Gray Millsap, MD

Awake Intubation

Case

54 y/o M with COPD and previous cervical spinal fusion surgery presents to the ED in respiratory distress. He is a cooperative, bearded, obese man, tachypneic, and satting 83% on NRB. You decide to give duonebs and place on BiPap and his sats increase to 85%. You and your attending anticipate that the patient will need to be intubated and that it will be very difficult. What is your approach?

Indications/Contraindications

Awake intubation should be considered in **any potentially difficult airway that isn't crash**. Advantages to awake intubation are the patient is **able to breathe spontaneously during the procedure, is able to maintain airway patency by control of airway musculature, and is able to cooperate with the person intubating the patient**. Awake intubation takes time to appropriately anesthetize and sedate the patient and should not be utilized for any immediate intubation. Indications include an airway that does not need to immediately be secured, low risk of vomiting, cooperative patient, and a feasible intubation through oral/nasal route. Contraindications include an **uncooperative patient, significant risk of vomiting, and time constraints such as an apneic patient**. A 2003 study that analyzed 1,612 patients stated that the indications for awake intubation include **an anticipated difficult airway, cervical spine issues, BMI > 35, poor dentition, polyarthritis, contraindication for neuromuscular blocking medications, and space occupying mouth and neck lesions including abscess**.

Preparation

Preparation for awake intubation includes **drying oropharynx and pre-treating the gag reflex, local anesthesia, and sedation**. Antisialagogues such as **glycopyrrolate** or atropine are used to dry out the oropharynx because the topical anesthetics are ineffective if there are secretions present. Scott Weingart recommends glycopyrrolate over atropine because it does not cross the blood-brain barrier and has less side effects than atropine, which includes tachycardia, dizziness, and blurred vision. It takes around 15 minutes for peak concentrations of glycopyrrolate to occur so it is recommended to give early. It is also important to suction and then pad oropharynx dry with 4 x 4 gauze to further dry out the airway. Since the local anesthetic is not 100% effective, an antiemetic such as **Ondansetron** can be used to diminish the gag-reflex when instrumenting the patient.

Depending on whether you are planning to nasally or orally intubate your patient, you will need to anesthetize the nerves of the upper airway. If nasally, this includes branches of the trigeminal, glossopharyngeal, and vagus nerves while this does not include the trigeminal nerve if intubating orally. Anesthesia literature recommends cocaine, benzocaine, or lidocaine for topical anesthesia, but we will focus on **lidocaine** in the ED because of its readability, different concentrations, quick onset, duration, relatively low toxicity, and multiple forms. It is important to remember that lidocaine is mostly eliminated by the liver so be cautious in patients with hepatic dysfunction. There are various methods of anesthetizing the airway, but Scott Weingart's method seems to

be most widely regarded and is also similar to anesthesia literature. He recommends **5cc of 4% lidocaine via nebulizer at 5L per minute**. He recommends low flow so the particles are bigger and do not enter into the lungs and mostly anesthetize the oropharynx. He then recommends the patient to **gargle a dollop of viscous lidocaine (2-4%)** to anesthetize the epiglottis and vallecula. Once this takes effect, you can use an **atomizer to topicalize areas of the posterior oropharynx**. To anesthetize below the cords (the vagus nerve) for when you place the bougie or ETT, you can **place the atomizer between the vocal cords and spray 2-3 cc's of lidocaine** into the trachea. Some experts recommend a transtracheal injection of 3 cc's 4% lidocaine directly through cricothyroid membrane into the trachea. Although this might not be necessary, it will allow you to pre-emptively find the cricothyroid membrane if the need for cricothyrotomy arises. Anesthesia literature also recommends nerve blocks for awake intubation including glossopharyngeal, superior laryngeal, and translaryngeal but states these blocks are very difficult to perform and have a significant risk for bleeding, nerve damage, and vascular injection. For EM physicians it is probably safer to rely on topical anesthesia than complicated nerve blocks.

Sedation can be important for both anesthetizing the airway and the intubation itself. Anesthesia literature recommends a combination of benzodiazepines and opioids while EM literature recommends **ketamine or versed**. Weingart recommends Ketofol but more ketamine than propofol (75% ketamine/25% propofol) or just ketamine alone until the patient is relaxed and still breathing on his/her own. Versed also is effective because of its short duration. Dexmedetomidine or remifentanil have also been used. In a study comparing videolaryngoscope versus fiberscopes for awake intubation, not one patient could remember the intubation in either method.

Intubation

The rest of the preparation is **similar to how we set up for RSI**: preoxygenation, position, soft restraints, passive oxygenation via nasal cannula, then intubation. It is important to minimize touching of the oropharynx during intubation because the patient will likely not be fully anesthetized. Scott Weingart recommends using **fiberoptic bronch then fiberoptic stylet then video laryngoscope then DL for preference of the method** of intubating; however, a 2015 study comparing video laryngoscopy (**CMAC**) versus fiberoptic scope for awake intubation showed that the mean time for intubation was significantly shorter with CMAC (38 seconds versus 94 seconds) with 96% success rates for both techniques. The video laryngoscope is also easier to learn. With competence defined as having greater than 90% success rate within three minutes, a trainee only needs 1-6 intubations with video laryngoscope to become competent while needing 25 intubations to become competent with fiberscope.

Clinical Takeaway

I believe that in cooperative patients that do not need an immediate airway, an awake intubation is very important to consider. With appropriate anesthesia and sedation, a difficult intubation can be attempted without losing the patient's airway. Although most of the literature recommends fiberscope for awake intubation, the new study in 2015 showed similar success rates and quicker time to intubation with video laryngoscope, and I feel like the video laryngoscope will be my first choice for awake

intubations, especially since I feel much more comfortable with video laryngoscope such as Glidescope than fiberoptic scopes. There is also much more research that needs to be done about awake intubation, in particular in the Emergency Department. A recent anesthesia study was released that provided the success rates, incidence, and complications associated with awake intubation in the operating room but it would be nice to see this data applied specifically in the Emergency Department for a helpful airway technique.

References

- Fitzgerald, E., Hodzovic, I. 'From darkness into light': time to make awake intubation with videolaryngoscopy the primary technique for an anticipated difficult airway? Anaesthesia. 2015 Apr;70(4):387-92.
- Kramer A, Muller D, Pfortner R, Mohr C, Groeben H. Fibreoptic vs videolaryngoscopic (C-MAC D-BLADE) nasal awake intubation under local anesthesia. Anaesthesia. 2015 Apr;70(4):400-6.
- Law, JA, et al. The incidence, success rate, and complications of awake tracheal intubation in 1554 patient over 12 years: an historical cohort study. Canadian Journal of Anesthesia. 24 Apr 2015.
- Law, JA, Kovacs, G. Awake fiberoptic intubation using an optical stylet in an anticipated difficult airway. Annals of Emergency Medicine. 2007 Jan;49(1):81-3.
- Nickson, C. Awake intubation. Life in the Fastlane. Revised 31 March 2015. Accessed 6 May 2015. http://lifeinthefastlane.com/ccc/awake-intubation/.
- Ramkumar, V. Preparation of the patient and the airway for awake intubation. Indian J Anaesth. 2011 Sep-Oct; 55(5): 442-447.
- Simmons, S, Schleich, A. Airway regional anesthesia for awake fiberoptic intubation. Regional Anesthesia and Pain Medicine. 2002 Mar-Apr;27(2):80-92.
- Weingart, S. Podcast 145 – Awake Intubation Lecture from SMACC. EMCrit. Edited 16 March 2015. Accessed 5 May 2015. http://emcrit.org/podcasts/awakeintubation/.