Newer Approaches for Managing OSA and Obese Ambulatory Patients

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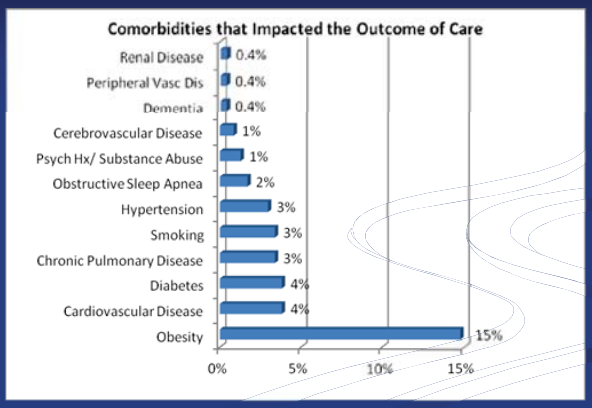
Obesity

- Body mass index (BMI) commonly used to define the severity of obesity
- 25.0 to 29.9 kg/m2 = overweight
- 30 to 40 kg/m2 = obese
- >40 kg/ m2 = morbid obesity
- >50 kg/ m2 =super obesity

Analysis of patient injury based on anesthesiology closed claims data from a major malpractice insurer

Ranum, et al., J Healthcare Risk Management 2014; 34(2): 31-42.



Sieffert MR et al. Obesity Is Associated with Increased Health Care Charges in Patients Undergoing Outpatient Plastic Surgery

Plastic and Reconstructive Surgery Journal 2015; 135(5):1396-1404.

- 2009-2010: California, Florida, Nebraska, and New York ambulatory surgery, inpatient, and emergency department databases
- Obesity, postdischarge acute care, and hospital charges within 30 d
- Liposuction, abdominoplasty, breast reduction, and blepharoplasty

Results:

- 47,741 discharges, obese 2052 (4.3 percent)
- Obese vs non obese: hospital-based acute care, 7.3% vs 3.9%, serious adverse event 3.2% vs 0.9% within 30 days of surgery.
- Obese vs non obese patient hospital charges are greater, on average ($p<0.01$), by $3917 (liposuction), $7059 (breast reduction), and $7412 (abdominoplasty)

Memtsoudis SG et al. The Impact of Sleep Apnea on Postoperative Utilization of Resources and Adverse Outcomes
Anesth Analg 2014;118:407–18

- 2006-10: 530,089 discharge data entries
- Total hip/knee arthroplasty ~400 US Hospitals
- 8.4% diagnosis code for SA
- SA: more likely to receive ventilatory support, intensive care, stepdown and telemetry services, greater economic resources, longer hospitalization
- **CONCLUSIONS:** The presence of SA is a major clinical and economic challenge in the postoperative period.

Selection of Obese Patients Undergoing Ambulatory Surgery: A Systematic Review of the Literature

Girish P Joshi, MB BS, MD, FFARSCI,* Shireen Ahmad, MD,† Waleed Riad, MSc, AB, MD (PhD), SB, KSUF,† Stanley Eckert, MD,§ and Frances Chung, MBBS, FRCPC‖
(Anesth Analg 2013; 117:1082-91)

BACKGROUND: The incidence of obesity has increased over the past 2 decades. In recent years, several studies have assessed perioperative outcomes in obese patients undergoing ambulatory surgery. However, this evidence has not been reviewed and evaluated systematically.
METHODS: We conducted a systematic review of studies published between 1948 and May 2012, assessing perioperative outcome in adult obese patients undergoing ambulatory surgery. All studies were eligible for inclusion if they reported perioperative complications including unplanned hospital admission and readmission.
RESULTS: A literature search revealed 23 studies (13 prospective and 10 retrospective), and 1 systematic review assessing laparoscopic bariatric surgery. A total of 106,119 patients were included in the analysis with 62,476 patients included in the prospective trials and 43,643 patients included in the retrospective trials (not including the systematic review of laparoscopic bariatric surgery). Of these, 39,548 patients underwent bariatric surgery. The super obese (body mass index [BMI] >50 kg/m²) appear to be at higher risk of complications. Patients undergoing nonbariatric surgery had a lower degree of obesity (BMI approximately 30 kg/m²). Patients undergoing bariatric surgery were morbidly obese (BMI >40 kg/m²), which is associated with a higher comorbidity burden. However, the lack of increase in unanticipated admission rate in this
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…the super obese (BMI >50 kg/m²) do present an increased risk for perioperative complications, while patients with lower BMIs do not seem to present any increased risk as long as any comorbidities are minimal or optimized before surgery.

