



COLUMBIA UNIVERSITY
MEDICAL CENTER

Procedural Sedation

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Case

A 52 yom with obesity, OSA presents for evaluation of dysphagia

He reports long-standing GERD (x20 years) and new onset dysphagia to solids

He denies weight loss, hematemesis

No prior EGDs

He takes omeprazole once daily

He is allergic to “some pain killer he got” after knee surgery

You plan to perform an EGD for further evaluation

Case

What kind of sedation are you planning?

What information from history and physical to you use to determine that?

How do you prepare your patient for this type of sedation?

What might you need if the patient develops an adverse event due to sedation?

Types of Sedation

Minimal or No Sedation (Anxiolysis)

- Pt responds to verbal stimuli
- Airway unaffected
- Spontaneous ventilation unaffected
- Cardiovascular function unaffected

Moderate Sedation (conscious sedation)

- Purposeful response to verbal or tactile stimuli
- No intervention required for airway
- Normal spontaneous ventilation
- Cardiovascular function usually maintained

Deep sedation (usually “MAC”)

- Purposeful response after repeated stimulation
- Intervention may be required to maintain airway
- Spontaneous ventilation adequate
- Cardiovascular function usually maintained

General Anesthesia

- Pt unarousable
- Airway intervention required
- Spontaneous ventilation usually inadequate
- Cardiovascular function may be impaired



Types of Sedation

Minimal or No Sedation (Anxiolysis)

- Pt responds to verbal stimuli
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- Topical lidocaine improves discomfort for esophageal intubation vs. placebo ¹
 - This is not true for propofol sedation²⁻³
- Factors associated with willingness for unsedated colonoscopy: absent anxiety, no prior colonoscopy, male sex⁴

Types of Sedation

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Sedative administered by RN under supervision by GI/Endoscopist

Typically combination of BZD + Opiate

Adjunct meds: diphenhydramine

BZD provides anxiolysis + amnesia

Midazolam (Versed) typically used-
fast onset, short duration

Opiate provides analgesia and sedation

Fentanyl typically used- rapid
clearance



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Doses given in increments

Starting dose varies per endoscopist:

-50mcg fentanyl/2mg versed

-25mcg/1

Typically 2 minutes between doses, re-assess patient's sedation and comfort level

Opiate antagonist (Naloxone) should be on hand

0.2 mg IV, repeat if necessary

BZD antagonist (flumazenil)



Types of Sedation

Typically Propofol used for deep sedation

In NY, requires advanced training (i.e. not us)

Rapid onset and offset

May decrease recovery time

Allows endoscopist to focus on endoscopy

Recommendations:

Requires physiologic monitoring

Ability to rescue airway or provide ACLS

Deep sedation
(usually “MAC”)

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Types of Sedation

Patient intubated with ETT or LMA

Anesthesia agents could be propofol or inhalants, muscle relaxers

Good option for anyone with high risk of aspiration:

Active hematemesis/stomach full of blood

Gastric outlet obstruction/retained food

General Anesthesia

- Pt unarousable
- Airway intervention required
- Spontaneous ventilation usually inadequate
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How to choose?

Some centers only use monitored anesthesia care (which could include conscious sedation but administered by anesthesia not GI)

Otherwise:

Consider the ASA class and Mallampati scores

Consider risk factors for “difficult to sedate”

Consider Drug allergies or prior experience

ASA Class- American Society of Anesthesiologists

<i>Class</i>	<i>Description</i>
I	The patient is normal and healthy
II	The patient has mild systemic disease that does not limit their activities (eg, controlled hypertension or controlled diabetes without systemic sequelae)
III	The patient has moderate or severe systemic disease, which does limit their activities (eg, stable angina or diabetes with systemic sequelae)
IV	The patient has severe systemic disease that is a constant potential threat to life (eg, severe congestive heart failure, end-stage renal failure)
V	The patient is morbid and is at substantial risk of death within 24 hours (with or without a procedure)
E	Emergency status: in addition to indicating underlying ASA status (1-5), any patient undergoing an emergency procedure is indicated by the suffix "E"



