

SWESEM's utbildningsutskott

Rubrik

Basala luftvägsmanövrar

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Introduktion

En ofri luftväg kräver omedelbara åtgärder. En vanlig orsak till ofri övre luftväg är sänkt muskeltonus i svalgmuskulaturen hos en medvetslös patient¹. I denna situation kan basala luftvägsmanövrar snabbt skapa fri luftväg tills en definitiv lösning kan genomföras. Att behärska dessa manövrar är väsentligt i akutsjukvård¹.

Med ”basala luftvägsmanövrar” menas i detta dokument:

- Head-tilt / chin-lift
- Jaw-thrust
- Använda näskantarell
- Använda svalgtub

I specialisttentamen

I specialisttentamen bedöms kunskap om indikationer och kontraindikationer samt kompetens vid genomförandet av dessa basala luftvägsmanövrar hos patienter i alla åldersgrupper med eller utan trauma. Om en utförd manöver vid kontroll inte åtgärdat problemet förväntas Läkaren korrigera, optimera sin åtgärd eller välja en annan lämplig manöver tills problemet är löst.

HEAD-TILT / CHIN-LIFT

Indikation

Ofri övre luftväg orsakad av sänkt muskeltonus² när halsryggskada inte misstänks³

Kontraindikation

Potentiell halsryggskada³

1-Utrustning

- Tar på sig handskar

2-Handgrepp

- Positionerar patientens huvud i rätt läge⁴:
 - Flexion av nedre halsryggen hos vuxna och barn (sniffing position)
 - Huvudet i neutralt läge hos spädbarn
- Placerar sin ena hand på patientens panna och sin andra hands pek- och långfinger under patientens haka, på mandibula
- Lyfter hakan kraniellt/anteriort och trycker pannan posteriort så att övre halsryggen extenderas⁵

3-Kontroll

- Kontrollerar luftpassage/ventilation⁶
- Använder tummen för att hålla munnen öppen⁵ om det behövs

4-Teknik

- Genomför manövern på ett ofarligt sätt (ex trycker på mandibula och inte på mjukdelarna submandibulärt⁵, hyperextenderar ej halsryggen)

JAW-THRUST

Indikation

Ofri övre luftväg orsakad av sänkt muskeltonus² hos en patient med potentiell halsryggskada³

Ofri övre luftväg orsakad av sänkt muskeltonus² hos en patient där chin-lift/head tilt är otillräckligt⁴

1-Utrustning

- Tar på sig handskar

2-Handgrepp

- Positionerar patientens huvud i neutralläge⁴
- Placerar sina handflator bilateralt parieto-occipitalt⁷ och tummar bilateralt på os zygomaticus⁸
- Placerar sina pek- och långfinger bilateralt bakom angulus mandibulae⁷
- Lyfter mandibula anteriort så att underkäken protrueras (får underbett)⁷

3-Kontroll

- Kontrollerar luftvägspassage/ventilation⁶
- Använder tummen för att hålla munnen öppen⁵ om det behövs

4-Teknik

- Genomför manövern på ett ofarligt sätt (ex extenderar inte halsryggen, och smärtstimulerar inte retromandibulärt)

NÄSKANTARELL

Indikationer

Ofri övre luftväg orsakad av sänkt muskeltonus² hos en patient som inte är djupt medvetslös⁹
Ofri övre luftväg orsakad av sänkt muskeltonus² när munnen inte kan öppnas¹⁰

Kontraindikation

Misstänkt skallbasfraktur¹¹

1-Utrustning

- Tar på sig handskar
- Väljer rätt storlek på näskantarellen¹²
- Applicerar glidmedel (t ex lidokaingel)¹³

2-Handgrepp

- För in näskantarellen utmed nashålans golv, lätt rotation vid behov¹⁴

3-Kontroll

- Kontrollerar luftpassage/ventilation⁶

4-Teknik

- Genomför manövern på ett ofarligt sätt (ex atraumatiskt så att näsblödning undviks)

SVALGTUB

Indikation

Ofri övre luftväg orsakad av sänkt muskeltonus² hos en medvetslös patient⁹

Kontraindikation

För ytlig patient (svalgreaktion vid införande)⁹

1-Utrustning

- Tar på sig handskar
- Väljer rätt storlek på svalgtub¹⁵

2-Handgrepp

- För in svalgtuben korrekt¹⁶:
 - För in svalgtuben i sidoläge eller upp och ner och roterar korrekt 90/180 grader
 - Trycker ned tungan (t ex med tungspatel) och för in svalgtuben utan rotation

