

Procedural Sedation in Regional Anaesthesia – Narrative Review

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Abstract

Background:

Regional anesthesia is a widely utilized technique. Supplementing the regional anesthesia with the sedatives will lessen the patient's anxiety while increasing the effectiveness of various blocks. We evaluated hemodynamic changes, level of sedation, and level of satisfaction of both the surgeon and patient when regional anesthesia is supplemented with sedatives like Ketamine, Propofol, and Dexmedetomidine.

Aim:

The main aim of the study is to know the hemodynamic changes, level of sedation, and level of satisfaction of both the surgeon and patient when regional anesthesia is supplemented with sedatives.

Methods:

An extensive search of all materials related to the topic with keywords - Intraoperative sedation, Analgesia, Regional block, and Sedatives was carried out in the PubMed and Google Scholar Search engines. Over 79 articles were identified on this topic including original research articles. Among these 15 articles were excluded as they did not match the field of our review and 21 articles were excluded as full articles were not available for review. Thus relevant research articles focusing on "Procedural sedation in regional Anaesthesia" published in the period 2000 – 2021 were included in the review. A total of 10 studies similar to the current study objectives were included in the study and analyzed.

Conclusion:

After reviewing the literature, we conclude that Propofol in combination with Ketamine given intravenously is a good substitute for procedural sedation along with regional anesthesia technique. When supplemented with regional anaesthesia, it is found to provide better hemodynamic stability intraoperatively and better surgeon and patient satisfaction.

Keywords: intraoperative sedation; analgesia; regional block; sedatives

Introduction:

Effective and prolonged analgesia plays an important role in all surgeries and it can be achieved with various regional blocks. (1,2) Procedural sedation during regional Anaesthesia has always been a great turmoil for the Anaesthetist with the availability of Anaesthetic drugs in day-to-day practice. (3) Providing sedation with sub Anaesthetic doses along with regional Anaesthesia is safe and does not require any major hemodynamic monitoring.

Various drugs like Propofol, Ketamine, and Dexmedetomidine has sedative, sympatholytic, and analgesic properties. Procedural sedation will help to relieve anxiety and inhibit tachycardia, and hypertension during the procedure.

Since Literature demonstrating a thorough regimen for balanced sedation during surgeries is unquestionably absent in the era of opioid-free Anaesthesia,(4) we aim to address the suitable drug used for intraoperative procedural sedation.

Methods

An extensive search of all materials related to the topic with keywords - Intraoperative sedation, Analgesia, Regional block, and Sedatives was carried out in the PubMed and Google Scholar Search engines. Over 79 articles were identified on this topic including original research articles. Among these 15 articles were excluded as they did not match the field of our review and 21 articles were excluded as full articles were not available for review. Thus relevant research articles focusing on "Procedural sedation in regional Anaesthesia" published in the period 2000 – 2021 were included in the review. A total of 10 studies similar to the current study objectives were included in the study and analyzed.

Review of Literature

Mona Mohamed Mogahd et al, studied the Safety and efficacy of continuous infusion of ketamine-dexmedetomidine versus ketamine-

propofol combinations for sedation among 70 patients who underwent coronary artery bypass graft surgery. They observed that ketamine-dexmedetomidine in comparison with ketamine-propofol, delivered a shorter duration of mechanical ventilation and, lesser requirement of fentanyl dose, with no significant difference in hemodynamic stability and length of stay in the ICU.⁽⁵⁾

Senem Koruk, et al, did a Prospective Randomized Study and studied the Safety and efficacy of ketamine-dexmedetomidine versus ketamine-propofol combinations for Anaesthesia in 90 Paediatric Patients (45 in each group) Undergoing Transcatheter Atrial Septal Defect Closure. They observed that both the groups were similarly tolerated, and the recovery period was significantly shorter in the dexmedetomidine group. Systolic and diastolic blood pressure values were not significantly different between groups, but the Heart rate values were significantly higher in the ketamine group.⁽⁶⁾

