

10-2012

# Multimodal analgesia for open liver resection in an anti-coagulated patient

Ammar Yamani MD

*Baystate Health*, Ammar.Yamani@baystatehealth.org

Stanlies D'Souza MD

*Baystate Health*, dsouzastan@yahoo.com

Follow this and additional works at: [https://scholarlycommons.libraryinfo.bhs.org/all\\_works](https://scholarlycommons.libraryinfo.bhs.org/all_works)

Part of the [Medicine and Health Sciences Commons](#)

---

## Recommended Citation

Yamani A, D'Souza S. Multimodal analgesia for open liver resection in an anti-coagulated patient. American Society of Anesthesiologists Annual Meeting, Oct 13-17, 2012, Washington, DC.

This Presentations, Research is brought to you for free and open access by Scholarly Commons @ Baystate Health. It has been accepted for inclusion in All Scholarly Works by an authorized administrator of Scholarly Commons @ Baystate Health.

# Multimodal Analgesia for Open Liver Resection in an Anti-coagulated Patient

Ammar Yamani, M.D. and Stanlies D' Souza, M.D.

Department of Anesthesiology, Baystate Medical Center, Tufts University School of Medicine, Springfield, MA

## CASE DESCRIPTION

A 55 year old male with a history of alcoholism, smoking, mitral valve replacement on chronic anticoagulation and thrombocytopenia underwent laparoscopic left hepatectomy converted to laparotomy for carcinoid tumor. He received 500 micrograms of intravenous (IV) fentanyl at the beginning of the case, and near the conclusion of a four hour case he received IV clonidine 40 micrograms and IV ketamine 40 milligrams, as well as bilateral transversus abdominis plane block (TAP) with bupivacaine. He was extubated in the operating room. His PACU course required only 0.4 mg of IV hydromorphone, and phenylephrine infusion for hypotension without adverse neurologic or cardiac event. The remainder of his hospital course required very minimal intravenous narcotics transitioned to oral hydrocodone.

## TAP BLOCK<sup>1</sup>

- Compartment block
- Blocks ventral branch of T7-L1
- Blocks spinal, ilioinguinal, iliohypogastric nerve
- For middle/lower abdomen surgery
- Site of injection: Triangle of Petit (iliac crest, latissimus dorsi, external oblique) Fig.2
- Decrease in post-op narcotic consumption
- Provides analgesia to abdominal wall, spares viscera

### SIDE EFFECTS:

- Peritoneal puncture, local anesthetic toxicity, liver hematoma (rare)

## KETAMINE<sup>2</sup>

- NMDA receptor antagonist
- Amnesia/intense analgesia subanesthetic doses
- Kappa-receptor agonist, Mu-receptor antagonist
- Mild local anesthetic-like effect
- Anti-inflammatory properties (inhibit IL-6)

### SIDE EFFECTS:

- Psychomimetic side effects proportional to plasma concentration of ketamine
- Sympathetic stimulation

## CLONIDINE<sup>2</sup>

- 220:1  $\alpha$ -2 to  $\alpha$ -1 agonism
- Produces sedation, hypnosis, anxiolysis, sympatholysis, analgesia
- Decrease post-op narcotic & VAS scores
- Treatment for alcohol withdrawal

### SIDE EFFECTS:

- Prolonged hypotension, bradycardia, sedation
- POISE-2 Trial<sup>3</sup> (ongoing, prospective, interventional, randomized control trial)
  - Treatment with oral  $\alpha$ -2 agonist and low dose ASA perioperatively
  - Evaluate all cause mortality & non-fatal MI at 30 days and 1 year, including chronic post-op pain, stroke, & acute kidney injury, after non-cardiac surgery