ASA Class and GI Endoscopy

Higher ASA class associated with higher rate immediate adverse events

Retrospective look 1.59 million endoscopy (EGD, colon, flex sig, ERCP) ¹

Overall adverse event 0.35%

OR for EGD ASA II 1.54, III 3.9, IV/V 12.02

CORI database review of GI endoscopy with moderate sedation (c/s)²

Odds of unplanned cardiopulmonary event higher in ASA III and up

ASGE recommendations: Consider MAC/Deep for ASA IV and more



Mallampati Score

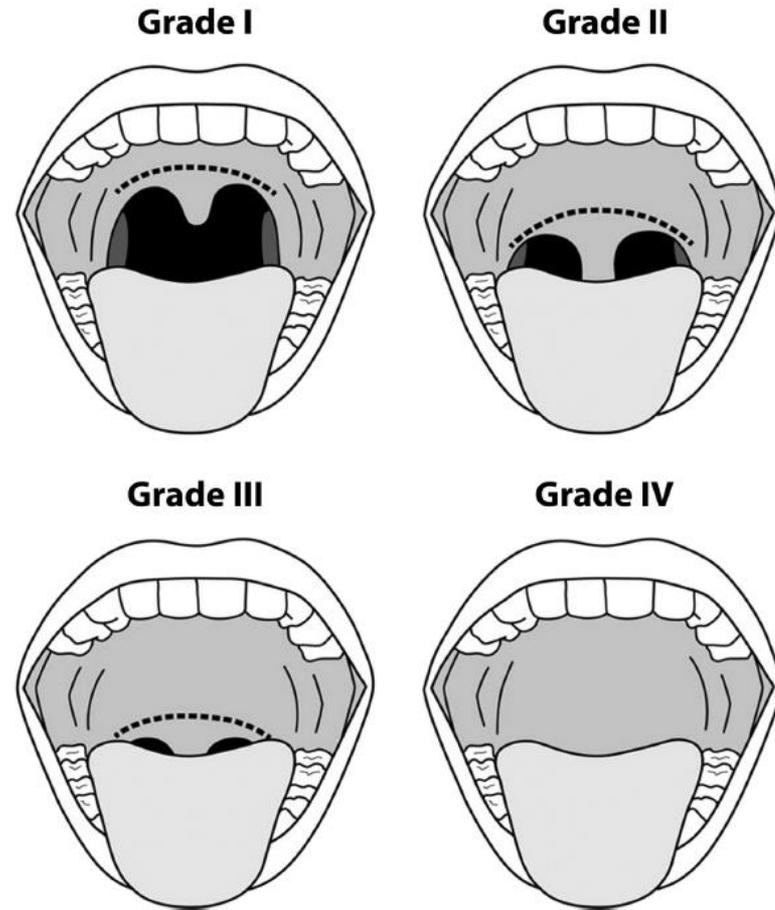


Figure 1. The Mallampati Classification. Class I: soft palate, fauces, uvula, pillars. Class II: soft palate, fauces, portion of uvula. Class III: soft palate, base of uvula. Class IV: hard palate only. The original figure was first published in the article "Multisociety sedation curriculum for gastrointestinal endoscopy" *Gastrointest Endosc* 2012;76:e1-25 and is reused with permission.

Mallampati Score

- May identify obstructive airway
- Can identify difficult airway

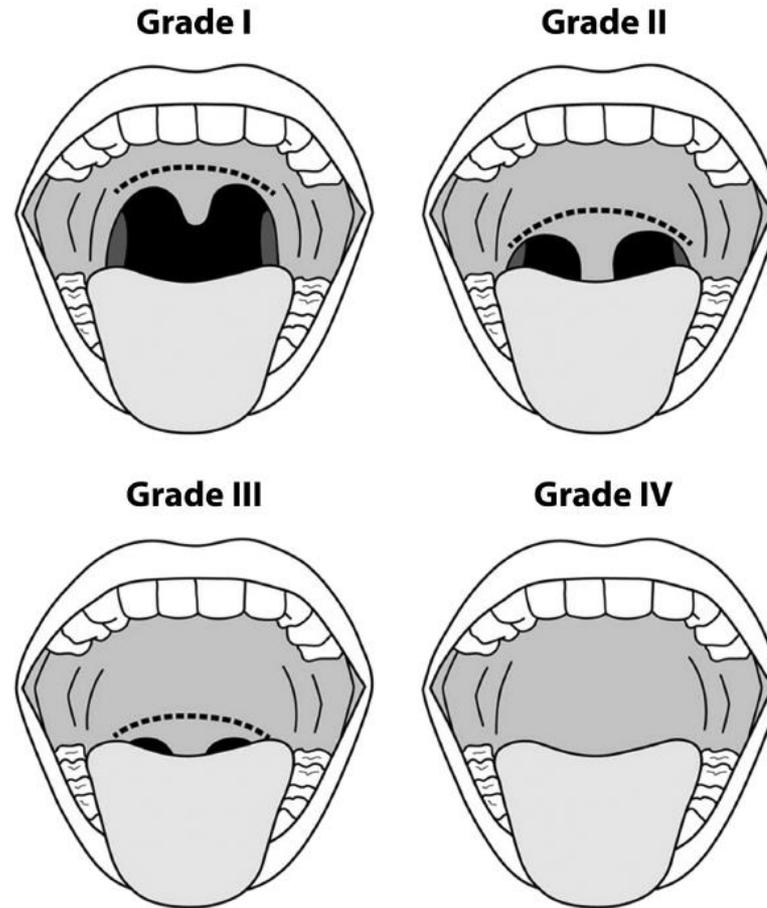


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Other “difficult to sedate” risk factors

Prior difficult attempt at moderate sedation

H/o of anxiety

Multiple psychiatric medications

Opiate or BZD dependence

Young age

Alcoholic

Red hair (variant of melanocortin-1 receptor gene) ¹

Putting it all together

Moderate sedation vs. Anesthesia guided:

TABLE 4. Guideline for anesthesia provider assistance during GI endoscopy

Anesthesia provider assistance should be considered in the following situations:

Prolonged or therapeutic endoscopic procedures requiring deep sedation

Anticipated intolerance to standard sedatives

Increased risk for adverse event because of severe comorbidity (ASA class IV or V)

Increased risk for airway obstruction because of anatomic variant

ASA, American Society of Anesthesiologists.