Mai W.Abdalla et al, did a randomized comparative study and studied the Safety and efficacy of ketamine-dexmedetomidine versus ketamine-propofol combinations for anesthesia of 60 patients (30 in each group) undergoing endoscopic retrograde cholangiopancreatography (ERCP). They observed that the Dexmedetomidine-propofol combination as TIVA during ERCP demonstrated better intra- and post-procedural stability of hemodynamic parameters, lesser postoperative nausea and vomiting, lesser post-operative cognitive dysfunctions, and faster recovery time.⁽⁷⁾

Zeynep Tosun et al, did a Prospective, randomized trial, and studied the effects of ketamine-dexmedetomidine versus ketamine-propofol combinations for Anaesthesia among 44 (22 in each group) Spontaneously Breathing Paediatric Patients Undergoing Cardiac Catheterization. They observed that the group that received the dexmedetomidine-ketamine combination did not yield superior results compared with the propofol-ketamine combination, because of the higher ketamine consumption, longer recovery time, insufficient sedation, and analgesia.⁽⁸⁾

Vidya Sagar Joshi et al, compared the effects of ketamine-dexmedetomidine versus ketamine-propofol combinations for Procedural Sedation in 60 Children (30 in each group) Undergoing Minor Cardiac Procedures in the Cardiac Catheterization Laboratory. They observed that the group that received the dexmedetomidine-ketamine combination had higher ketamine consumption, and longer recovery time, but with good stability in hemodynamic parameters and respiratory effects.⁽⁹⁾

Reza Azizkhani et al, did a prospective, randomized, and double-blind study, and compared the effects of dexmedetomidine versus propofol in addition to the ketamine combinations for reducing recovery agitation among the 93 pediatric patients after ketamine procedural sedation in the emergency department. 31 each were allocated to in keta dex, ketofol, and ketamine alone groups. They observed that the incidence of recovery agitation was 3.2% in the keta dex group, which was significantly lower compared to the 22.6% in the ketofol group, and 22.6% in the ketamine group. In the keta dex group, there was a lesser incidence of unpleasant recovery reactions such as hallucinations, crying, and nightmares.⁽¹⁰⁾

Reza Azizkhani et al, did a randomized double-blind clinical trial and compared the effects of dexmedetomidine versus propofol in addition to the ketamine combinations for reducing recovery agitation among the 93 adult patients after ketamine procedural sedation in the emergency department. 31 each were in keta dex, ketofol, and ketamine alone groups. They observed that the incidence of recovery agitation was 26% in the keta dex group and 29% in the ketofol group, which was significantly lower compared to 58% in the ketamine group.⁽¹¹⁾

Dilek Gunay Canpolat et al, did a randomized, prospective study, and compared the effect of ketamine-dexmedetomidine versus ketamine-propofol combinations among 60 children (30 in each group) for sedation during tooth extraction. They observed that the children in the Ketamine-

propofol group had a lesser incidence of lower vomiting and nausea episodes, no difference in heart rate and blood pressure, and higher surgeon satisfaction levels.⁽¹²⁾

Özgür Yağan et al, Compared the effect of Dexmedetomidine Versus Ketamine-Propofol Combination for Sedation among 60 patients (30 in each group) undergoing Cataract Surgery. At similar sedation levels, sedation provided by ketofol group provided satisfactory analgesia, rapid onset of action, and a shorter recovery period without resulting in significant hemodynamic changes or adverse respiratory effects.⁽¹³⁾

Prabhavathi Ravipati et al, studied the Safety and efficacy of dexmedetomidine when combined with ketamine-propofol among 60 patients posted for elective debridement and dressing. They observed that the group that received Dexmedetomidine (1µg/kg IM) decreased the requirement of propofol and ketamine, with better stable intraoperative hemodynamic parameters.⁽¹⁴⁾

Declaration of the author:

I declare the above article is my exclusive work. And this statement is true.

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Conflicts of interest: There are no conflicts of interest.

Conclusion

After reviewing the literature, we conclude that Propofol in combination with Ketamine given intravenously is a good substitute for procedural sedation along with regional anesthesia technique. When supplemented with regional anesthesia, it is found to provide better hemodynamic stability intraoperatively and better surgeon and patient satisfaction.

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