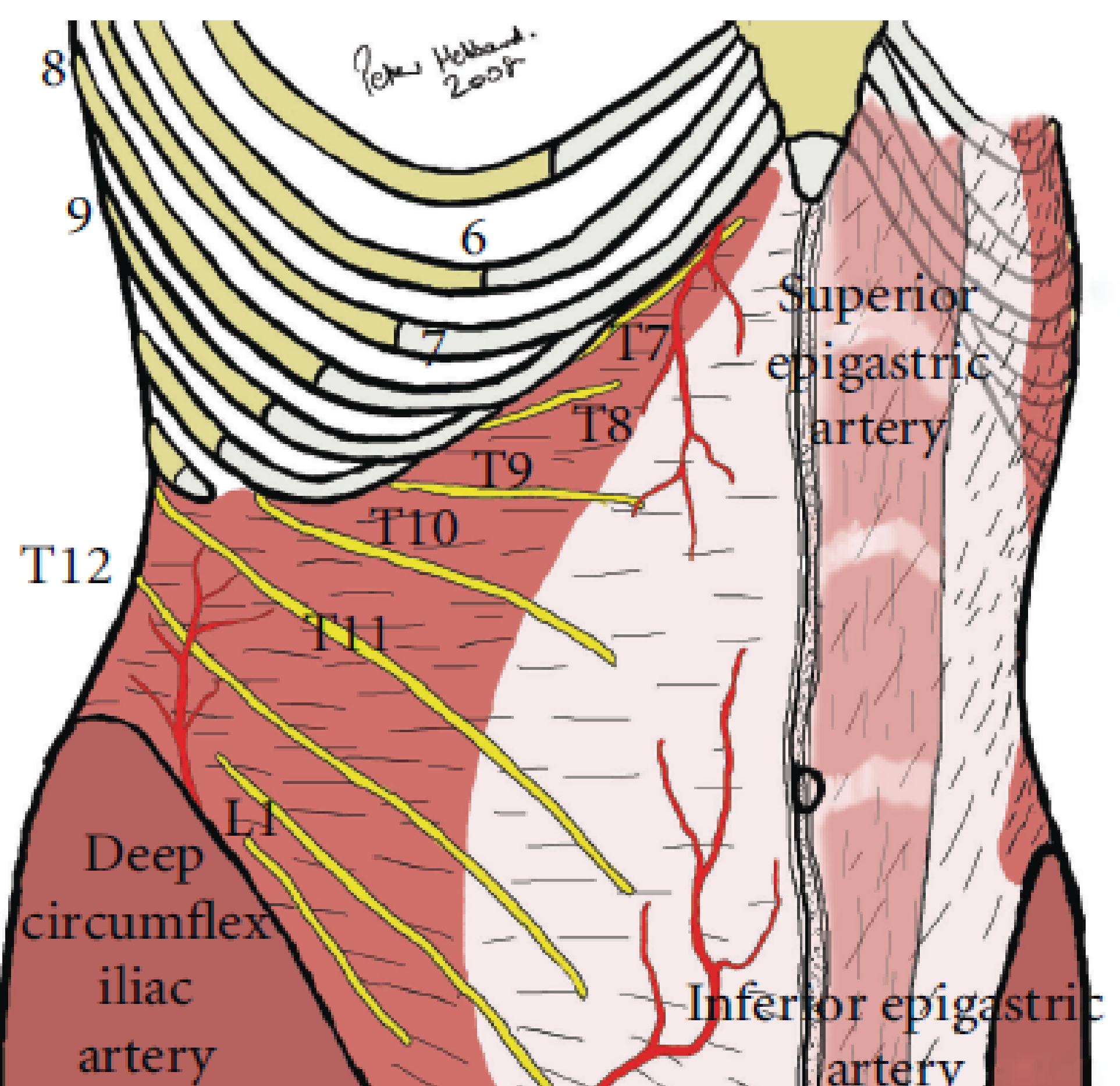
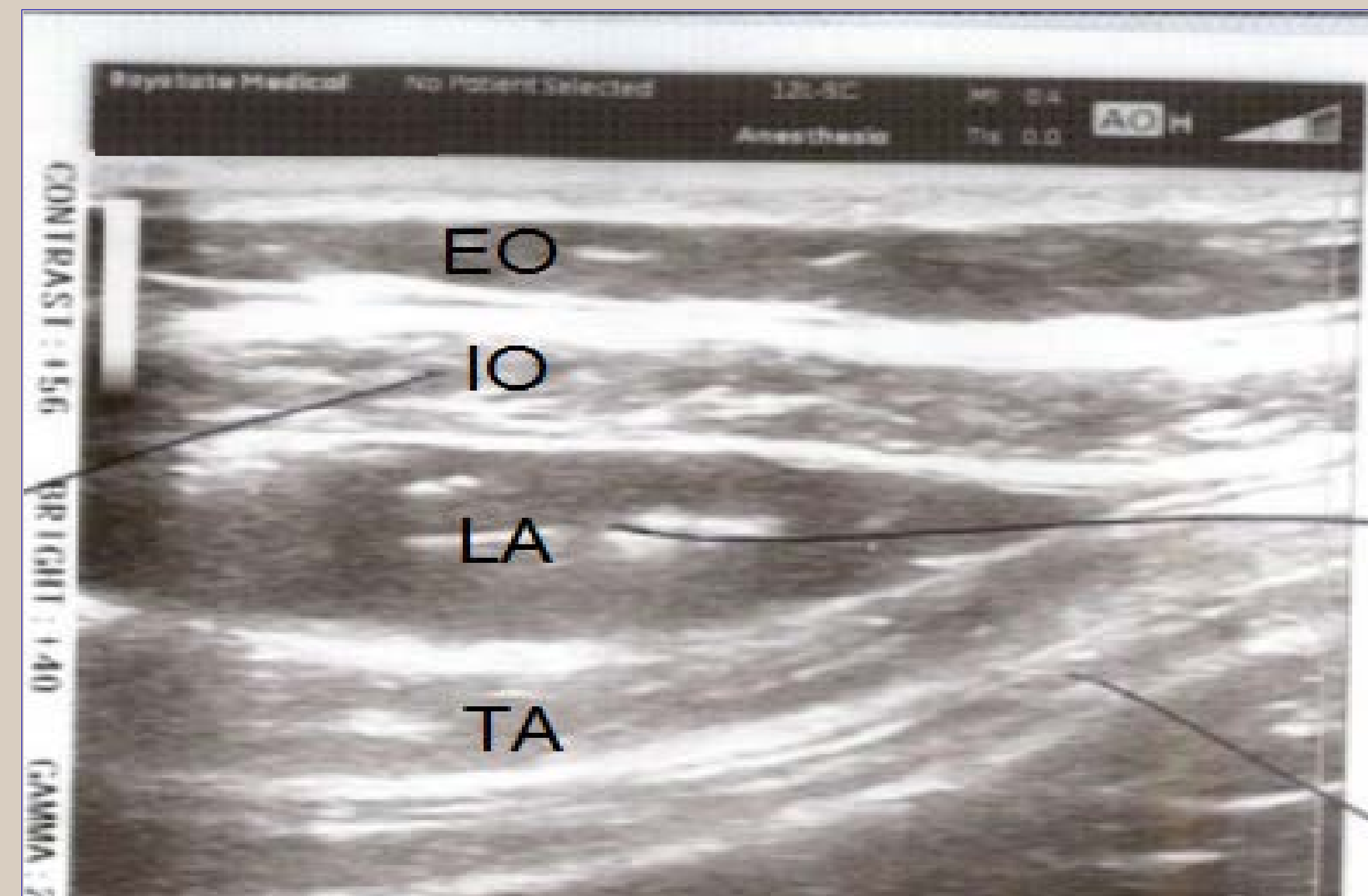


