



Title	Modified thoracoabdominal nerves block through perichondrial approach (M-TAPA) provides a sufficient postoperative analgesia for laparoscopic sleeve gastrectomy
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1 **Modified thoracoabdominal nerves block through perichondrial approach (M-**  
2 **TAPA) provides a sufficient postoperative analgesia for laparoscopic sleeve**  
3 **gastrectomy.**

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17 Running Title: M-TAPA for laparoscopic sleeve gastrectomy.

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19 **Key words**

20 Obesity, bariatric surgery, modified thoracoabdominal nerves block, postoperative

21 analgesia.

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37 Dear editor,

38 Achieving sufficient postoperative analgesia in patients who undergo laparoscopic  
39 sleeve gastrectomy (LSG) is challenging. In fact, epidural anesthesia is technically  
40 difficult given the excessive subcutaneous fat, which increases the risk of serious  
41 complications. Moreover, patients with this condition often have comorbidities that  
42 require anticoagulation therapy. Although ultrasound-guided transversus abdominis plane  
43 (TAP) block may be beneficial, it is still a matter of debate [1].

44 Recently, modified thoracoabdominal nerves block through perichondrial approach  
45 (M-TAPA) has been reported as a novel and promising technique that provides effective  
46 analgesia in the anterior and lateral thoracoabdominal wall [2]. Herein, we present a  
47 successful case of LSG managed with M-TAPA.

48  
49 A 46-year old female patient (156 cm, 99kg) with diabetes, sleep apnea syndrome,  
50 and hypertension was scheduled for LSG. Epidural anesthesia was avoided considering  
51 that she had undergone thoracic spine surgery. A bilateral M-TAPA was selected for  
52 opioid-sparing postoperative analgesia. Following an uneventful induction and  
53 intubation, a linear transducer was placed on the costochondral angle in the sagittal  
54 plane [3] (Fig. 1A). A total of 60 mL of 0.25% ropivacaine (30 mL for each side) was

55 bilaterally injected into the layer between the transversus abdominis muscle and the  
56 lower aspect of the costal cartilage (Fig. 1B). Anesthesia was maintained with 0.8 MAC  
57 desflurane and 0.15-0.35  $\mu\text{g}/\text{kg}/\text{min}$  remifentanil infusion. Hemodynamic stability was  
58 maintained throughout the anesthesia. The operation time was 104 min, and the total  
59 dose of intraoperative fentanyl was 400  $\mu\text{g}$ . She had no pain at discharge from the  
60 operation theater.

61 Although the patient was administered a continuous infusion of fentanyl to control  
62 visceral pain in the ward, the postoperative pain was adequately controlled. By  
63 performing repetitive pinprick tests, we revealed an excellent analgesic effect of the M-  
64 TAPA. At 7 and 24 h after the blockade, a complete sensory block of the T3-12  
65 dermatomes from the posterior axillary line to the midline was demonstrated. At 36 h  
66 after the blockade, although the patient started to feel slight pain associated with  
67 movement, an almost complete sensory block of the T4-12 was still remained.  
68 Subsequently, the sensory block was observed to become incomplete (4 out of 10 as  
69 reported by the patient) and the affected area was cramped (T6-12) at 48 h. Finally, the  
70 effect of the sensory block disappeared at 56 h after the blockade.

71 This case has demonstrated an effective, broad, and long-lasting analgesic effect of  
72 the M-TAPA. Furthermore, by performing the repetitive pinprick tests, we demonstrated

73 the time course of the M-TAPA, which has not yet been investigated previously. The  
74 anesthetized area of the present patient was wider than previous reports [2, 4]. The  
75 larger volume of the local anesthetics used in the current case may be a reason behind  
76 such an observation. Although further research to reveal the spread of the local  
77 anesthetics and its mechanism is required, the M-TAPA can be a suitable option for  
78 LSG. Written informed consent was obtained from the patient.

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91 **Declaration of interest**

92 None.

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98 **Conflicts of interest**

99 None.

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145 **Figure titles and legends**

146 Ultrasound image and postoperative abdominal wall. A, B. Ultrasound image of the  
147 perichondral area before (A) and after (B) local anesthetic solution was injected. C.  
148 Image of the postoperative abdominal wall. (CC: costal cartilage, EOM: external  
149 oblique muscle, IOM: internal oblique muscle, TAM: transversus abdominis muscle,  
150 LA: local anesthetic)

