

Conscious Sedation

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Myth: Conscious sedation is typically needed when performing most interventional pain procedures (e.g. epidural steroid injections, sacroiliac injections, medial branch blocks, and radiofrequency denervation).

Fact: Sedation is not intrinsically necessary for interventional spine procedures. The decision to use sedation should be made on a case-by-case basis.

Sedation and analgesia include a continuum of states of consciousness ranging from minimal sedation (anxiolysis) to general anesthesia. The continuum of depth of sedation is fully defined by the American Society of Anesthesiologists (Quality Management and Departmental Administration Committee, last amended October 15, 2014)(1). This FactFinder will focus on moderate (conscious) sedation, defined as "a drug-induced depression of consciousness during which patients respond purposefully to verbal command, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained" (2).

Sedation, particularly over-sedation, may result in the inability of the patients to respond adequately to any potential pain, discomfort, or paresthesia during a procedure and warn the physician accordingly of a potential impending serious complication. For this reason, the use of sedation is believed to have contributed to some cases of neurologic injury in patients undergoing interventional pain procedures (3). An analysis of closed claims involving cervical interlaminar or cervical transforaminal injections revealed that when the patient is heavily sedated during the procedure or unresponsive at the time of injection, there is an increased risk of spinal cord injury (4). Moderate sedation itself also carries with it separate risk independent from its effect on the spine procedure; these risks include apnea and hypoxemia possibly requiring reversal agents or prolonged bag-mask ventilation (5). The risks of moderate sedation as it pertains to the relative incidence of minor complications during spine procedures is less clear, as one study of over 3,000 procedures reported no difference in complications with and without the use of sedation (6).

Despite risks, sedation remains heavily utilized in spine pain

procedures. One survey by Ahmed *et al.* indicated that practitioners utilize sedation for nearly 50% of interventional spine procedures (7). Appropriate consideration of real or perceived benefits is thus warranted. There is limited evidence of isolated situations where sedation may provide medical benefit, specifically for preventing vasovagal reactions (8). The other conceivable benefit is patient satisfaction, which may be a corollary of procedure-related pain or anxiety. Studies by Kim *et al.* and Cucuzzella *et al.* have suggested that if providers offer sedation, patients with higher levels of anxiety are more likely to choose to have sedation (8,9). Overall, few patients tend to choose sedation when given the option, suggesting that default use is not necessary (10).

Conversely, a large randomized controlled trial by Cohen *et al.* found that sedation did not predict satisfaction with care and that patients who received fentanyl as part of the sedation were not more likely to report pain relief (11). Even more, when sedation is simply not offered, patient satisfaction remains extremely high. Diehn *et al.* demonstrated only a 3% dissatisfaction rate in nearly 6900 patients when transforaminal injections were performed without sedation (12).

The finding that patients do not intrinsically need sedation for an interventional spine procedure are supported by the American Society of Anesthesiologists' position (approved by the ASA House of Delegates on October 22, 2005 and last amended on October 26, 2016), which states that the majority of minor pain procedures, under most routine circumstances, do not require anesthesia care other than local anesthesia (including epidural steroid injections, epidural blood patch, trigger point injections, sacroiliac joint injections, bursal injections, occipital nerve block, and facet injections). Exceptional circumstances, wherein moderate sedation may be considered, include

when patients experience “significant anxiety” and for “procedures that are prolonged and/or painful” (13).

Complete recommendations from the Spine Intervention Society regarding the use of sedation for pain procedures can be found in the International Spine Intervention Society’s Guidelines (2nd edition) (14).

For the frequently performed spinal procedures mentioned, default use of conscious sedation does not add a clear health/outcome benefit. The use of sedation may increase the risk of rare but catastrophic neurologic complications. Use of moderate sedation also adds to health care costs. While it seems that when given the option, patients with anxiety are more likely to elect the use of sedation, only a very small percentage of patients report dissatisfaction if sedation is simply not offered. When sedation is used, it does not predict patient satisfaction. If “significant anxiety” or vasovagal reaction is a concern for a particular patient, conscious sedation can be considered.

Physicians should be judicious in the safe use of sedation. Patients should be advised during informed consent that sedation is not necessary, but elective. The physician and patient need to weigh the risks and benefits of procedural harm with any potential advantage attributed to intravenous sedation. Providing patient educational material regarding sedation can assist patients in making informed decisions. If the physician performing the procedure decides to administer and supervise the sedation, they should be trained and qualified to do so. In these situations, a separate healthcare provider is required to assist with the administration of the medications and monitoring of the patient.

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