OSA

- Most common sleep disorder
- Combination: Upper airway obstruction and Decreased SP02
- 10-20% adult population
- 80% undetected
- Anesthetic challenge: proper patient selection
- ASA/SAMBA guidelines

Risk Factors

- Between 30-70: male 14%, female 5%
- Anatomic abnormalities: craniofacial, macroglossia, retrognathia, endocrine (eg Cushing), connective tissue (eg Marfan)
- Age > 50
- Neck Circumference > 40cm
- Lifestyle - alcohol, smoking

Co-morbidities

- Myocardial ischemia
- Hypertension, arrhythmias, heart failure
- cerebrovascular disease
- metabolic
- insulin resistance
- GERD
- obesity

Diagnosis

- Gold standard: Sleep study
- AHI index: average number of respiratory events/hour of sleep
- Apnea - cessation airflow 10 sec
- Hypopnea - reduced airflow with SPO2 decrease > 4%
- AASM: AHI > 15 or AHI > 5 with sx
- AHI: 5-14 mild, 15-30 mod, >30 severe

Hai, F et al. Postoperative complications in patients with obstructive sleep apnea: a meta-analysis
Journal of Clinical Anesthesia (2014) 26, 591–600

- Academic Veterans Affairs Medical Center.
- Relationship between OSA and postoperative respiratory and cardiac complications among adults. (to April 2013)
- Seventeen studies, 7,162 pts
- Diagnosis of obstructive sleep apnea (OSA) imparts an increased risk of postoperative respiratory failure, cardiac events, and intensive care unit (ICU) transfer than patients with no OSA diagnosis.

ASA Guidelines 2014: Selection and Perioperative Management

- Severity of OSA
- Invasiveness of surgery
- Type of anesthesia
- Postoperative opioid requirement
- Score = 0-9
- < 3 may undergo ambulatory surgery
- > 5 increased risk

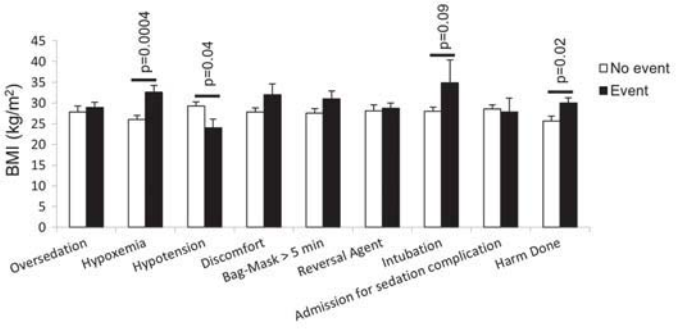
Gross JB, et al: Practice guidelines for the perioperative management of patients with obstructive sleep apnea. An updated report by the American Society of Anesthesiologists task force on perioperative management of Patients with obstructive sleep apnea. Anesthesiology 2014; 120: 268-86.

Analysis of Adverse Events Associated With Adult Moderate Procedural Sedation Outside the Operating Room

Sergey Karamnov, MD, Natalia Sarkisian, PhD,† Rebecca Grammer, DMD,* Wendy L. Gross, MD, MHCM, and Richard D. Urman, MD, MBA**

J Patient Saf. 2014 Sep 8.

