cancer and non-cancer pain.<sup>1-3</sup>

Medicinal Cannabis refers to the medicinal use of the plant and its components for medical purposes using some of the active components with pharmacological properties and has been used for millennia. The major components used are  $\delta$ 9-Tetrahydrocannabinol (THC), the major component presenting psychoactive action on the Central Nervous System (CNS), and Cannabidiol (CBD), cannabinoid acids, cannabiniol, cannabigerol and cannabivarin, components with pharmacological properties on the CNS, but without psychoactive action. The concentration and quality of THC and CBD depend on the plant lineage and type of cultivation.<sup>2-4</sup>

In this scenario, it is of interest to anesthesiologists to access a wider range of options to control pain, given these professionals are also responsible for analgesia, especially those trained in pain and working in the specialty. When taking into account relevant issues in pain control, especially side effects due to the chronic use of opioids, and in the pursuit of parsimonious use, medicinal cannabis can be helpful in this scenario, given it presents less severe side effects such as opioid related respiratory depression, as the use of cannabinoids does not pose a risk of the complication.<sup>1,5</sup>

The major effects of cannabinoids are through their action on Cannabinoid receptors (CB), which can be type 1 (CB1), located in the central nervous system, mainly in the frontal cortex, basal ganglia and cerebellum, in addition to spinal cord, adipocytes, gastrointestinal tract, thyroid, adrenal glands, gonads and immune cells; or type 2 Cannabinoid receptors (CB2), expressed mainly in immune cells, CNS glial cells and peripheral tissue.<sup>2,4</sup>

THC is a partial agonist of type I (CBD I) and type II (CBD II) cannabinoid receptors, which acts on multiple conditions and symptoms, such as pain, nausea, spasticity, appetite stimulation, and is also responsible for the psychotropic effects of the plant. Cannabidiol (CBD), in turn, has no psychoactive effects, has low direct affinity to these receptors, and works as a negative allosteric modulator of CB1, which attenuates the side effects of THC, in addition to exerting

its action on serotonergic receptors, producing analgesic, anti-inflammatory, anxiolytic and antipsychotic effects.<sup>2,5</sup>

In 2015, a systematic review with a meta-analysis concluded that there is moderate evidence to the use of cannabinoids to treat chronic pain and spasticity, and that there is low evidence for the treatment of chemotherapy induced nausea and vomiting, for weight gain in patients living with immunodeficiency syndrome, sleep disorders and Tourette Syndrome, although the authors concluded that there is very little quality work available.<sup>3</sup> Neuropathic pain is the most studied pain disorder in clinical trials with cannabinoids, with evidence showing mild to moderate efficacy to attain a 30% reduction in pain intensity.<sup>1,3–5</sup>

Despite the evidence of the benefits described above, in Brazil cannabinoid use in medical practice is still incipient, unlike some countries such as Israel, Australia, Canada, and some parts of the United States, where using the substance is already part of the medical armamentarium to control cancer and non-cancer pain. The use of CBD has been authorized currently in Brazil, and is prescribed mainly for difficult control epilepsy, as is the reduced concentration of THC, given the substance is responsible for the psychotropic effects of medicinal cannabis and therefore still has legal barriers to its authorization in higher doses, which already is the case of the countries mentioned above.<sup>1,4,5</sup>


Based on the exposed, and as cannabinoid use has shown itself as a new therapeutic option for pain control, we cannot neglect the importance of anesthesiologists who work with pain to be updated on the use of the substance and have it in the range of options to offer their patients, if they deem it favorable. It is also indispensable that, as more in-depth knowledge on the topic arises, our colleague anesthesiologists be inspired to develop new studies in the country, given the literature available is still scarce and limited, enabling a wide horizon in this field.

## Conflicts of interest

The authors declare no conflicts of interest.

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## Regional analgesia technique for postoperative analgesia in total knee arthroplasty: have we hit the bull's eye yet?



Dear Editor,

Total knee replacement (TKR) is one of the most commonly performed elective lower limb orthopedic surgeries. It is associated with moderate postoperative pain in 30% and severe pain in 60% of the patients.<sup>1</sup> Inadequate and poorly treated postoperative pain affects the rehabilitation process by decreasing the range of motion, delaying early ambulation, prolonging the length of hospital stay and overall patient satisfaction. It may also be associated with several complications like myocardial ischemia, decreased pulmonary function, increased risk of infection, thromboembolism, and chronic pain development.

To provide optimal postoperative analgesia, the knowledge of the pain generating components and their neural innervations is essential (Figure 1A-B). The preoperative

pain originates mainly from intra-articular elements due to damaged cartilage stimulating free nerve endings and nociceptors (Figure 1C). The primary pain generating components following TKR surgery include skin/subcutaneous tissue over the incision area, medial retinaculum, periosteal rim of the cut bones, remnant of the anterior joint capsule, cut nerves along the surgical dissection area, microfractures and inflammation.<sup>2</sup> Structures like the anterior capsule, synovium, meniscus, cruciate, intra-articular ligaments, periosteum of the knee joint, and prepatellar fat pads are removed during the surgery and hence do not contribute to pain generation (Figure 1C-D). The posterior capsule of the knee joint remains untouched, and the intra-articular components contributing to the posterior knee pain are removed during surgery. Thus, postoperative knee pain is mainly contributed by anterior knee components as compared to the posterior elements.

The anterior knee is innervated by branches from the femoral nerve (FN) and anterior division of obturator nerve (ON) through the subsartorial plexus and peripatellar plexus. The posterior knee and intra-articular structures are innervated from the branches of the sciatic nerve and posterior