

## Tap block in chronic pain treatment: a case of entrapment syndrome of iliohypogastric and ilioinguinal nerves

Stefano Brauneis<sup>1</sup>, Alessandra Vecchio<sup>1</sup>, Cristina Babetto<sup>1</sup>, Riccardo Bellucci<sup>2</sup>

<sup>1</sup>UOD Medicine for Chronic Pain "Enzo Borzomati", Policlinico Umberto I, Sapienza University, Rome.

<sup>2</sup>DAI Anesthesia and Intensive Care, Policlinico Umberto I, Sapienza University, Rome.

\*Corresponding author: stefano.brauneis@uniroma1.it

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### Abstract

*The patient is a 42 years old woman with entrapment syndrome of the “nerves of passage” – ilioinguinal (IING) and iliohypogastric (IHPO) – after abdominal surgery.*

*The patient was suffering for IV stage infiltrating endometriosis and went through 13 abdominal surgical interventions (laparoscopic and open). Consequently, she developed chronic neuropathic pain in the IING and IHPO areas, unresponsive to drug therapy.*

*Ultrasound images showed a subverted anatomy with fibrosis of the involved nerves.*

*After three TAP (transversus abdominis plane) block sessions the ultrasound sight resulted improved: a significant amount of preexistent adhesions had lysed and pain was considerably reduced.*

*Temporarily, pain totally disappeared and gradually resume with different features in terms of intensity and continuity.*

*This case highlights the possibility to treat this kind of painful iatrogenic syndromes of injurious and adhesive nature with this technique, with variations in imaging aspects as well as in clinical symptoms. In this particular case we did not get a total resolution of pain, maybe due to the long history of the symptoms and their chronicity.*

*The study of a number of pain cases of more recent onset could be extremely useful in the evaluation of this technique, as suggested by this case history.*

**Keywords:** tap block, entrapment of iliohypogastric and ilioinguinal nerves

### Introduction

Ilioinguinal (IING), Iliohypogastric (IHPO) and genitofemoral (GF) are called “passage nerves” because they are located in a transition region between abdomen and thigh. They are mixed nerves and their lesion causes sensitive and motor impairments. IING and IHPO innervate the inferior muscles of abdomen ; their paralysis can be clearly highlighted by the Beevor sign (the navel ascends when the head is lifted in supine position). The GF lesion can abolish the cremasteric reflex. These motor impairments are not very disabling.

The sensitive damage is way more detrimental because it comes with dysesthesia, hyperesthesia, anesthesia and

paresthesia in the interested areas. Neuropathic chronic pain is due to iatrogenic damage in 17,5% of cases and the most frequent causes are hernioraffia, cesarean section, appendicectomy, and urogynecological surgery in general. Diagnostic suspect arises with the sensitive and motor clinic signs described before and can be confirmed by a perinervous injection of local anesthetics with the temporary resolutions of symptoms.

Treatment relies primarily in combined drug therapies, with the use of opioids and non-opioids analgesics along with adjuvant molecules for the pathological nervous signal transmission (i.e. Gabapentin, pregabain, amitriptyline). Frequently, chronic pain is the less responsive to drug therapies the older is the history of the

pain. In case of unresponsiveness, a suitable therapeutic strategy is to block the pathologic impulse with chemical neurolysis. Until now, phenol and ethanol had been used; more recently, radiofrequency and crioneurolysis have been considered but there are still few experiences in this field. After ethanol neurolysis, options are the evaluation of surgical retroperitoneal neurectomy.

## Case history

The present is a case of complex pain with a long history. Its origins are based in the previous condition of the patient and to the several subsequent surgical procedures she went through during the years.

The patient is a 42 years old woman, with a IV stage infiltrating endometriosis. The neuropathic pain takes origin in the compression of ectopic endometrial tissue masses on the nociceptive fibers and was exacerbated by the adherent fibrosis caused by their growth.

The recurrent growth of abdominal masses needed 13 surgical interventions either laparoscopic or open. But the pain worsened dramatically and became disabling after the radical hysteroneomyectomy in 2013.

It is reasonable to speculate that the endometriosis was the base of the neuropathic pain, while the post-surgical adhesions amplified it as well as the mechanical damage of nerve fibers by the hysteroneomyectomy that contributed to worsen the symptoms.

The patient came to our attention in 2016: the ultrasound images showed a recti muscles diastasis, fibrosis in the subumbilical region, altered structure in the left IING and IHPO nerves with inhomogeneous aspect (transvers diameter of 5mm), enhanced perineural and perivascular echogenicity, fibrosis of transverse muscle. This evident fibrotic panel came along with constant pain, quantified at level 8 of the Numerical Rating Scale (NRS). The patient reported dysesthesia and hyperalgesia from the hip to the medial side of the left knee. Pain was unresponsive to any drug therapy. At that time, the patient's therapy was: Tapentadol, L-acetyl carnitine and amitriptyline.

We confirmed the diagnosis of Entrapment syndrome of IHPO and IING with the perineural injection of Lidocaine 2%, under ultrasound guidance.