Contribution of the patient's BMI to adverse events (n=52)



ASA Risk Assessment Scoring System

Severity of sleep apnea	
None	0
Mild	1
Moderate	2
Severe	3
Invasiveness of surgery and anesthesia	
Superficial surgery/local anesthesia and no sedation	0
Superficial surgery/moderate sedation or general anesthesia	1
Peripheral surgery with regional anesthesia and moderate sedation	1
Peripheral surgery with general anesthesia	2
Airway surgery with moderate sedation	2
Major surgery/general anesthesia	3
Airway surgery/general anesthesia	3
Requirement for postoperative opioids	
None	0
Low-dose oral opioids	1
High-dose oral, parenteral, or neuraxial opioids	3

Total score : a score of 4 suggests possible increased risk, and scores of >5 suggest significantly increased risk

Gross JB, et al: Practice guidelines for the perioperative management of patients with obstructive sleep apnea. An updated report by the American Society of Anesthesiologists task force on perioperative management of Patients with obstructive sleep apnea. Anesthesiology 2014; 120: 268-86.

STOP-BANG Questionnaire

Anesthesiology. 2008 May;108(5):812-21.

Snoring - Do you snore loudly (louder than talking or loud enough to be heard through closed doors)?

Tired - Do you often feel tired, fatigued, or sleepy during daytime?

Observed - Has anyone observed you stop breathing during your sleep?

Blood **P**ressure - Do you have or are you being treated for high blood pressure?

BMI - more than 35 kg/m^2?

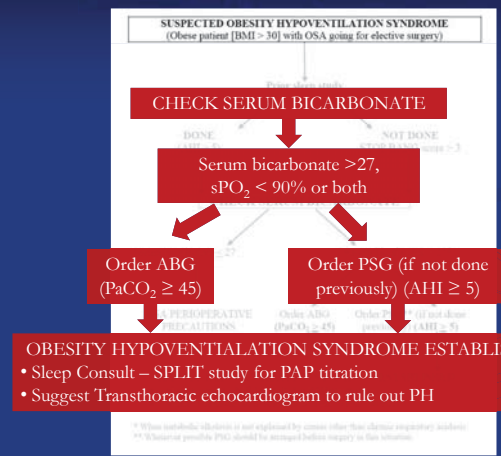
Age - over 50 yr old?

Neck circumference - greater than 40 cm?

Gender - male?

Kaw R. et al. Postoperative Complications in Patients with Unrecognized Obesity Hypoventilation Syndrome Undergoing Elective Non-cardiac Surgery

Chest, 2015 http://journal.publications.chestnet.org/



Society for Ambulatory Anesthesia Concensus Statement on Preoperative Selection of Adult Patients with Obstructive Sleep Apnea Scheduled for Ambulatory Surgery
Joshi GP, Ankichetty SP, Gan TJ, Chung F. Anesth Analg 2012;115:1060-8

Obstructive Sleep Apnea (OSA)

- Use of STOP-Bang criteria for preoperative OSA screening
- Consider patient co-morbidities in selection process

Mutter TC et al. A Matched Cohort Study of Postoperative Outcomes in Obstructive Sleep Apnea: Could Preoperative Diagnosis and Treatment Prevent Complications?

Anesthesiology 2014; 121:707-18

- 1987 – 2008: Postoperative outcomes, adult OSA patients up to 5 yr before (undiagnosed OSA, n = 1,571), and after (diagnosed OSA, n = 2,640) PSG and CPAP prescription
- Controls: Pts with low risk of having sleep apnea (n = 16,277). Follow-up: at least 7 postoperative days.
- **Results:** Risk of respiratory complications was similarly increased for both undiagnosed and diagnosed OSA. The risk of cardiovascular complications, **cardiac arrest and shock**, significantly different ($P = 0.009$) between undiagnosed OSA and diagnosed OSA patients.
- **Conclusions: Diagnosis of OSA and prescription of continuous positive airway pressure therapy is associated with a reduction in postoperative cardiovascular complications**

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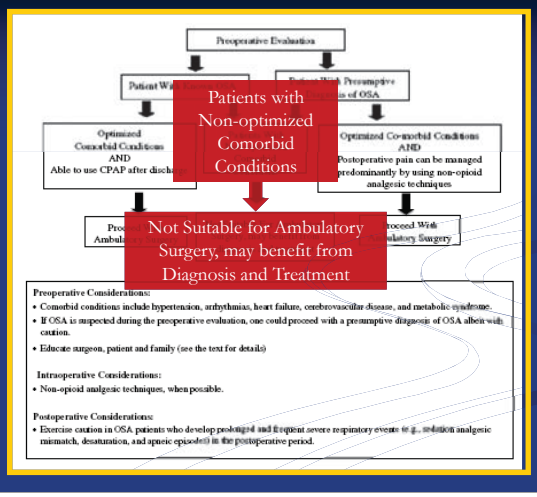

