



Technique Spotlight

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HTA[®] System Endometrial Ablation System

3 clinical vigilance

Observe patient carefully for progression of sedation beyond anxiolysis. The most common cause of complications in selecting local anesthesia for any procedure relates to the progression of sedation to a level deeper than anticipated and consequent problems resulting in hypoxia and cardiovascular instability.

The definitions of levels of sedation are as follows:

	Responsiveness	Airway	Spontaneous Ventilation	Cardiovascular Function
Minimal Sedation (Anxiolysis)	Normal response to verbal stimulation	Unaffected	Unaffected	Unaffected
Moderate Sedation/Analgesia ("Conscious Sedation")	Purposeful** response to verbal or tactile stimulation	No intervention required	Adequate	Usually maintained
Deep Sedation/Analgesia – MAC/TIVA	Purposeful** response following repeated or painful stimulation	Intervention may be required	May be inadequate	Usually maintained
General Anesthesia	Unarousable even with painful stimulus	Intervention often required	Frequently inadequate	May be impaired

**Reflex withdrawal from a painful stimulus is NOT considered a purposeful response.

Minimal Sedation (Anxiolysis) is a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.

Moderate Sedation/Analgesia ("Conscious Sedation") is a drug-induced depression of consciousness during which patients respond purposefully** to verbal commands, 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.

Deep Sedation/Analgesia is a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully** following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

General Anesthesia is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.

Because sedation is a continuum, it is not always possible to predict how an individual patient will respond. Hence, practitioners intending to produce a given level of sedation should be able to rescue patients whose level of sedation becomes deeper than initially intended. Individuals administering Moderate Sedation/Analgesia ("Conscious Sedation") should be able to rescue patients who enter a state of Deep Sedation/Analgesia, while those administering Deep Sedation/Analgesia should be able to rescue patients who enter a state of general anesthesia.

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HTA[®] System

Endometrial Ablation System

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As technology advances to allow for minimally invasive surgery, more and more elective surgical procedures are being performed in a surgical out-patient setting. One such procedure that can be done in an out-patient setting is global endometrial ablation for the treatment of excessive uterine bleeding (EUB).

More than 6 million women suffer from EUB¹. With the advancement of medicine, women now have several choices to manage and treat this condition. The HTA System is a minimally invasive procedure that can be performed in an out-patient setting under a variety of anesthesia options which may include local anesthesia. This technique spotlight illustrates various anesthesia considerations. Counseling patients prior to any procedure is essential for determining which type of anesthesia is preferred. Counseling should include a detailed overview of how the procedure is performed and what to expect in terms of pain and/or discomfort during and after the treatment.

Safe anesthesia and successful procedure outcomes are dependent upon:

- 1 Patient Selection
- 2 Careful Technique
- 3 Clinical Vigilance

Authors' Recommendation for Pre and Post Procedure Pain Management

1. Ibuprofen 800mg. (Meclomen 100mg , Cataflam[®] 50mg) - taken night before
2. Diazepam 10mg-taken 1-2 hrs prior to procedure
3. Vicodin[®] 2 tabs-taken 1-2 hrs prior to procedure
4. Toradol[®] 30 mg + Atropine 0.4mg IM-30 min pre procedure
5. Atarax[®] 25 mg (2 tabs) or Anzimet 100 mg for post op nausea prevention (give to patient to take at home if necessary)

* Use discretion in prescribing combinations of analgesics and sedatives. The above are recommendations and should be tailored to the individual patient.

¹References: U.S. Census Bureau. Annual Estimates of the Population by Sex and Five-Year Age Groups for the United States: April 1, 2000 to July 1, 2004. Available at: <http://www.census.gov/popest/national/asrh/NC-EST2004-sa.html>.

* The images in this brochure are of models, not actual patients or users of the HTA System.

Authors' Anesthetic Considerations*

	Patient Comfort	Risk of Movement ¹	Risk of N/V ²	Ease of Emergence	Time to Discharge	Suggested Medications	Credentialing Required
Minimal Sedation ³	Up to 50-75% of patients will be comfortable ³	Up to 50-75% of patients might move ^{1,4}	Less than 25% of patients will have N/V	100% of patients will awaken promptly	0-30 min.	Ibuprofen, Toradol® Atropine, Vicodin® 2-Chloroprocaine – For Para Cervical Block	N
Moderate Sedation/ Analgesia ³	75% of patients will be comfortable ⁴	Less than 50% of patients might move ⁴	Less than 25% of patients will have N/V	75-100% of patients will awaken promptly	20-60 min.	Midazolam, Demerol®, Fentanyl, Toradol, 2-Chloroprocaine – For Para Cervical Block	Y
MAC/TIVA ^{3,5} (Deep Sedation)	Almost all patients will be comfortable	Less than 25% of patients might move	Less than 25% of patients will have N/V	75-100% of patients will awaken promptly	45-90 min.	Propofol, Midazolam, Remifentanyl, Toradol, 2-Chloroprocaine – For Para Cervical Block	Y
General Anesthesia ⁶	Almost all patients will be comfortable	Less than 25% of patients might move	Up to 75 % of patients will have N/V	50% of patients will awaken promptly	60-120 min.	Sevoflurane™ or Desflurane	Y

* The information provided is based on the authors' clinical experience.