The patient underwent to three sessions of infiltrations with TAP block technique once every thirty days. This lapse allowed us to evaluate short and long time effects of injected drugs. We use the definition of Tap technique rather than Tap block because drugs were injected between internal oblique and transverse muscle (as in Tap block) but beyond L1 plan to find IHPO and IING. We injected Ropivacaine 0,1 mg/kg and Dexamethasone 40 mg.

These were the results:

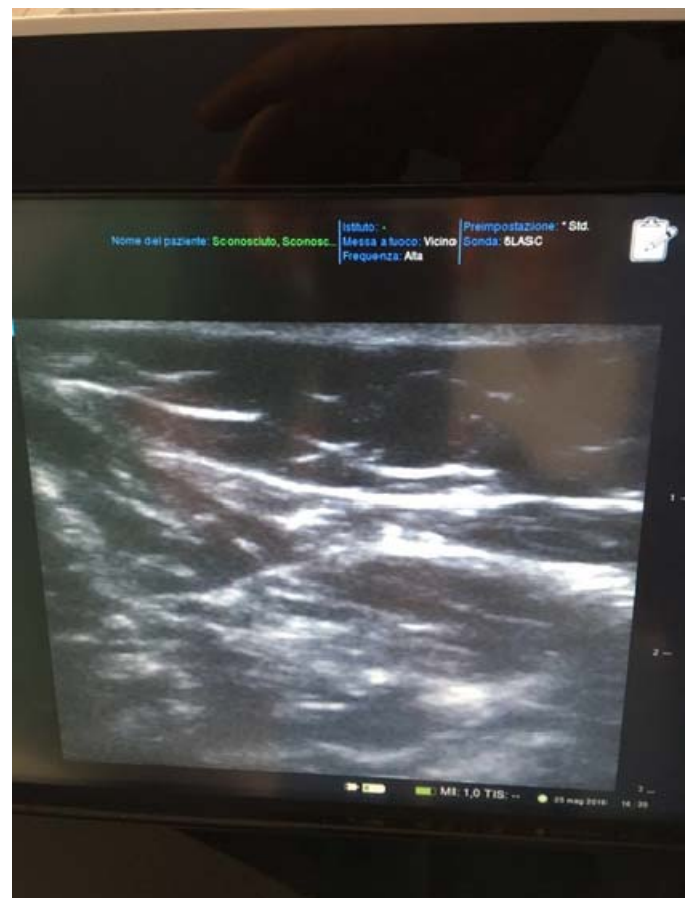
After the first session we assisted to a total remission of the pain (NRS 0) for the first four days. From day five to 15 NRS was 1 and after that pain resumed to NRS 4-5 with peaks of 7.

After the second session: pain was NRS 1 for first 6 days, then returned to NRS 4 with peaks of 7.

After the third session the beneficial effects were higher (NRS 0) for the first days. After that, the clinic panel stabilized on an "underground" pain that the patient described as "not disabling", quantified at NRS 3 with scarce hyperalgesia episodes (NRS 6-7). Six months after the treatment, the situation was totally stable.

Together with clinical symptoms we evaluated the ultrasound features finding that, after the first session, there were differences in the disposition of muscular plans, with an improvement of the adhesions and less anatomical diversions from normal physiology (**Figure 1**).

**Figure 1:** ultrasound image, after the first tap-block treatment



## Discussion

The therapeutic goal in this particular case was the reduction of the pain but, considering the resistance to drugs and the post-surgical features, it was also mandatory to spare to our patient another surgical procedure: the IING and IHPO neurectomy.

Our assumptions were:

1. Local infiltrations could mechanically break the adherences and give the patient partial relief.
2. The action of Ropivacaine could give a stop to the continuous nociceptive signal, introducing a positive input in the process of chronic pain nervous path modulation.
3. The action of cortisone could be useful on tissue healing and fibrosis processes, reducing the onset of new adhesions.
4. Another surgery should be averted along with all the chances to worsen the patient situation.

Results have been partially encouraging. The ultrasound findings after the procedures confirmed the action of mechanical lysis, but this was not sufficient to completely resolve the symptoms.

The not full therapeutic achievement is, in our opinion, partly due to the pain etiology itself - that is the iatrogenic damage to nervous fibers - and not just to adhesions interfering with sensitive signal pathways.

That's why the favorable effects on the fibrosis were not sufficient to resolve the symptoms.

Another reason is the long history of this neuropathic pain: its origin was to be set to the histeroanesiectomy in 2013. Sensitive pathways, during the years, had time to consolidate a wrong message, making maybe too ambitious the aim to completely heal the symptoms.

Anyway, we find encouraging the improvement in patient's quality of life even without a complete resolution of the pain, and we foster further and wider studies in this direction.

This procedure is not particularly invasive nor detrimental and proved to be effective on adhesions lysis: therefore more similar cases could be evaluated in the perspective of a procedural step prior to surgical

neurectomy. Moreover, we assume that this technique could prove to be far more effective if applied on an earlier base and not years after the onset of the pain.

Our conclusions suggest that the effectiveness of this procedure could be tested not only in the more traditional post-surgery settings for acute pain analgesia, but in the field of chronic pain therapy.

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