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Obstructive Sleep Apnea (OSA)

- Pre-procedure surgeon, patient and family education re: increased vigilance, potential complications
- Bring CPAP to facility, encourage few days and nights after procedure
- Sleeping in a semi-upright position postoperatively
- Precaution against use of opiates

Postoperative management of the pt with diagnosed or suspected OSA

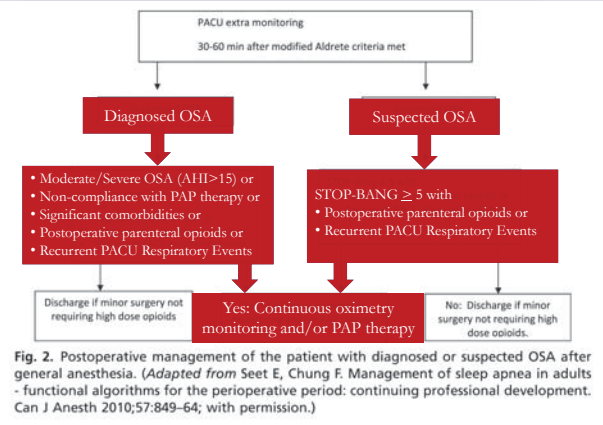


Fig. 2. Postoperative management of the patient with diagnosed or suspected OSA after general anesthesia. (*Adapted from* Seet E, Chung F. Management of sleep apnea in adults - functional algorithms for the perioperative period: continuing professional development. Can J Anesth 2010;57:849–64; with permission.)

Seet and Chung. Can J Anesthesia 2010; 57: 849-64

Continuing Education in Anaesthesia, Critical Care & Pain Advance Access published February 14, 2013

Non-opioid-based adjuvant analgesia in perioperative care

Shankar Ramaswamy MBBS MD FRCA
John A. Wilson MBChB MD MRCP FRCA FFPMRCA
Lesley Colvin MBChB FRCA PhD FFPMRCA

Continuing Education in Anaesthesia, Critical Care & Pain | 2013

- Perioperative pain can result in hyperalgesia, central sensitization, and chronic postsurgical pain
- Multimodal analgesia may improve pain management, decrease opioid requirement and opioid-related side effects
- Ketamine, pregabalin, gabapentin, i.v. lidocaine, and alpha-2 agonists, often used for chronic pain – evidence of efficacy for use in acute pain control

Perioperative Precautions and Risk Mitigation

Seet and Chung. Can J Anesthesia 2010; 57: 849-64

Table 2
Perioperative precautions and risk mitigation for patients with OSA

Anticipate difficult airway	
	Consider α_2-adrenergic agonists (clonidine, dexmedetomidine)
Intraoperative, non-opioid, multi-modal technique	
	Consider CPAP preoxygenation
	Two-handed triple airway maneuvers
Local, regional anesthesia	
Gastroesophageal reflux disease	Consider proton pump inhibitors, antacids, rapid sequence induction with cricoid pressure
Moderate sedation- capnography	
	Multimodal approach to analgesia (nonsteroidal anti-inflammatory drugs, acetaminophen, tramadol, ketamine,
Deep sedation, secure the airway	
Carry-over sedation effects from longer-acting	Use of propofol/remifentanil for maintenance of anesthesia
	Use of insoluble potent anesthetic agents (desflurane)
GA- short acting agents; extubate awake, semi-upright position	
Postextubation airway obstruction	Verify full reversal of neuromuscular blockade
	Extubate only when fully conscious and cooperative
	Nonsupine posture for extubation and recovery
	Resume use of positive airway pressure device after surgery

Adapted from Seet E, Chung F. Management of sleep apnea in adults - functional algorithms for the perioperative period: continuing professional development. Can J Anaesth 2010;57:849–64; with permission.

