



# Regional Anesthesia for Sternoclavicular and Shoulder Pain

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## INTRODUCTION

Regional anesthesia is often part of a multimodal regimen to address acute pain typically in the perioperative setting. However, the role of regional anesthesia in managing chronic pain is not as well established. Recent publications have shown the increasing use of regional anesthesia in the management of chronic pain and its potential to provide effective, long-lasting pain relief, well beyond the expected duration of the local anesthetics used <sup>1,2</sup>. This ability to provide targeted pain relief has been used to treat a variety of painful conditions including Complex Regional Pain Syndromes (CRPS), neuropathic and cancer related pain <sup>3</sup>. Effective pain management can lead to improved physical functioning, mental health and quality of life in patients with chronic pain. This case report highlights a case encountered in our Chronic Pain clinic where a patient had several months of effective pain relief after a regional anesthetic technique targeting the nerves supplying the painful area.

## CASE REPORT

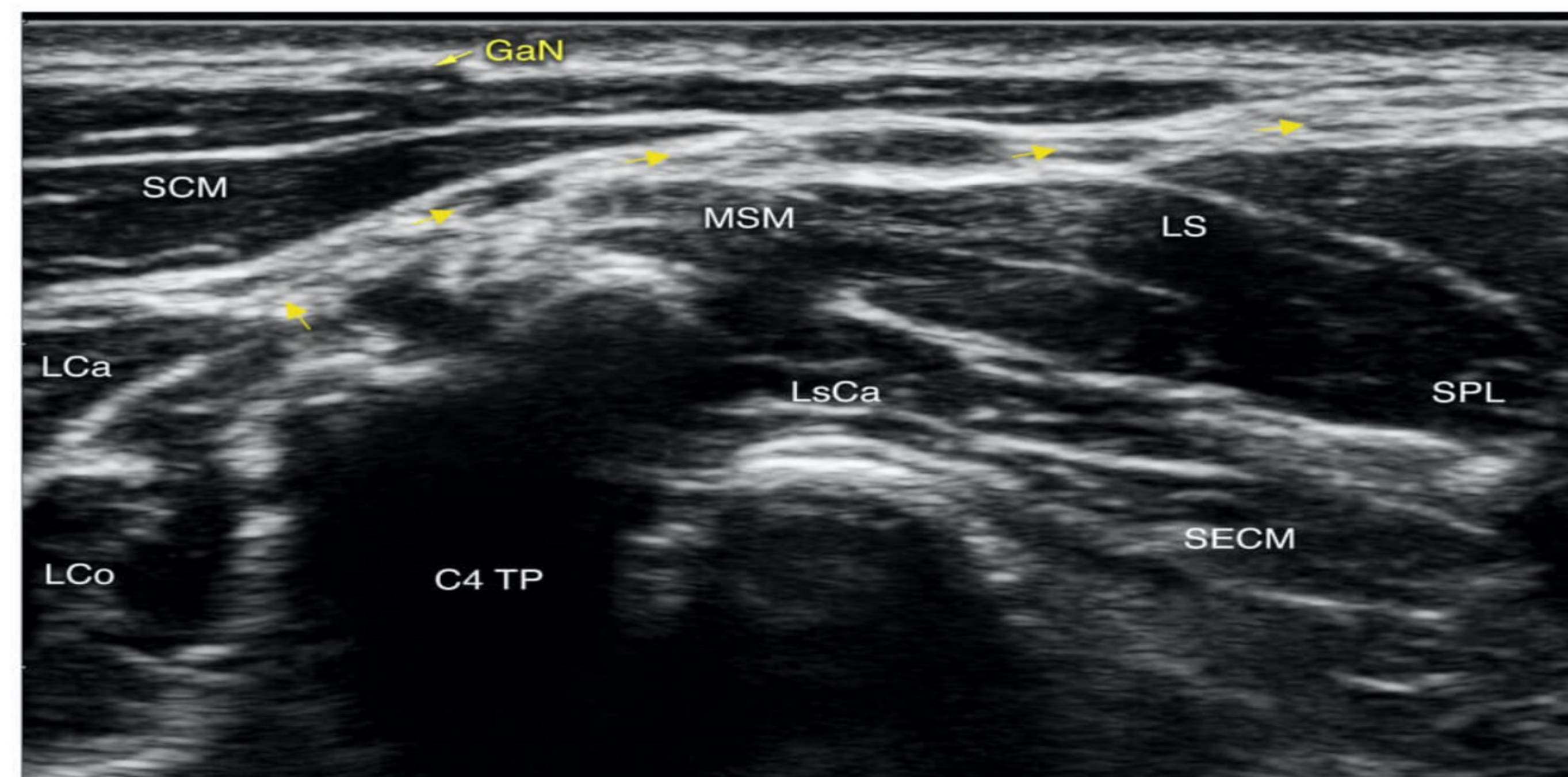
Patient is a 40-year-old male presented to our clinic with 6-month history of severe right sternoclavicular and shoulder joint pain. The onset of pain was sudden without preceding injury accompanied with swelling. He was initially evaluated by Orthopedic surgery and started on NSAIDS and Physical therapy with minimal improvement. Rheumatology workup was negative. A CT scan revealed fluid around the right sternoclavicular joint with cortical thinning and erosion at the medial end of the right clavicle and adjacent manubrium, a sequela of remote trauma, septic or inflammatory arthritis. The surgeon proceeded with Osteotomy of the clavicle and irrigation and debridement of the sternoclavicular joint. Tissue cultures from surgery were negative. There was worsening of pain following surgery when he presented to our clinic for evaluation. Pain was described as sharp, shooting, and radiating to right shoulder, neck, chest, and axilla, worse with deep breathing, and coughing. He reported often curling into a fetal position and crying during pain exacerbations and verbalized suicidal ideations secondary to pain with worsening of preexisting depression. He was managed on methadone 10 mg twice daily and gabapentin at the time of presentation. Physical exam was significant for moderate amount of crepitus over the right sternoclavicular area extending to the shoulder, and diffuse tenderness overlying the sternoclavicular joint and right shoulder. A right shoulder intra-articular steroid injection was performed which provided minimal relief of his shoulder pain. He was then scheduled for a right Superficial cervical plexus block, and started on diclofenac, Elavil in addition to methadone. Patient reported 100% pain relief within 10 minutes after the Superficial cervical plexus block. He was seen a month later where he continued to have 80% pain relief and he reported that he has never felt better since the pain began. A repeat block was done two and half months after the first block as pain gradually returned to baseline, though still about 50% better since initial presentation. The patient is presently four months status post second superficial cervical plexus block and continues to have greater than 70% pain relief.