3-Kontroll

- Kontrollerar luftpassage/ventilation⁶

4-Teknik

- Genomför manövern på ett ofarligt sätt (ex atraumatisk mot tänder och mjuka gommen, backar vid kräkreflex)

1-Introduktion

“basic techniques such as opening the airway, oxygenation, and bag-mask ventilation remain the cornerstones of good emergency airway management. Airway maintenance without endotracheal intubation is one of the most important emergency airway management techniques to keep patients alive until a definitive airway can be established.” (Reardon 2009)

2-Ofri övre luftväg orsakad av sänkt muskeltonus

“Soft tissue airway obstruction in the unconscious patient can occur by several mechanisms. These include prolapse of the tongue into the posterior pharynx and loss of muscular tone in the soft palate. Simple airway maneuvers, such as the head-tilt chin-lift or jaw-thrust with or without a head tilt, often ameliorate this problem quickly.” (Barker 2011)

“Altered mental status, somnolence, or even sleep can depress intrinsic and extrinsic airway muscle tone and produce obstruction. Upper airway obstruction in the unconscious patient occurs primarily because intrinsic muscle relaxation causes laryngeal inlet obstruction by the epiglottis. This can be relieved simply by extending the neck. It is unclear whether posterior displacement of the tongue in the somnolent or comatose patient is the major cause of airway obstruction as studies have shown that during anesthesia in the supine patient, the tongue does, in fact, displace posteriorly, but it does not appear to occlude the pharynx.” (Tintinalli 2011 Chapter 28)

“Airway obstruction in unconscious patients may be due to posterior displacement of the tongue; however, research in obstructive sleep apnea and CPAP shows that the concept of the airway collapsing like a flexible tube may be more accurate. Upper airway obstruction may cause snoring or stridor, but an apneic patient or one who is moving minimal air may not exhibit any audible evidence of upper airway obstruction. Therefore, every unconscious patient has a potential upper airway obstruction.” (Reardon 2009)

3-Halsryggskada

The head-tilt chin-lift is the primary maneuver used in any patient in whom cervical spine injury is NOT a concern.” (Barker 2011)

“It is widely accepted that the jaw-thrust-only (without head-tilt) maneuver should be performed in patients with suspected cervical spine injury, but this technique is sometimes ineffective and there is no evidence that it is safer than the head-tilt/chin-lift maneuver. In 2005, the American Heart Association (AHA) concluded that airway maneuvers are safe during manual in-line stabilization of the cervical spine, but highlighted evidence that all airway maneuvers cause some spinal movement. Both the chin-lift and the jaw-thrust maneuvers have been shown to cause similar substantial movement of the cervical vertebrae. The AHA recommended that “in a victim with a suspected spinal injury and an obstructed airway, the head-tilt/chin-lift or jaw-thrust (with head-tilt) techniques are feasible and may be effective for clearing the airway,” while emphasizing that “maintaining an airway and adequate ventilation is the over-riding priority in managing a patient with a suspected spinal injury.” Despite the lack of evidence for the jaw-thrust-only (without head-tilt) technique, many experienced airway providers believe that this technique is effective and valuable. It is certainly reasonable to attempt the jaw-thrust-only technique before employing the chin-lift/head-tilt technique in patients with possible cervical spine injury.” (Reardon 2009)

“It should be noted that, if there is a history of trauma, then the head tilt/chin lift manoeuvre may exacerbate cervical spine injury. In general, the safest airway intervention in these circumstances is the jaw thrust without head tilt. However, on rare occasions, it may not be possible to control the

airway with a jaw thrust alone in trauma. In these circumstances, an open airway takes priority over cervical spine risk and a gradually increased degree of head tilt may be tried. Cervical spine control should be achieved by a second rescuer maintaining in – line cervical stabilisation throughout.” (APLS 5th ed)

4-Huvudläge

Flexion av nedre halsryggen tillsammans med extension av övre halsryggen resulterar i den så kallade “sniffing position” som underlättar öppningen av övre luftvägen: “Extension of the neck and anterior displacement of the mandible move the hyoid bone anteriorly and, in turn, lift the epiglottis away from the laryngeal inlet. In a supine individual, the degree of extension of the head required to open the airway depends on elevation of the occiput above the horizontal plane. The more the occiput is elevated relative to the neck, the less extension is required to open the airway, which explains why patients with airway compromise need to have their heads in the “sniffing” position. One can place a folded towel (not rolled) or foam rubber device underneath the patient's occiput (and slightly underneath the superior aspect of the neck if needed) to create this position.” (Tintinalli 2011 Chapter 28)