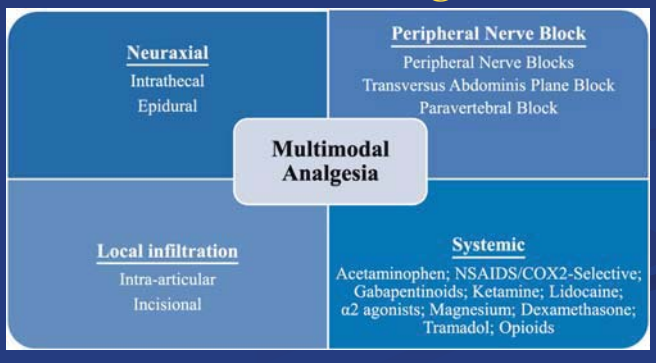
Gritsenko, K et al. Multimodal therapy in perioperative analgesia. Best Practice & Research Clinical Anaesthesiology 28 (2014) 59–79

Drugs used in multimodal analgesia

Drug	Dosing
Gabapentinoids	Gabapentin - 600 mg PO preoperatively - 100–600 mg q8h postoperatively Pregabalin - 150–300 mg PO preoperatively - 50–100 mg q12h postoperatively
α2 agonists	Clonidine Bolus: - 2–5 mcg/kg PO/IV before - 150 mcg PO 60–90 min before Dexmedetomidine - Bolus: 0.2–1 mcg kg^{-1} h^{-1} over 10 min at induction - Infusion: 0.2–0.5 mcg kg^{-1} h^{-1}
Ketamine	Intraoperative Bolus 0.25–0.5 mg/kg Infusion 0.2–0.3 mg kg^{-1} h^{-1} OR 2.5–10 mcg kg^{-1} min^{-1} Postoperative Infusion: 1.25–5 mcg kg^{-1} min^{-1} IV-PCA: morphine 0.7 mg + 5 mg ketamine/bolus/7 min
Lidocaine	Bolus: 1–1.5 mg/kg over 10 min Infusion: 1–3 mg kg^{-1} h^{-1} or 30–40 mcg/kg/r
Dexamethasone	0.1 mg/kg

Gritsenko, K et al. Multimodal therapy in perioperative analgesia. Best Practice & Research Clinical Anaesthesiology 28 (2014) 59–79

Basic components of multimodal analgesia



Extended Mastectomy/ and or any Plastic Reconstruction of the breast or face

Reduce PACU length of stay and increase patient satisfaction by reducing post-op pain, PONV, and sedation by minimizing opioids and incorporating a multimodal analgesic regimen.

Meds ordered night before

- Gabapentin 300-400 mg PO x 1 OR Pregabalin 75mg PO x 1.
- Acetaminophen 1000mg PO x 1
- Celecoxib 400mg PO (except for facial plastics)
- **Scopolamine Patch for PONV**

- Ondansetron 4mg IV at end of case.
- Minimal opioids. Short acting (Fentanyl or Dilaudid in low doses)

Consider using:

- Esmolol Infusion in place of opioids. 10 mcg/kg/min, adjusted 5-15 mcg/kg/min based on HR. Start during induction, end with removal of airway device

PACU

- PO Opioid as needed when able to tolerate PO.
- IV opioid (fentanyl or hydromorphone in low doses) for breakthrough pain, if unable to tolerate PO, or VAS>5.

PAIN MEDICINE

Postoperative Opioid-induced Respiratory Depression

A Closed Claims Analysis

Lorri A. Lee, M.D., Robert A. Caplan, M.D., Linda S. Stephens, Ph.D., Karen L. Posner, Ph.D., Gregory W. Terman, M.D., Ph.D., Terri Voepel-Lewis, Ph.D., R.N., Karen B. Domino, M.D., M.P.H.

opioid-induced respiratory depression in 92/357 claims

77% led to brain damage or death

88% were within 24 hours of surgery

97% deemed preventable by better monitoring and personnel response

patterns of injuries could guide preventative strategies.

tors for RD, clinical management, nursing assessments, and timing of events were abstracted from claim narratives to identify

damage or death. The vast majority of RD events (88%) occurred within 24 h of surgery, and 97% were judged as preventable

tially preventable with improvements in assessment of sedation level, monitoring of oxygenation and ventilation, and early response and intervention, particularly within the first 24 h postoperatively. (ANESTHESIOLOGY 2015; 122:659-65)

Outpatient Reality

PAIN MEDICINE

Postoperative Opioid-induced Respiratory Depression

A Closed Claims Analysis

Lorri A. Lee, M.D., Robert A. Caplan, M.D., Linda S. Stephens, Ph.D., Karen L. Posner, Ph.D., Gregory W. Terman, M.D., Ph.D., Terri Voepel-Lewis, Ph.D., R.N., Karen B. Domino, M.D., M.P.H.