Safe anesthesia and successful outcomes depend on:

1 patient selection

To minimize the potential for adverse anesthetic outcomes, any elective medical procedure should be limited to patients with no significant co-morbid conditions who fall into the classification of the American Society of Anesthesiologists Physical Status 1 or 2. In addition, patient selection criteria should also include the patient's tolerance for pain and or discomfort, level of anxiety, and preference for the type of setting the procedure will be performed in such as a physician's office vs. a hospital/ outpatient operating room.

Examples of P2 would be a patient with controlled hypertension compliant with a medical regimen or a patient with diabetes well controlled with insulin. Although perhaps not thought of as severe systemic disease, some clinical conditions that might preclude using parenteral (I.V. or I.M.)* sedation with high doses of local anesthetics might include:

- Morbid obesity because of the possibility of airway compromise in lithotomy position when adequately sedated.
- History of seizure disorder because of the risk of a lower seizure threshold in the presence of high local anesthetic blood concentrations
- Recent URI** or unexplained fever because of the risk of hypoxia secondary to hypoventilation from sedatives
- Chronic obstructive lung disease
- Craniofacial, neck, or thoracic abnormalities that could compromise the airway
- Patients with uncontrolled anxiety, or extreme pain sensitivity

* I.V.; Intra-venous I.M.; Intra-muscular

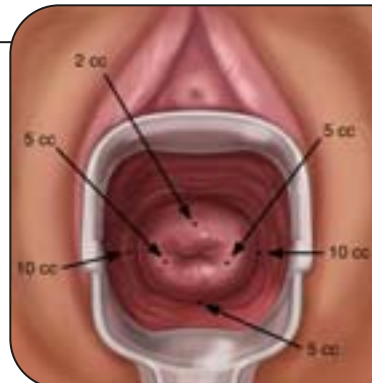
** Upper Respiratory Infection; URI

2 careful technique

If choosing to treat patient under local anesthesia, an effective Para Cervical Block will facilitate the introduction of cervical instruments such as the HTA System procedure sheath.

Para Cervical Block Technique

1. 15 cc 1% Mepivacaine, Carbocaine®, Polocaine® at 8:00 o'clock and 4:00 o'clock (Alternatively the use of 2% chloroprocaine [2% Nesacaine™-MPF 2%] or 1% Xylocaine [Lidocaine])
2. Give 5 cc intracervical 1cm deep and 10 cc Para Cervical submucosally to raise weal
3. 5-10 cc submucosally between uterosacrals
4. Monitor patient's BP/Pulse using a patient vital signs monitoring system



- Total Dose = 37cc (370 mg) (Mepivacaine)
- Recommended Maximum dose = 400 mg (Mepivacaine)
- Maximum dose given without adverse effects = 550 mg*
- Injecting at 6 o'clock is key in providing an optimal block

Definitions:

¹ The percentages indicated are based on clinical impressions in patients that have not received anti-emetic prophylaxis. If selecting minimal sedation it is important to counsel patients regarding the importance of remaining still during the duration of the ablation cycle to prevent inadvertent sheath movement.

² N/V; Nausea and or Vomiting

³ Assumes effective Para Cervical Block

⁴ Highly Dependent of Patient Selection

⁵ MAC/TIVA; Monitor Anesthesia Care/ Total Intravenous Anesthesia

Note: Monitored Anesthesia Care does not describe the continuum of depth of sedation, rather it describes “a specific anesthesia service in which an anesthesiologist has been requested to participate in the care of a patient undergoing a diagnostic or therapeutic procedure.”

⁶ Maintain airway patency with mask or LMA if possible, avoiding intubation and possible “bucking” on emergence

Note: The time to emerge patients from anesthesia is at the conclusion of the procedure.

These criteria will help determine what is the preferred anesthesia and clinical setting for each case.

- P1** A normal healthy patient
- P2** A patient with mild systemic disease
- P3** A patient with severe systemic disease
- P4** A patient with severe systemic disease that is a constant threat to life

Note: These definitions appear in each annual edition of the ASA Relative Value Guide. There is no additional information that will help you further define these categories.

Note: Empty contents of the single dose vial of local anesthetic into the medicine cup and draw it up several times with a control-top syringe as needed. This makes injection easier than a 20 or 30 cc syringe.

⁷ **Note:** The use of Nesacine-MPF 2% (2% Chloroprocaine) rather than mepivacaine as the local anesthetic agent is suggested. Chloroprocaine is an ester local anesthetic, metabolized rapidly by plasma cholinesterase. It has a half life of 25 seconds, making it a less potentially toxic drug than the amide anesthetics (mepivacaine and lidocaine) if absorbed into the circulation in significant amounts. Maximum dose is 800 mg (11 mg/kg). The MPF (methylparaben free) preparation avoids introducing a preservative sometimes responsible for precipitating allergic reactions. Be aware of early signs of local anesthetic toxicity usually resulting from inadvertent intravascular injection.

Signs of local anesthetic toxicity: Dizziness, lightheadedness, blurred vision, tinnitus, excitement often manifest as garrulousness, twitching (early sign of seizure), and unconsciousness. In the event of a severe reaction be prepared to treat with systemic support employing techniques of Advanced Cardiac Life Support (ACLS).

Occasionally, manipulation of the cervix will precipitate a vagal reaction with bradycardia and hypotension resulting in lightheadedness, nausea, and fainting. These effects can be treated with IV fluids and Atropine 0.5mg Q3-5 min up to a total dose of 3 mg if needed.