Flexion av nedre halsryggen tillsammans med extension av övre halsryggen ingår i en av beskrivningen av den så kallad ”triple maneuver”: “The “triple airway maneuver” is described by many authors as the best manual method for maintaining a patent upper airway. The most common description of this maneuver is head-tilt, jaw-thrust, and mouth opening. Other authors describe the triple maneuver differently, as a combination of upper cervical extension (head-tilt), lower cervical flexion, and jaw protrusion (jaw-lift). The triple airway maneuver has been described as a technique for providers with advanced airway skills. No studies exist to support the assertion that this technique is more effective than the head-tilt/chin-lift or jaw-thrust maneuvers. However, the triple maneuver is commonly mentioned in the anesthesia literature and is probably very effective.” (Reardon 2009)

APLS rekommenderar “sniffing position” hos barn > 1 år och huvudet i neutralt läge hos barn < 1 år: “In the infant, the head is placed in the neutral position; in the child, the head should be in the ‘sniffing’ position.” (APLS 5th ed)

5-Head-tilt / Chin-lift

“In this technique, the clinician uses two hands to extend the patient's neck and open the airway. While one hand applies downward pressure to the patient's forehead, the tips of the index and middle finger of the second hand lift the mandible at the mentum, which lifts the tongue from the posterior pharynx. This technique has been shown in multiple studies to improve airway patency.” (Barker 2011)

“To perform the head-tilt/chin-lift maneuver, place the tips of the index and middle fingers beneath the patient's chin. Lift the chin cephalad and toward the ceiling. The upper neck will naturally extend when the head tilts backward during this maneuver. Apply digital pressure on only the bony prominence of the chin and not on the soft tissues of the submandibular region. The final step of this maneuver is to use the thumb to open the patient's mouth while the head is tilted and the neck is extended.” (Reardon 2009)

“Place the hand nearest to the child’s head on the forehead and apply pressure to tilt the head back gently. The fingers of your other hand should then be placed under the chin and the chin should be lifted upwards. Care should be taken not to injure the soft tissue by gripping too hard. As this action

can close the child's mouth, it may be necessary to use the thumb of the same hand to part the lips slightly." (APLS 5th ed)

6-Kontroll av luftpassage/ventilation

För att bekräfta att luftvägen är fri behöver man bekräfta att ventilation sker spontant eller att konstgjord ventilation är möjlig.

Efter head-tilt / chin-lift eller jaw-thrust rekommenderar APLS: "The patency of the airway should then be assessed. This is done by:

- LOOKing for chest and/or abdominal movement
- LISTENing for breath sounds
- FEELing for breath

and is best achieved by the rescuer placing his or her face above the child's, with the ear over the nose, the cheek over the mouth and the eyes looking along the line of the chest for up to 10 seconds." (APLS 5th ed)

APLS betonar vikten av ventilationskontroll efter insättande av näskantarell eller svalgtub:

"Reassessment following placement is therefore a vital part of safe insertion of an airway device... The acid test of success, as in all therapeutic interventions, is that insertion of one or other of these devices should result in improvement in the patient's condition. If it does not occur then a reappraisal of the choice or size of airway is urgently required." (APLS 5th ed).

Efter insättande av näskantarell rekommenderar APLS:

"7 Recheck airway patency.

8 Finally, provide oxygen, considering ventilation by pocket mask or bag-and-mask." (APLS 5th ed)

Efter insättande av en svalgtub rekommenderar APLS:

"3 Recheck airway patency, looking for improvement following insertion.

4 Be prepared to change to a different size.

5 Provide oxygen and consider augmenting ventilation using either a pocket mask or a bag-valve-mask device." (APLS 5th ed)

Efter insättande av en svalgtub rekommenderar UpToDate: "the clinician should be certain that the OPA is correctly positioned. If there are problems ventilating the patient after insertion, the OPA should be removed and reinserted. If ventilation problems persist, the clinician should verify the size of the OPA (often a larger OPA will succeed where a smaller one fails), and insert at least one nasopharyngeal airway." (Barker 2011)

7-Jaw Thrust

"The jaw-thrust maneuver is an effective airway technique, particularly in the patient in whom cervical spine injury is a concern. This maneuver moves the tongue anteriorly with the mandible, minimizing the tongue's ability to obstruct the airway. With the patient supine and the clinician standing at the head of the bed, the technique is performed by placing the heels of both hands on the parieto-occipital areas on each side of the patient's head, then grasping the angles of the mandible with the index and long fingers, and displacing the jaw anteriorly. The jaw thrust is the safest first approach to opening the airway of a casualty with a suspected neck injury because if properly performed, it can generally be accomplished without extending the neck. The reduced emphasis on the jaw-thrust technique in the current Advanced Cardiac Life Support (ACLS) guidelines has to do

with reducing the complexity of cardiopulmonary resuscitation (CPR) for lay persons rather than opposition to its use.” (Barker 2011)

