

Does Transversus Abdominis Plane (TAP) Blocks Cure Chronic Abdominal Pain and Improve Debilitating Symptoms Long Term – A One Year Follow-up

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Case Presentation

Treatment Background: A transverse abdominis plane (TAP) block anesthetizes nerves that supply the anterior abdominal wall, spanning the T6 to L1 thoracolumbar nerves. In TAP blocks, injectate is delivered between the internal oblique and transversus abdominus muscle planes for regional anesthesia or acute pain management. TAP blocks are quick, simple, and safe to perform with ultrasound. We present a novel use of TAP block for the treatment of chronic pain and refractory belching.

Patient Background: Our case involves a middle-aged male who underwent a left indirect inguinal hernia repair with mesh over one year ago. In the post-operative period, he experienced numerous new gastrointestinal symptoms. Subsequent workup revealed a segment of bowel adhered to the mesh's underside. A corrective takeback operation was performed. Nevertheless, symptoms remained including abdominal pain and debilitating belching. No etiology was found. The patient exhausted many medical options and had become reliant on highly addictive medication like opioids for pain management and benzodiazepines for anxiety management. Functionally, he began requiring assistance for self care. He became unemployed and lived an isolated lifestyle. The patient presented to our spine and pain management clinic. He reported experiencing temporary relief with "steroids injected into the abdominal wall" at an outside clinic. We discussed repeat therapy and ultimately pursued a three series course of TAP blocks.

Clinical Course

The patient was evaluated in our Pain and Spine Clinic. Based on the workup to date and our examination, there was no definitive cause for persistent abdominal pain. Gastroenterology classified belching as supragastric belching within the context of uncontrolled abdominal pain and poorly managed co-morbid mental health conditions. Supragastric belching is classified as a behavior disorder that occurs when an individual rapidly sucks air into their esophagus and rapidly releases the air through the mouth, without the air originating or transversing the stomach as seen in gastric belching.

Given the possibility of neuropathic etiology of his persistent symptoms—perhaps nerve entrapment, we pursued a series of repeat TAP blocks spaced one month apart. The injectate consisted of 4 mg dexamethasone and an anesthetic, either 2% lidocaine or 0.25% bupivacaine. The patient experienced cumulative relief at each follow-up visit and at a follow-up 4 months since the last TAP block. At a one-year follow-up, the patient reported return of symptoms, though notably not as bothersome as his baseline preintervention symptoms. Compared to initial constant severe abdominal pain, the patient described variable intensity pain that is intermittently present. He reported return of belching. He additionally reported distress due to multiple mental health diagnoses and navigating the complexity of the American healthcare system after suffering a debilitating iatrogenic injury. The patient denied pursuing any other Pain Medicine therapies. Finally, the patient reported he had returned to baseline functional independence and had gainful employment.