## MATERIALS AND METHODS

Patient's informed consent was obtained for this presentation. As the poster is devoid of any Protected health information (PHI) or patient identifiers, per UMMC policy no IRB approval is required.

## DISCUSSION

With the opioid crisis still raging, any technique to manage chronic pain that can minimize or eliminate the need for opioids is invaluable. The ability of Regional anesthetic techniques to provide targeted pain relief by blocking the specific nerves responsible for pain, avoids the systemic side effects of pain medications such as respiratory depression, sedation, mood changes, constipation, and gastrointestinal upset while lowering the risks of tolerance and addiction. The increased use of Ultrasound guided techniques in regional anesthesia has improved the safety and efficacy of regional techniques allowing direct visualization of nerves or fascial planes which the nerves traverse, recognition of important vascular structures nearby avoiding inadvertent intravascular injections while also allowing us the ability to limit the dose required compared to nerve stimulator techniques. Ultrasound guidance has also broadened the options available to treat specific areas of pain with the ever-expanding field of fascial plane blocks to address deeper structures, particularly in the trunk and thorax. A randomized controlled trial published in 2018 showed an Erector Spinae Plane block provided more effective pain relief and functional improvement than a Lumbar epidural steroid injection for chronic radicular pain <sup>3</sup>. A systematic review and meta-analysis published in Regional Anesthesia and Pain Medicine (RAPM) showed the efficacy of Peripheral nerve blocks in managing chronic shoulder pain <sup>4</sup>. In another study Paravertebral blocks were shown to provide effective pain relief and functional improvement in patients with advanced lung cancer with reduced opioid requirements.



While the exact mechanism by which these regional techniques effectively reduce chronic pain is still largely unknown, several postulated mechanisms include their role in reducing central sensitization by blocking nociceptive input to the spinal cord, anti-inflammatory effects of local anesthetics, suppression of the adrenergic response, and altering neuroplasticity. Lack of standardization in dose, agents and techniques when used in the chronic pain arena is a limiting factor besides the skills required to perform these techniques. Vigilance for the potential for Local anesthetic systemic toxicity (LAST) and knowledge of prompt treatment is vital for practitioners adopting these techniques. The need for a longer post-procedure observation time before discharge may necessitate a change in clinic throughput as chronic pain clinics typically have space and personnel limitations. As interventional pain physicians become increasingly facile with these techniques, the adoption of regional anesthesia in the management of chronic pain will become more widespread. Further studies are required to elucidate the exact mechanisms of action in chronic pain as well as the best options in terms of local anesthetics and adjuvants used, dosing, frequency of blocks, optimal indications, and specific techniques in the management of various chronic pain conditions. There is no doubt that Regional anesthetic techniques can be an effective component of a multimodal regimen in treating Chronic pain besides its more recognized role in perioperative pain management.

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