“If the head tilt/chin lift manoeuvre is not possible or is contraindicated because of suspected neck injury, then the jaw thrust manoeuvre can be performed. This is achieved by placing two or three fingers under the angle of the mandible bilaterally and lifting the jaw upwards. This technique may be easier if the rescuer’s elbows are resting on the same surface as the child is lying on. A small degree of head tilt may also be applied if there is no concern about neck injury.” (APLS 5th ed)

“To perform the jaw-thrust maneuver, place the tips of the middle or index fingers behind the angle of the mandible. Lift the mandible toward the ceiling until the lower incisors are anterior to the upper incisors. This maneuver can be performed in combination with the head-tilt/chin-lift maneuver or with the neck in the neutral position during in-line stabilization.” (Reardon 2009)

8-Tummar på os zygomaticus

Genom att trycka på os zygomaticus med tummarna och hålla skallen med handflatorna är det lättare att lyfta käken utan att extendera en potentiellt skadad halsryggrad.

9-Djup medvetlöshet

“Patients tolerate NPAs more easily than OPAs, so NPAs can be used when the use of an OPA is difficult, such as when the patient's jaw is clenched or the patient is semiconscious and cannot tolerate an OPA.” (Barker 2011)

“A nasal airway is made of pliable material so it can be placed into the nostril of a somnolent patient with an intact gag reflex.” (Tintinalli 2011 Chapter 28)

“Oropharyngeal airways (OPAs) should only be used in a deeply unresponsive patient who is unable to maintain his or her airway. In responsive patients, they can cause vomiting and aspiration.” (Barker 2011)

“If gag reflex is present, it may be best to avoid the use of an oropharyngeal tube or other artificial airway, because it may cause choking, laryngospasm or vomiting.” (APLS 5th ed)

“Semiconscious patients who require a head-tilt/chin-lift or jaw-thrust maneuver to open their airways may develop hypoxia because of recurrent obstruction if these maneuvers are discontinued. O₂ supplementation and a nasopharyngeal airway may be all the support that is necessary.” (Reardon 2009)

“Both oropharyngeal and nasopharyngeal airways provide airway patency similar to that of the head-tilt/chin-lift maneuver. The nasal airway is better tolerated by semiconscious patients and is less likely to induce vomiting in those with an intact gag reflex.” (Reardon 2009)

“The oropharyngeal airway may induce vomiting when placed in patients with an intact gag reflex.” (Reardon 2009)

10-När patientens mun inte kan öppnas

“Patients tolerate NPAs more easily than OPAs, so NPAs can be used when the use of an OPA is difficult, such as when the patient's jaw is clenched or the patient is semiconscious and cannot tolerate an OPA.” (Barker 2011)

11-Misstänkt skallbasfraktur

“Although there are two case reports of intracranial NPA placement in patients with basilar skull fractures, such extreme complications are rare and can only occur with devastating disruption of the basal skull, improper insertion technique (angling the NPA cephalad in the naris, instead of following the floor of the naris), or both. More common potential hazards of using the NPA include:

- Using an airway that is too long: this may cause the tip to enter the esophagus, increasing gastric distention and decreasing ventilation during rescue efforts.
- Injury to the nasal mucosa causing bleeding: this occurs in 30 percent of insertions and can lead to aspiration of blood or clots.” (Barker 2011)

“The nasopharyngeal airway is often better tolerated than the Guedel airway. It is contraindicated in fractures of the anterior base of the skull.” (APLS 5th ed)

12-Näskantarell storlek

“NPAs come in sizes based on their internal diameter. The larger that the internal diameter of the airway is, the longer the tube will be. A length of 8.0 to 9.0 cm is used for a large adult, 7.0 to 8.0 cm for a medium adult, and 6.0 to 7.0 cm for a small adult. Selecting NPAs based on length, rather than diameter, improves accuracy. A rough method for choosing the correct NPA size is to hold the airway beside the patient's mandible, orienting it with the flared end at the tip of the patient's nose and the distal tip directed toward the angle of the mandible. The tip of an appropriately sized NPA should just reach the angle of the patient's mandible.” (Barker 2011)

“The correct size nasopharyngeal airway will extend from the tip of the nose to the tip of the earlobe.” (Reardon 2009)

“A suitable length can be estimated by measuring from the lateral edge of the nostrils to the tragus of the ear. An appropriate diameter is one that just fits into the nostril without causing sustained blanching of the nostril. As small - sized nasopharyngeal airways may not be available, shortened endotracheal tubes may be used.” (APLS 5th ed)