Fig. 1: Neurovascular anatomy of TAP block<sup>4</sup>



Fig. 2: Anatomical landmarks for triangle of Petit<sup>4</sup>



EO: External oblique  
IO: internal oblique  
LA: local anesthetic  
TA: transversus abdominis muscle

## DISCUSSION

Patients undergo surgery which results in acute pain that can put them at risk for developing chronic post-surgical pain.<sup>5</sup> Understanding the mechanisms of pain transmission and plasticity and that traditional analgesic techniques may increase the risk of developing this problem is a key to acute peri-operative pain management. Interrupting pain transmission via peripheral nerve blockade, pain modulation via glutaminergic pathway antagonism, and pain perception with opioids and CNS depressants are keys to successful peri-op analgesia and avoidance of long-term pain syndromes.<sup>6</sup> However, many medications at our disposal have short and long-term effects; both beneficial and adverse-opioids and  $\alpha$ -2 agonists are two examples.<sup>5</sup> Intravenous lidocaine and gabapentin are modalities also with evidence of short and long-term benefit for peri-op pain.<sup>6,7</sup> Multi-modal analgesic techniques should be considered in all patients, weighing risk to benefit ratios, particularly when multiple comorbidities are present which make peri-op pain management challenging.

## REFERENCES

1. Milan ZB, Duncan B, Rewari V, Kocarev M, Collin R. Subcostal transversus abdominis plane block for postoperative analgesia in liver transplant recipients. *Transplant Proc.* 2011;43:2687–90
2. Stoelting, R. K., & Hillier, S. C. *Pharmacology & Physiology in Anesthetic Practice* 4th ed. Philadelphia: Lippincott Williams & Wilkins; 2006; 167-174, 340-344.
3. Devereaux PJ, Sessler DI. The potential role of  $\alpha$ (2) agonists for noncardiac surgery. *Anesthesiology.* 2012;116(6):1192–4.
4. Young MJ, Gorlin AW, Modest VE, Quraishi S A. Clinical implications of the transversus abdominis plane block in adults. *Anesthesiol Res Pract* 2012;2012:1-11
5. Grosu I, de Kock M. New concepts in acute pain management: strategies to prevent chronic postsurgical pain, opioid-induced hyperalgesia, and outcome measures. *Anesthesiol Clin* 2011;29:311–27
6. Clarke H, Bonin RP, Orser BA, Englesakis M, Wijeyesundera D, Katz J. The prevention of chronic postsurgical pain using gabapentin and pregabalin: A combined systematic review and meta-analysis. *Anesth Analg* 2012;115:428–42
7. Koppert W, Weigand M, Neumann F, Reinhard S, Schuettler J, Schmelz M, Werner H. Perioperative intravenous lidocaine has preventive effects on postoperative pain and morphine consumption after major abdominal surgery. *Anesth Analg* 2004;98:1050–5