Results

Ultrasound-Guided Tap Block

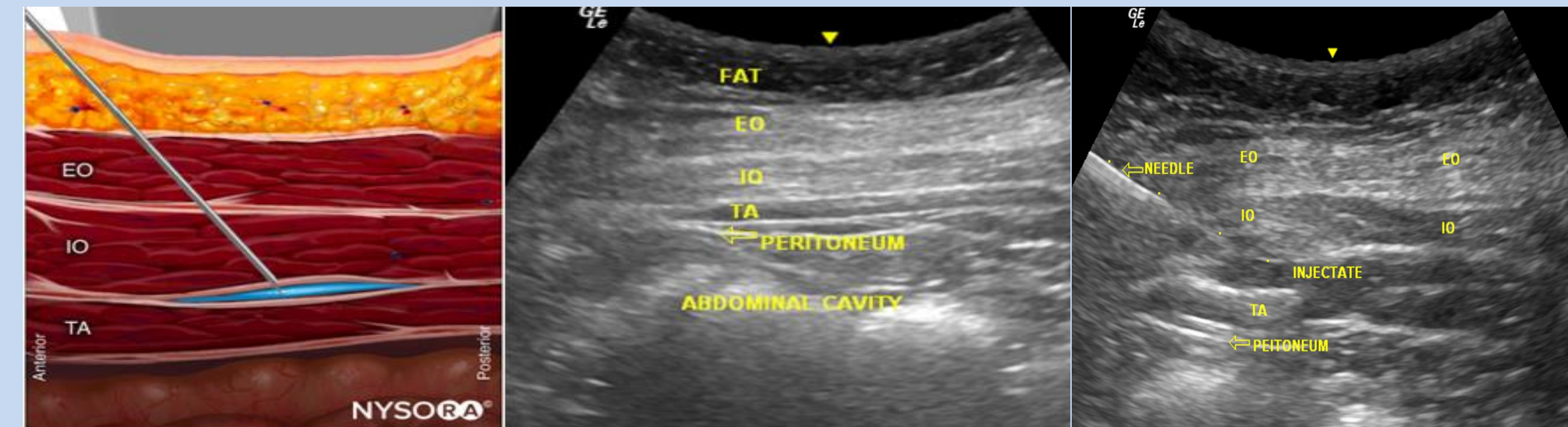


Figure 1A

Figure 1B

Figure 1C

Figures 1A-C: Side-by-side comparison pictorial anatomy model of the abdominal wall musculature. Figure 1A demonstrates correct needle placement for a TAP block. Figure 1B demonstrates a desired sonographic view utilized for TAP block guidance. Figure 1C demonstrates via sonography correct needle placement for a TAP block with injectate located between the planes of the internal oblique (IO) and transversus abdominis (TA) muscles.

Short Term Efficacy

Table 1: Cumulative Reduction Symptoms: Pain and Refractory Belching	
Tap Block #	Percentage of Relief Experienced (cumulative)
1	50%
2	70%
3	80%

Table 1: The patient experienced a significant reduction in chronic abdominal pain and belching frequency, severity, and duration.

Long Term Efficacy

Table 2: Analysis of Long-Term Sustained Pain and Belching Relief	
Time after Initial Intervention	Pain Severity
Prior to Initial Tap Block	Severe
One Month After Initial TAP Block	Moderate
3 Months after initial TAP Block	Mild
One Year after initial TAP Block	Variable, on average moderate severity

Refractory Belching: For refractory belching, compared to baseline (pre-TAP block at our clinic), at the one-year follow-up the patient reported:

- Belching frequency reduced by 50%
- Belching severity reduced by 50%
- Belching duration reduced by 98%

Table 2 reflects experienced level of pain on a 10-point scale with 10 being the worst pain imaginable: mild (1-3), moderate (4-6), and severe (7-10). It also reflects changes in refractory belching that occurred at the one-year follow-up.

Discussion

Although TAP blocks are primarily used for regional anesthesia or acute pain management, there are limited reports of them being used to effectively manage chronic pain. These sparse reports focus on recent post-operative patients with a specific anatomical target for the proposed intervention. While our case did not have a specific anatomical target, our patient did have at least one remote abdominal surgery that preceded the beginning of chronic abdominal pain.

Furthermore, there are a few studies that show a link between anxiety, depression, and other mental health conditions with refractory belching, also known as supragastric belching. This may have been exacerbated by unmanaged pain and loss of trust with the healthcare system.

A series of TAP blocks provided immediate and short-term relief for our patient's abdominal pain and refractory belching. Further, there was evidence of sustained relief at a one-year follow-up. Though we lack definitive proof, injectate from the TAP block may have temporarily reduced local nerve inflammation, which led to pain control and overall debilitating symptom reduction. Since cessation of ongoing pain management therapy with TAP blocks, a nerve inflammatory process may have led to symptom recurrence. Additionally, current unmanaged mental health conditions may also cause a psychosomatic disorder contributing to worsening of symptoms.

Our case highlights Pain Medicine as a specialty uniquely equipped to treat symptoms and improve function when symptomatology is from varied or unknown sources, as with our patient. Thus, from a Pain perspective, we localized the organic etiology to the abdominal area and opted to trial a low risk, minimally invasive procedure such as a TAP block to limit both medical and psychological harm to our patient. Though not cured, since our interventional therapy, the patient has experienced both short-term and long-term symptom relief of chronic abdominal pain and refractory supragastric belching. The patient's quality of life has improved through improved pain control and less reliance on addictive medication such as opioids with compounding side effects like opioid-induced constipation or benzodiazepines with associated sedating side effects.

Conclusion

Our case is noteworthy in demonstrating that TAP blocks provide additional therapeutic benefits in addition to regional anesthesia and management of acute pain. In our case, a series of TAP blocks treated chronic pain, refractory belching, and dependence on oral medications with high addictive profiles. Furthermore, TAP blocks led to improved function, independence with ADLs, and societal reintegration. At a one-year follow-up, recurrence of symptoms were reported, but there remained sustained benefit of our therapy. It is unclear what component of symptoms reported at the one-year virtual follow-up are physical versus psychosomatic. Given this, the patient was encouraged to return to Pain Clinic for reassessment and discussion of therapy options and assisted with additional mental health support options. It is our strong belief that multi-disciplinary care focusing on whole body care and wellness will lead to further improvement in chronic pain and other debilitating symptoms, and thus will promote the maintenance of functional independence, continued employment, stable personal relationships, and societal reintegration.