Opinion

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# Pain Management in the Setting of Acute and Subacute Orthopedic Trauma

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## Description

Pain management in the setting of acute and sub-acute orthopedic trauma can be challenging. Due to the recent focus on the rising opioid epidemic, as well as the adverse side of effects of opioid pain medication, multimodal pain control has become the standard of care for management of orthopedic trauma, particularly during operative fixation. The purpose of this paper is to report on the use of regional anesthesia for surgical intervention of extremity fractures in patients who present following traumatic injury as part of a multimodal pain management protocol. Types of, indications for and outcomes of both upper and lower extremity peripheral nerve blocks will be reviewed. The management of pain in the setting of acute orthopedic trauma can be challenging. With a primary focus on the acute resuscitation, assessment, and treatment of life-threatening injuries, the provision of analgesia can often be delayed. Situational factors including confusion or dementia in the elderly, head injury and or hypotension in the high energy patient, patient refusal, and provider-patient communication issues have also been shown to limit the delivery of timely and adequate analgesia Although intravenous opioid therapy is the most common modality of analgesia in the acute trauma setting given ease of administration, fast onset, and excellent analgesia, opioid analgesia places the patient at risk for significant adverse effects including respiratory depression, vasodilation and hypotension, delirium, nausea or vomiting, and the inability to take oral medication.

## Use of Regional Anesthesia for Surgical Intervention of Extremity Fractures

The resultant pain in acute orthopedic trauma often requires significant amounts of opioids to provide adequate pain relief. Given the recent focus on the rising opioid epidemic, a multimodal analgesic approach is now often the standard of care to both decrease opioid requirements and opioid-related adverse effects as well as to better address patient and trauma-specific factors for which opioids may poorly or adversely treat. Even with the addition of multimodal agents, there is still widespread under treatment of pain in orthopedic trauma patients. In a study of patients presenting to the emergency department with predominantly extremity injuries, 91% had pain on admission and 86% still had pain upon discharge with pain increasing in 17% of patients at the time of discharge. Such data speaks to the need for improved pain management and introduces a role for regional anesthesia techniques to improve pain relief in the acute orthopedic trauma setting. The purpose of this paper is to report on the use of regional anesthesia for surgical intervention of extremity fractures in patients who present following traumatic injury as part of a multimodal pain management protocol or injuries of the shoulder, proximal humerus, and distal clavicle, the interscalene block targeting the roots as well as the suprascapular and supraclavicular nerves has been shown to be effective in providing prolonged pain relief, reducing length of stay in the emergency department and one-to-one monitoring requirements.

## Possible Side Effects of the Interscalene Block

8 Possible side effects of the interscalene block include phrenic nerve blockade, sympathetic chain blockade, and recurrent laryngeal nerve blockade. A rare complication of the interscalene block is spinal cord root injury. For clavicle fractures, interscalene brachial plexus blocks should be supplemented with modified superficial cervical plexus block in order to provide adequate regional anesthesia coverage of the surgical field and obviate the need for general anesthesia. A study of 110 patients randomized to combined interscalene brachial plexus block and modified superficial cervical plexus block without general anesthesia versus general anesthesia with interscalene brachial plexus block demonstrated higher intra-operative fentanyl requirements in the general group with no intra-operative conversions of the combined blocks to general Furthermore, total anesthesia time and overall case time were significantly longer in the general anesthesia group. Interscalene blocks have also demonstrated good clinical efficacy for use in proximal humerus fractures.