ABSTRACT

Background: Postoperative opioid-induced respiratory depression (RD) is a significant cause of death and brain damage in

Contributing and potentially actionable factors included multiple prescribers (33%), concurrent administration of nonopioid sedating medications (34%), and inadequate nursing assessments or response (31%).

16% of claims. Somnolence was noted in 62% of patients before the event.

Conclusions: This claims review supports a growing consensus that opioid-related adverse events are multifactorial and potentially preventable with improvements in assessment of sedation level, monitoring of oxygenation and ventilation, and early response and intervention, particularly within the first 24 h postoperatively. (ANESTHESIOLOGY 2015; 122:659-65)

Gastrointest Endosc. 2011 Dec;74(6):1238-47. doi: 10.1016/j.gie.2011.09.006.

Obesity as a risk factor for sedation-related complications during propofol-mediated sedation for advanced endoscopic procedures.

Wani S[1], Azar R, Hovis CE, Hovis RM, Cote GA, Hall M, Waldbaum L, Kushnir V, Early D, Mullady DK, Murad F, Edmundowicz SA, Jonnalagadda SS.

- Obesity and sedation-related complications (SRCs) in patients undergoing AEPs
- 1016 patients (**BMI ≤30, 730 [72%]; 30-35 159 [16%]; ≥35, 127 [12%]**).
- MAC with propofol or combination propofol, benzo/opioid
- Airway maneuvers (AMs), hypoxemia, hypotension requiring vasopressors, and early procedure termination.

Results:

	BMI ≤30	BMI 30-35	BMI ≥35	P-value
Frequency of AMs	10.5%	18.9%	26.8%	$P \leq .001$
Hypoxemia	5.3%	9.4%	13.4%	$P \leq .001$

- No difference in patients receiving propofol alone or in combination

Conclusions: Obesity associated with increased frequency of SRCs; propofol can be used safely in obese patients undergoing AEPs when administered by trained professionals.

Opioid-free total intravenous anaesthesia reduces postoperative nausea and vomiting in bariatric surgery beyond triple prophylaxis

P. Ziemann-Gimmel*, A. A. Goldfarb, J. Koppman and R. T. Marema
Br. J. Anaesth. (2014) 112 (5): 906-911. doi: 10.1093/bja/aet551

- Despite triple prophylaxis, up to 42.7% of bariatric surgery patients require antiemetic rescue medication (AERM)
- Prospective, randomized study: Nov 2011-Oct 2012.
- Classic GA group (n= 59): volatile anaesthetics and opioids.
- TIVA group (n=60) propofol, ketamine, and dexmedetomidine.
- Results: PONV in GA group, 22 patients (37.3%) vs TIVA, 12 patients (20.0%). Absolute risk reduction = 17.3%

Conclusions: Opioid-free TIVA is associated with reduction in relative risk of PONV compared with balanced anaesthesia.

Propofol versus propofol/ketamine for brief painful procedures in the emergency department: clinical and bispectral index scale comparison

Phillips W et al. J Pain Palliative Care Pharmacother. 2010; 24 (4): 349-55

- 28 pts undergoing procedural sedation for fracture manipulation in ED
- Randomized 2 groups: P and PK
- Measurements: Procedural pain, bispectral index (BIS) score, adverse effects, recovery time and vital signs
- PK reduces amount, cardiorespiratory depressant effects of PPF
- PK decreased side effects of ketamine alone (eg. slower emergence, hallucinations, PONV, emergence delirium)
- BIS score at goal sedation (77 versus 61), smaller difference between baseline and goal sedation BIS score (18.78 ± 10 versus 34.64 ± 11)
- No patient in either group experienced respiratory depression or required any intervention.

