

# Sedation with Combination of Midazolam, Pentazocine and Propofol for Colonoscopy in Outdoor Patients.

Nagendra Bahadur K.C.<sup>1</sup>, Dinesh Pokhrel<sup>2</sup>.

<sup>1</sup>Department of Anesthesiology, Shree Birendra Hospital, <sup>2</sup>Department of Medicine, Birendra Police Hospital.

## ABSTRACT

**Introduction:** Diagnostic colonoscopies are generally done in OPD basis and requires sedation and analgesia to relieve both anxiety and pain. Propofol and midazolam combination is used worldwide and allows rapid and profound sedation with quick recovery. But data on combined sedation with midazolam, pentazocine and propofol are not found. So this study was conducted to test this combination for day care surgery. **Methods:** Prospectively, 242 colonoscopy procedures who had received combined sedation with midazolam, pentazocine and propofol were analysed. Midazolam and Pentazocine were given intravenously as a single dose of 2 mg and 15 mg respectively. 20 mg of Propofol was given bolus, than 10 mg top up titrating sedation till procedure is finished. Pulse, Non Invasive Blood pressure and oxygen saturation were recorded. Patients' genders, ages, weight, length of procedure and the need of total received Propofol for complete sedation in mg were recorded. Movement during procedure, the time of recovery and any complications were also recorded. Patients were also asked whether they had any memories of procedure. **Results:** Lower dose of propofol is required to produce adequate anaesthesia. There are no complication and vitals were stable including oxygen Saturation. There was quicker recovery as all patients responds on verbal command just after the procedure and no patient had memories of the procedure. All patients safely discharged within one hour. **Conclusions:** The combination is safe and comfortable for patients undergoing diagnostic colonoscopy to produce adequate anaesthesia without any significant complications.

**Keywords:** colonoscopy, moderate Sedation, propofol

## INTRODUCTION

Screening colonoscopies is generally done in OPD basis and requires sedation and analgesia to relieve both anxiety and pain. Virtually every colonoscopy done these days is performed under anesthesia to make the procedure comfortable<sup>1</sup>. Standard sedation is typically achieved with a benzodiazepine (midazolam) and narcotic (fentanyl or meperidine) combination, targeted to moderate sedation. In many cases, these agents provide effective and safe sedation, but Fentanyl and meperidine is costly and not easily available<sup>2</sup>.

The combination of Propofol and midazolam gives sedation alone without relieving pain. So, Pentazocine was used in our series as an analgesic agent along with Propofol and midazolam. Pentazocine is a synthetic opioid analgesic agent which is cheap and easily available with minimal side effect.

The aim of this study was to compare the rate of subclinical respiratory depression and the rate of clinical interventions related to respiratory depression. Secondary outcomes included the level of sedation achieved, the rate of adverse events, the time required for patients to return to baseline mental status after the procedure, the success of the procedure, and the patient-derived outcome factors of perceived pain, recall of the procedure, and satisfaction with the care received.

## METHODS

This was a prospective, descriptive study of 242 colonoscopies performed in outpatient basis for different abdominal complaints. All patients were called in the morning in empty stomach with bowel prepared one day prior to colonoscopy. After arrival of patient pre anaesthetic check-up was done and explained about the procedure and the sedation to be given for comfort with the related complications. The age, sex, body weight of the

Correspondence:

Col. Dr. Nagendra Bahadur K.C.

Department of Anesthesiology, Shree Birendra Hospital.

Email: drnkcbnita@gmail.com

Phone: +977-9851044030

study population is shown in Table 1.

**Table 1. Demographic data of the study population (n=242)**

<b>Mean age of patients (range)</b>	46.007 (11-84) years
<b>Mean weight of the patient (range)</b>	58.105(32-86) Kg
<b>Sex</b>	
Male	144(59.60%)
Female	98(40.40%)
<b>Duration of colonoscopy Procedure (minutes)</b>	14.549 (07-30)
<b>Total required Propofol in mg</b>	90.93(20-210)

Intravenous line was opened with 20 G Intra venous cannula and Ringer lactate was connected in all patients. Patients were put in left lateral position and Pulse oximetry and Blood Pressure cuff was attached. An oxygen inhalation 2 litre per minutes was given through nasal cannulae in all cases. When Physician is preparing for colonoscopy, Midazolam 2mg, Metoclopramide 10mg and Pentazocine 15 mg was given slowly through intravenous line one after another in all cases. Once the physician is ready for colonoscopy, injection Propofol 20 mg is given for the first time to all cases and 10-20 mg Propofol top up was done as required maintaining moderate sedation during the procedure. Pulse, Blood pressure and Oxygen saturation was recorded in every 5mints. Duration of colonoscopy was recorded in minutes. During the procedure any patient movement, complication were also noted. After completion of the procedure, Patients were tried to awaken by verbal and minimal painful stimuli and the time of recovery was recorded. After complete recovery patients were asked if they remember any event during the procedure and was there any discomfort during the procedure. All patients were kept for one hour for observation and discharged. Any post procedure complications were also recorded.

