



Review Article

# Transversus abdominis plane block: The new horizon for postoperative analgesia following abdominal surgery



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## KEYWORDS

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**Abstract** Post operative pain management is the key factor to decide the outcome of the patient. TAP block is relatively newer method for management of postoperative pain after abdominal surgery. Technique involves the injection of local anesthesia into the plane between the internal oblique and transversus abdominis muscle and thus giving pain relief. The technique when performed under ultrasound guidance improves the yield. TAP block provides good analgesia between T10 and L1 level hence very useful for lower abdominal and gynecological procedures. This significantly reduces the analgesic requirement in postoperative period and hence reduces the side effects of analgesics.  
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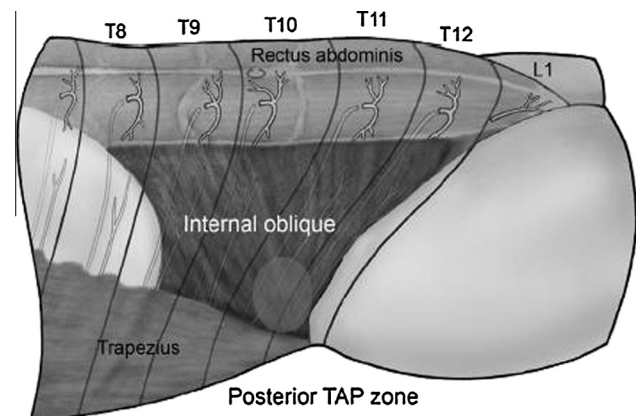
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**1. Introduction**

Since the times, pain has remained the most significant issue making patients to seek medical consultation. In post operative period, potent analgesia is required not only to make patients to bear the surgical stress but also it helps in early ambulation and thereby limits many complications such as lung atelectasis and deep vein thrombosis [1–4]. The opioid analgesics are most commonly used as parenteral agents to take care of post operative pain but the problem of respiratory depression remains to be considered [5]. There has been an everlasting concern among anesthetists to provide adequate relief for post operative pain especially in immediate post operative period. There is plenty of published literature to find out the role of various techniques and various agents in the management of post operative analgesia; but with varied potency, efficacy, safety and ease of administration.

The abdominal surgeries, may it be open or laparoscopic, are associated with significant post operative pain. In addition to parenteral opioids and NSAIDS, various other methods used for post operative analgesia are infiltration of local anesthetic agents, dermal patches, patient controlled analgesia and epidural catheters, etc.

Transversus abdominis plane (TAP) block is a relatively newer and a novel approach of injecting local anesthesia into the plane between the internal oblique and transversus abdominis muscle and thus giving pain relief. It was first described by Kuppuvelumani et al. in 1993 and was formally documented in 2001 by Rafi [6–8]. TAP block has been found to be a safe and effective tool in a variety of general, gynecological, urological, plastic, and pediatric surgeries, and it is suggested as part of the multimodal anesthetic approach to enhance recovery after lower abdominal surgeries [9–19]. The efficacy of TAP block has been studied and found in patients who undergone laparoscopic cholecystectomy as well [20].



**Figure 1** Anatomy of transversus abdominis plane (reproduced from JANKOVIC Z). Transversus abdominis plane block: the holy grail of anesthesia for (lower) abdominal surgery. PERIODICUM BIOLOGORUM 2009, 111(2): 203–208.

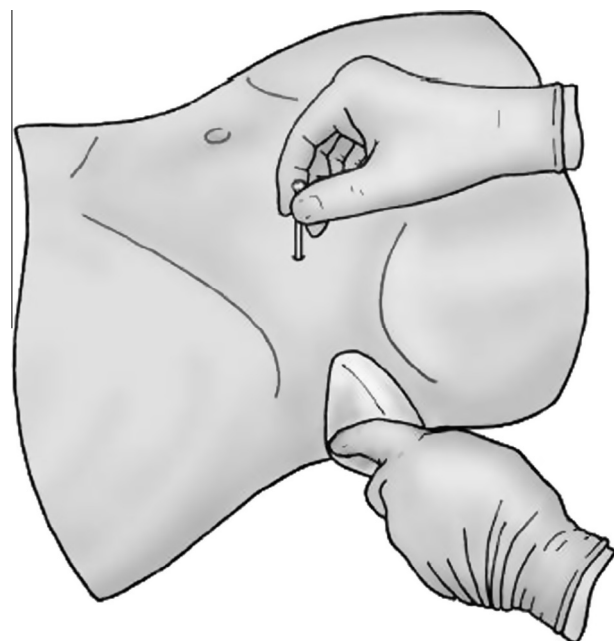
The guidance of TAP block with ultrasound has facilitated the injection of local anesthetic into the transversus abdominis fascial plane, where the nerves from T6 to L1 are located [20].

**2. Aim**

The aim of this article was to explore the various considerations regarding TAP block and to evaluate its clinical utility in reference to currently available literature.

**3. Anatomical considerations**

The transversus abdominis plane is a triangular fascial plane over abdomen in between the internal oblique and transversus abdominis muscles. Its anterior border is formed by linea semilunaris, which consists of the aponeuroses of both the internal and external oblique muscles and the transversus abdominis muscle, and extends from the cartilage of rib 9 to the pubic tubercle [21]. The superior border of the TAP plane is formed by the subcostal margin, from 9<sup>th</sup> to 12<sup>th</sup> costal cartilage continued into the border of the latissimus dorsi muscle and the lumbar triangle of Petit. The inferior border of the TAP is the inguinal ligament, iliac crest and posterior border of lumbar triangle of Petit [22]. Hence myocutaneous sensory blockade can be achieved by deposition of local anesthetic in the space (Fig. 1). The TAP blockade therefore disrupts the abdominal wall neural afferents. The sensory supply of the



**Figure 2** USG guided TAP block (reproduced from JANKOVIC Z). Transversus abdominis plane block: the holy grail of anesthesia for (lower) abdominal surgery. PERIODICUM BIOLOGORUM 2009, 111(2): 203–208.

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