Propool + Ketamine

Evaluation of dexmedetomidine/propofol combination in patients with obstructive sleep apnea characteristics during upper gastrointestinal endoscopy

Hannallah M et al. Proceedings of the International Anesthesia Research Society, May 2012

- Fifteen males/5 females aged 51±8 years undergoing GI endoscopy/colonoscopy. BMI was 34.7±8.4, and adjusted neck circumference was 53.4±3.4 cm. Seven had definitive OSA diagnoses.
- Dexmedetomidine 1 mcg/kg (maximum 100 mcg) was given over 10 min followed by propofol boluses until adequate depth of anesthesia. Maintenance by PPF infusion.
- Blood pressure, heart rate, and O2 saturation were recorded before, during, and after the procedure. The endoscopists evaluated the anesthesia conditions on a 10 points numerical scale (10 = perfect). Phase 1 time (time between end of anesthesia and patient fulfilling PACU discharge criteria) was recorded
- Two pts, O2 saturation < 85%, corrected with airway maneuvers.
- Six pts (systolic blood pressure < 90 mmHg) requiring vasopressor support
- No patient developed heart rate < 45 beats per minute.
- The evaluation score was 9±1.7 by the endoscopists, and 8±2.3 by the patients.

Propofol + Dexmedetomidine

Clinical efficacy of the combination of propofol and ketamine (ketofol) for deep sedation for colonoscopy

Amornyotin S, et al. Gut 2012(Suppl 2);61:A339-A340

- 194 patients who underwent intravenous sedation (IVS) for colonoscopy randomly assigned to 97 pts in PN and PK groups.
- All patients were premedicated with 0.02-0.03 mg/kg of midazolam.
- Results: All endoscopies were successfully.
- Mean total dose of propofol in group PK= 6.98 mg/hg/h and PN = 7.73 mg/kg/h. Mean total dose of ketamine in group PK = 1.49 (0.61) mg/kg/h.
- No significant differences in patient tolerance, discomfort during insertion, patient and endoscopist satisfaction, hemodynamic responses, procedural pain, recovery time and recovery score.
- Cardiovascular and respiratory adverse events were minimal, not significantly different between the two groups.

Propofol + Ketamine

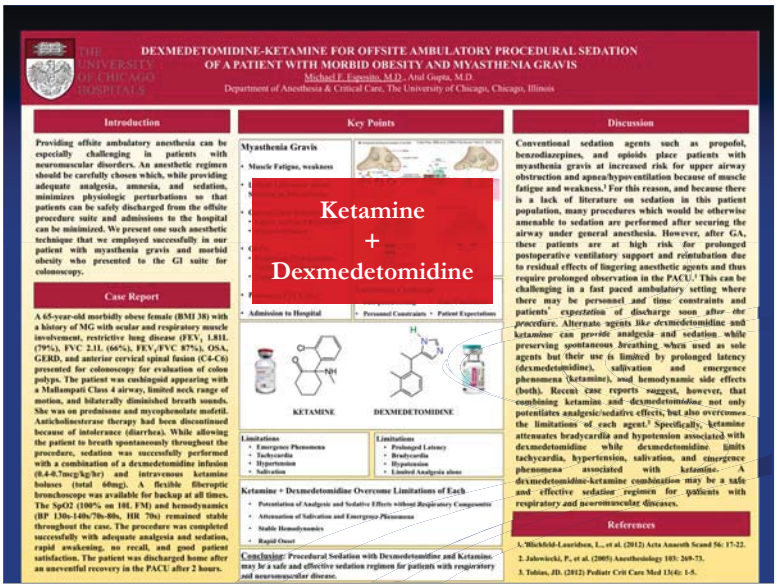
Evaluation of dexmedetomidine/propofol combination in patients with obstructive sleep apnea characteristics during upper gastrointestinal endoscopy

Hannallah M et al. Proceedings of the International Anesthesia Research Society, May 2012

Propofol Induction Dose and Phase 1 Time:

	When propofol induction for upper GI endoscopy was preceded with dexmedetomidine 1 mcg/kg.	When only propofol was used for induction for upper GI endoscopy. (Data from a different study)
Propofol Induction Dose.	0.8±0.4 mg/kg	2.0±0.5 mg/kg
Phase 1 time.	67.5±26.7 min	33.4±5.9 min

Propofol + Dexmedetomidine



Gastrointest Endosc. 2015 Sep 11. pii: S0016-5107(15)02850-3. doi: 10.1016/j.gie.2015.08.077. [Epub ahead of print]

A randomized, controlled trial to compare the efficacy and safety profile of a dexmedetomidine-ketamine combination with a propofol-fentanyl combination for ERCP.