After taking history, assessing ASA and Mallampati, and identifying other sedation factors, appropriate sedation can be selected



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h/o of OSA
Snoring
Dysmorphic features
Macroglossia
Short neck
Limited neck extension
micrognathia

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Back to our case.....

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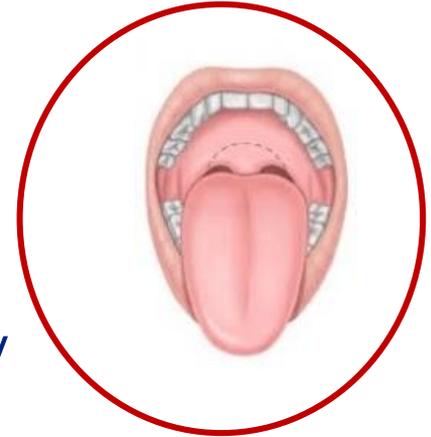
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Back to our case

ASA II

Mallampati 3

H/o of sleep apnea

Possible opiate allergy

- .
- .
- .

Would choose Deep Sedation with Monitered anesthesia care

How to prepare the patient

Inform patient of the risks of sedation

NPO status: protect against aspiration

ASA guidelines

Clear liquids	2 hours
Breast Milk	4 hours
Nonhuman Milk	6 hours
Light Meal	6 hours
Regular/Heavy Meal	8 hours

Preventing Adverse Events

Continuous Monitoring:

BP at least every 5 minutes

Pulsox

Routine oxygen given¹

Cardiac monitor

Capnography / End tidal CO₂

Used with deep sedation/propofol

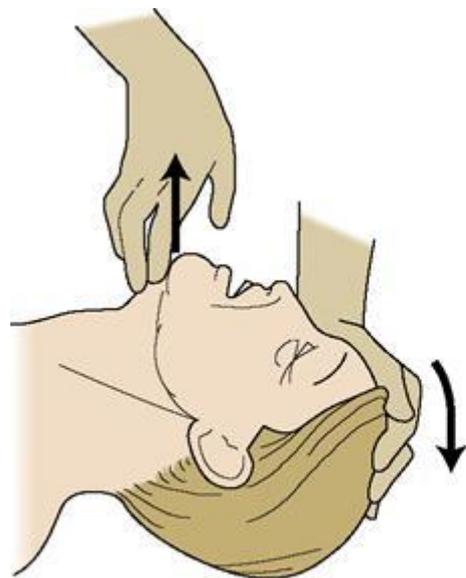


Preventing Adverse Events

Maintain the airway!

Suction for secretions

Maneuvers during hypoxia



Head tilt–chin
lift maneuver



Jaw-thrust
maneuver



Preventing Adverse Events

Oral or Pharyngeal Airway



Pregnancy and Endoscopy

Sedation carries risk to mother and fetus due to¹:

Possible hypoxia

Possible hypotension

Possible increased risk of aspiration

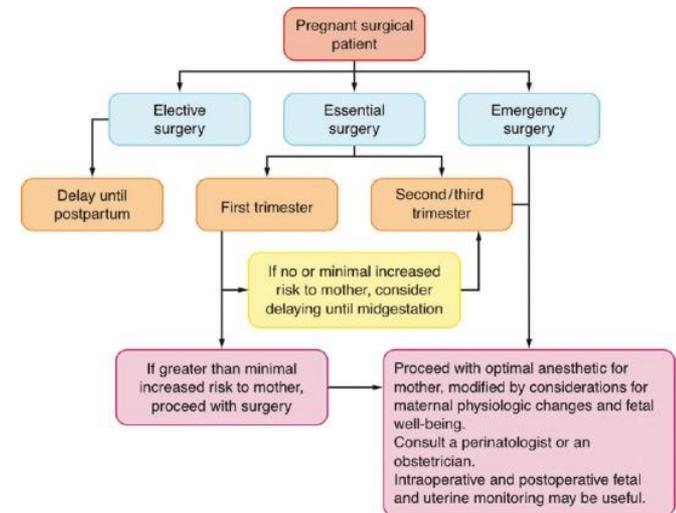
Teratogenicity of meds: Propofol category B, Fentanyl C, Midazolam D

Defer elective indications

If possible, wait until second trimester²

Lower risk of pre-term labor

Involve OBGYN! May need fetal monitoring



In Summary

Take a focused history and exam: classify the ASA and Mallampati

Determine appropriate level of sedation

Prepare the patient- NPO

Be ready to pull out the scope and maintain that airway!



EVOLUTION OF ANAESTHETIST



2000 BC



ETHER

1846



1950



2000



2014

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