## RESULTS

In this study, Duration of colonoscopy procedure in average was 14.549 (range 7-30) minute and the average Propofol required was 90.93 mg (range 20-210). During the procedure 47 Patients (19.421%) moved but only one patient (0.41%) claim that he could recall or remember the procedure. In this study, 19 patients (07.851%) showed decrease Oxygen saturation below 90%, chin lift and jaw thrust maneuver corrected this problem. There was no need of Bag mask ventilation or any other special airway management. Vitals were well maintained in all cases but in 3 patients (01.239%) heart rate decreased below 50 but only one required Atropine (0.6 mg) (Table 2).

After completion of the colonoscopy procedure, patients were awakened by verbal and minimal painful stimuli.

95 patients(39.25%) responded within one minute, 39 patients (16.12%) in 1-2 minutes, 28 patients(11.57%) in 2-3 minutes, 25 patients (10.33%) in 3-4 minutes, 22 patients (9.10%) in 4-5 minutes and 33 patients (13.63%) responded in >5 minutes (Table 3). No other complications were noted and all the patients were discharged within one hour.

**Table 2. Complications (n=242)**

Complications	No of Patients	Percent
Movement of patient during Procedure	147	60.743
Whether recall of Procedure	01	0.413
Hypoxemia (SpO2 less than 90%)	19	07.851
Bradycardia (Less than 50/min)	03	01.239

**Table 3. Recovery Time in minutes (n=242)**

Response in minutes	No of Patients(Percentage)
<1 minutes	95(39.25)
1-2 minutes	39(16.12)
2-3 minutes	28(11.57)
3-4 minutes	25(10.33)
4-5 minutes	22(09.10)
> 5 minutes	33(13.63)

## DISCUSSION

Analgesia during colonoscopy is a common practice both in the United states, Europe and even in Nepal<sup>3</sup>. Recently propofol has been used as an alternative method of sedation for patients undergoing endoscopy procedures. The advantages of propofol are its rapid induction of sedation, quicker patient recovery time, and anti-emetic effect. It is generally accepted that propofol and Midazolam has sedative and amnestic properties but lacks analgesic effect<sup>4-8</sup>.

During colonoscopy it is true that there is some sort of visceral pain during gas insufflations and insertion of colonoscope, so combination of propofol and midazolam is not sufficient for comfort of patient. Addition of analgesic agent is good to alleviate pain as well and it also potentiates the sedative action of Propofol and midazolam<sup>9</sup>. Propofol and remifentanyl have been shown to have a synergistic effect in terms of controlling response to noxious stimuli<sup>10</sup>. Similarly, fentanyl is an opioid analgesic agent commonly used in combination with propofol for procedural sedation<sup>11,12</sup>. In one study done by C. Chelazzi et al concluded that all sedated patients underwent complete endoscopic examinations, while 8.9% of unsedated patients had their examination stopped due to excessive discomfort or pain. Colonoscopies tended

to be shorter in sedated than unsedated patients. In our study we did not performed colonoscopy without sedation but we used the adjuncts with propofol and there was no complain of pain. Data suggest that the synergistic sedation with a low dose of midazolam combined with propofol was superior to a standard combination of midazolam and the opioid pethidine for colonoscopies<sup>13,14</sup>. In this study, we used Midazolam to alleviate patient anxiety and Pentazocine to reduce abdominal pain and discomfort during colonoscopy<sup>15-17</sup>.

Propofol can also be given in continuous propofol infusion via infusion pump and is an alternative procedure for deep sedation during long-lasting interventional endoscopy. However, recovery time was significantly slower and hypotension was tended to occur more often<sup>18</sup>. In our study, intermittent titrated bolus propofol was given with good result. Although gastrointestinal endoscopy with sedation is increasingly performed in elderly patients, data on combined sedation with midazolam / propofol are very limited for this age group. Elderly patients (>70 years) had a higher level of co-morbidity and needed lower mean propofol doses for sedation<sup>19</sup>. In our study also 43 (17.768%) patients were elderly; the average Propofol they received was lesser (69.23mg) than the mean requirement (90.93mg).

The goal was to assess the benefit from sedation with combined Midazolam, Pentazocine and Propofol in terms of reduced anxiety, discomfort and pain during the procedure. The choice of this combination of drugs is justified by this study to discharge patients in one hour, without any significant complication.