Goyal R[1], Hasnain S[1], Mittal S[1], Shreevastava S[2].

- Compare safety and efficacy of Propofol-Fentanyl (PF) to Dex-Ketamine (DK) combination in TIVA for ERCP
- 83 patients (18-75 years) randomized 2 groups: 42 PF, 41 KD
- Sedation-related adverse effects and recovery time noted
- Results: PF group had greater episodes of hypotension (19%), bradycardia (4.7%), and desaturation oxygen saturation (SpO2 <80% in 11.9% and SpO2 <90% for >10 s in 42.8%)
- Procedure completed all patients; interrupted 6 pts PF group due to desaturation (5) or sudden patient movement (1).
- Recovery time greater in DK group.

Conclusion: There were significantly fewer sedation-related adverse effects, but the recovery time was longer with DK.

Dexmedetomidine + Ketamine

J Anaesthesiol Clin Pharmacol. 2015 Apr-Jun;31(2):201-6. doi: 10.4103/0970-9185.155149.

The dexmedetomidine "augmented" sedato analgesic cocktail: An effective approach for sedation in prolonged endoscopic retrograde cholangio-pancreatography.

Mukhopadhyay S[1], Niyogi M[2], Sarkar J[3], Mukhopadhyay BS[4], Halder SK[5].

- Evaluate safety and efficacy of dexmedetomidine as additional med in three deep sedation drug regimens for prolonged ERCP
- Forty-five patients for therapeutic ERCP with prolonged procedural duration (>50 m[illegible]ps.
- Group 1: propofol and midazolam, Group 2: ketamine-propofol-midazolam-pentazocine, Group 3: sedato-analgesic cocktail plus dexmedetomidine infusion.
- Total propofol requirement, episodes of gagging, oxygen desaturation, changes in MAP, recovery and satisfaction score of endoscopist, anesthetist and patient were analyzed

Propofol, Ketamine, Midazolam + Dexmedetomidine

Taghinia, AH et al.

J Plastic and Recon. Surg. 2008, 121:269

- 142 consecutive facelifts with sedation
- 2002-2005 retro[illegible]ne surgeon
- No DEX group (77 patients)
  - Propofol, ketamine, midazolam, fentanyl
- DEX group (65 patients)
  - Above medications *and* DEX

Propofol, Ketamine, Midazolam + Dexmedetomidine

J Anaesthesiol Clin Pharmacol. 2015 Apr-Jun;31(2):201-6. doi: 10.4103/0970-9185.155149.

The dexmedetomidine "augmented" sedato analgesic cocktail: An effective approach for sedation in prolonged endoscopic retrograde cholangio-pancreatography.

Mukhopadhyay S[1], Niyogi M[2], Sarkar J[3], Mukhopadhyay BS[4], Halder SK[5].

Results:

	Group 1 propofol and midazolam	Group 2 ketamine-propofol-midazolam-pentazocine	Group 3 sedato-analgesic cocktail plus dexmedetomidine infusion
Less Mean propofol requirement		x	x
Fewer incidents of gagging		x	x
Less Oxygen desaturation		x	x
MBP more stable			x
Faster recovery			x
Greater anesthetist's satisfaction		x	x

Taghinia, AH et al.

J Plastic and Recon. Surg. 2008, 121:269

Results: Dexmedetomidine group

- Maintain spontaneous ventilation and oxygen saturation with room air, reducing fire hazard with the combination of supplemental oxygen and electrocautery.
- Decreased requirement for intraoperative midazolam, propofol, fentanyl.
- Decrease in postoperative antiemetic requirements.