13-Glidmedel

“Prior to insertion, the NPA should be coated with water-soluble lubricant or anesthetic jelly. Contact time is insufficient for anesthetic jelly to make insertion more comfortable, but may improve tolerance of the device after it is placed.” (Barker 2011)

“Lubricate the airway with a water - soluble lubricant” (APLS 5th ed)

14-Näskantarell införande

“The nasopharyngeal airway is very easy to place. Simply advance it into the nostril and direct it along the floor of the nasal passage in the direction of the occiput, not cephalad. Advance it fully until the flared external tip of the airway is at the nasal orifice.” (Reardon 2009)

“The device is then inserted along the floor of the naris into the posterior pharynx behind the tongue. Clinicians should note that the floor of the naris inclines in a caudad orientation approximately 15 degrees. The tube can be rotated slightly if resistance is encountered.” (Barker 2011)

“Lubricate the tip with lidocaine jelly, and insert it into the most patent nostril horizontal to the palate. Advance it until maximal airflow is heard. Select the largest sized tube that can be placed, and do not insert it so far that it stimulates the gag reflex.” (Tintinalli 2011 Chapter 28)

3 Insert the tip into the nostril and direct it posteriorly along the floor of the nose (rather than upwards).

4 Gently pass the airway past the turbinates with a slight rotating motion. As the tip advances into the pharynx, there should be a palpable ‘ give ’ .

5 Continue until the flange and safety pin rest on the nostril.

6 If there is difficulty inserting the airway, consider using the other nostril or a smaller size from the original estimate.” (APLS 5th ed)

15-Svalgtub storlek

“OPAs come in multiple sizes. A line between the posterior angles of the mandible approximates the plane of the posterior oropharynx. Therefore, a rough method for choosing the correct OPA size is to hold the airway beside the patient's mandible, orienting it with the flange at the patient's mouth and the tip directed toward the angle of the mandible. The tip of an appropriately sized OPA should just reach the angle of the patient's mandible.” (Barker 2011)

“The oropharyngeal airway is available in a variety of sizes. A correctly sized airway when placed with its flange at the centre of the incisors, then curved around the face, will reach the angle of the mandible. Too small an airway may be ineffective, too large an airway may cause laryngospasm. Either may cause mucosal trauma or may worsen airway obstruction.” (APLS 5th ed)

“The correct size oropharyngeal airway will extend from the corner of the mouth to the tip of the earlobe.” (Reardon 2009)

16-Svalgtub införande

“The oropharyngeal airway may be inserted by either of two procedures. One approach is to insert the airway in an inverted position along the patient's hard palate. When it is well into the patient's mouth, rotate the airway 180° and advance it to its final position along the patient's tongue, with the distal end of the airway lying in the hypopharynx. A second approach is to open the mouth widely, use a tongue blade to displace the tongue, and then simply advance the airway into the oropharynx. No rotation is necessary when the airway is placed in this manner. This technique may be less traumatic but it takes longer.” (Reardon 2009)

“The oropharyngeal airway may also cause airway obstruction if the tongue is pushed against the posterior pharyngeal wall when it is inserted.” (Reardon 2009)

“When inserting an OPA, the clinician must avoid pushing the tongue into the posterior pharynx. This can be accomplished by starting with the curve of the OPA inverted (ie, directed cephalad) and then rotating it 180 degrees as its tip reaches the posterior pharynx. Alternatively, a tongue depressor can be used to move the tongue out of the way as the airway device is passed, or care can be taken not to push the tongue posteriorly with the tip of the OPA.” (Barker 2011)

“Place the oral airway over the tongue, being careful not to push the tongue further into the hypopharynx. A tongue blade can help insertion. Place the concave portion of the airway cephalad and rotate it 180 degrees, or aim the airway toward the ear and rotate it 90 degrees inferiorly as it is inserted.” (Tintinalli 2011 Chapter 28)

Hos barn beror tekniken på sjukvårdspersonalens erfarenhet. Hos oerfaren sjukvårdspersonal rekommenderar APLS följande:

“2 Open the airway using a chin lift, taking care not to move the neck if trauma has occurred.

3 Use a laryngoscope blade or a tongue depressor to aid insertion of the airway ‘the right way up’. This also provides an opportunity to examine the oropharynx for foreign material.” (APLS 5th ed)

Erfaren vårdpersonal får även använda följande teknik: “Inserting the airway upside down until the tip has passed the soft palate and then rotating it 180 ° so that the natural curve of the Guedel airway follows the curve of the tongue and pharynx” (APLS 5th ed)

Referenser

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