## CONCLUSIONS

Combination of midazolam, pentazocine and propofol is safe and comfortable for patients and without any complication and patient can discharge safely in one hour after colonoscopic procedure.

## REFERENCES

1. Chelazzi C, Consales G, Boninsegni P, Bonanomi GA, Castiglione G, De Gaudio AR. Propofol sedation in a colorectal cancer screening outpatient cohort. *Minerva Anestesiologica*. 2009;75(12):677-83.
2. Zuccaro G Jr. Sedation and analgesia for GI endoscopy. *Gastrointest*

3. Cohen LB, Weckler JS, Gaetano JN, Benson AA, Miller KM, Durkalaski V et al. Endoscopic sedation in the united states: results from national wide survey. *Am J Gastroenterol*. 2006;101:967-74.
4. Singh H, Poluha W, Cheung M, Choptain N, Baron KI, Taback SP. Propofol for sedation during colonoscopy. *Cochrane Database Syst. Rev*. 2008 Oct 8;(4):CD006268.
5. Heuss LT, Inauen W. The dawning of a new sedative: propofol in gastrointestinal endoscopy. *Digestion*. 2004;69(1):20-6.
6. Miner JR, Gray RO, Stephens D, Biros MH. Randomized clinical trial of propofol with and without alfentanil for deep procedural sedation in the emergency department. *Acad Emerg Med*. 2009;16:825-34.
7. Miner JR, Bachman A, Kosman L, Teng B, Heegaard W, Biros MHJ. Assessment of the onset and Persistence of amnesia during procedural sedation with propofol. *Acad Emerg Med*. 2005;12:491-6.
8. American Society of Anesthesiologists. Continuum of depth of sedation:definition of general anesthesia and levels of sedation/analgesia. Approved by ASA House of Delegates on October13,1999, and amended on October 27,2004. Available at:<http://www.asahq.org/publications/And Services/standards/20.pdf>. [LastaccessedApril2,2007].
9. James R. Miner, MD, Richard O.Gray, MD, Jennifer Bahr, MD. Randomized Clinical Trial of Propofol Verses Ketamine for Procedural sedation in the emergency department. *Acad Emerg Med*. 2010;17:604-11.
10. Gottschalk A, Smith DS. New concepts in acute pain therapy: preemptive analgesia. *Am Fam Phys*. 2001;63:1979-84.
11. Moerman AT, Struys M, Vereecke H, Herregods L, De Vos M, Mortier E. Remifentanil used to supplement propofol does not improve quality of sedation during spontaneous respiration. *J Clin Anesth*. 2004;16:237-43.
12. Olofsen E, Romberg R, Bijl H, et al. Alfentanil and Placebo analgesia: no sex differences detected in models of experimental pain. *Anesthesiology*. 2005;103:130-9.
13. Paspatis GA, Manolaraki M, Xirouchakis G, Papanikolaou N, Chlouverakis G, Gritzali A.Synergistic: sedation with midazolam and propofol versus midazolam and pethidine in colonoscopies:a prospective, randomized study. *Am J Gastroenterol*. 2002;97(8):1963-7.
14. Patel S, Vargo JJ, Khandwala F, et al. Deep sedation occurs frequently during elective endoscopy with meperidine and midazolam. *Am J Gastroenterol*. 2005;100:2689-95.
15. Heiman DR, Tolliver BA, Weis FR, O'Brien BL, DiPalma JA: Patient-controlled anesthesia for colonoscopy using propofol: results of a pilot study. *South Med J*. 1998;91(6):560-4.
16. Liu SY, Poon CM, Leung TL, Wong CW, Chan YL, Leung TC, Leong HT:Nurse-administered propofol-alfentanil sedation using a patient-controlled analgesia pump compared with opioid-benzodiazepine sedation for outpatient colonoscopy, *Endoscopy*. 2009;41(6):522-8.
17. Lee DW, Chan AC, Sze TS, Ko CW, Poon CM, Chan KC, Sin KS, Chung SC: Patient-controlled sedation versus intravenous sedation for colonoscopy in elderly patients: a prospective randomized controlled trial. *Gastrointest Endosc*. 2002;56(5):629-32.
18. Riphaut A, Geist C, Schrader K, Martchenko K, Wehrmann T: Intermittent manually controlled versus continuous infusion of propofol for deep sedation during interventional endoscopy: A prospective randomized trial. *Scandinavian Journal of Gastroenterology*. 2012;8-9(47):1078-85.
19. Kerker A, Hardt C, Schlieff HE, Dumoulin FL : Combined sedation with midazolam / propofol for gastrointestinal endoscopy in elderly patients. *BMC Gastroenterology*. 2010;10:11.