

Appendix-I

The AMF “Line of Sight” Examination of Airway

Method of Focused Airway Assessment using the AMF Line of Sight (LOS) examination:

- *Equipment needed*
 - Torch
 - Measuring tape
 - Two scales (preferably 12 inches/30 cm)
 - +/- cotton wisp or metal spatula
- *Position* - Patient and operator sit face-to-face so that the operator’s eyes are at the level of the patient’s mouth.
- *Procedure* – Having conducted the focused history and general physical examination and explaining the LOS examination, start scanning the patient from the forehead downwards along the airway.
 - Look at the malar region, cheeks, and nose.
 - Gently evert the tip of the nose and look inside the nostrils in the torchlight.
 - Perform the test for nasal patency.
 - Now, look at the lips and teeth.
 - Ask the patient to open his mouth and measure the interincisor gap (IIG).
 - Perform the modified Mallampati (MMP) test and also look at the palate. (Mallampati is the name of a scientist, so M is always capital)
 - Examine the lower jaw next and perform the upper lip bite test (ULBT)/upper lip catch test (ULCT) as applicable.
 - Feel the compliance of the submandibular region next and measure the thyromental distance (TMD).
 - Examine the whole length of the neck.
 - Identify the cricoid cartilage.
 - Measure the neck length sternomental distance (SMD) and thickness (neck circumference).
 - Finally come to the side of the patient (by asking the patient to turn by 90° to the right or left or by standing and coming to the side of the patient) and measure the neck range of motion (ROM).
- *Specific Tests that are part of the LOS examination*
 - Test for nasal patency: The patient is asked to keep his mouth closed. He is now asked to block one of his nostrils and gently breathe in and out through the other nostril. His breath is felt on the back of the operator’s bare hand or forearm. The in-out movement of the breaths can be compared better by observing the difference in the back and forth movement of cotton wisp held near the patient’s open nostril. Alternately, the patient is asked to gently breathe out on a metal spatula held 1 cm away from each nostril keeping the other nostril closed. The side where the area of fogging due to condensation of the moisture in the expired breath is 1 cm more in diameter than the other side is considered to be more patent.^[22]
 - Interincisor gap (IIG)^[23] – With head in the neutral position, the patient is asked to open his mouth as wide as possible. A scale is held between the central incisors or the corresponding alveolar margins (in an edentulous patient) so that its length matches the length of the patient’s face. The distance between the free margins of the central incisors/gums is the IIG.
 - Modified Mallampati class (MMP) (Mallampati classification^[6] modified by Samsoun and Young*)^[24] – With head in the neutral position, the patient is asked to open his mouth as wide as possible and put out his tongue without phonation. The operator illuminates the oral cavity and beyond with the help of a torch and looks for the fauces (the space between the tongue below and soft palate above through which at least some part of the posterior pharyngeal wall is visible), tonsillar pillars, uvula, soft palate, and hard palate and classifies these as follows:
 - If all four (soft palate, fauces, uvula, pillars) are visible –MMP class I
 - If soft palate, fauces, uvula visible – MMP Class II
 - If soft palate (+/- base of uvula) – MMP Class III
 - If the soft palate is not visible at all, only hard palate visible – MMP Class IV
 - Upper lip bite test (ULBT)^[11] –The patient is asked to catch his upper lip with his lower teeth as high as possible. It is a good idea to demonstrate the same once. The ULBT is classified as:
 - Class I if lower incisors can bite the upper lip above the vermilion line thereby hiding the mucosa of upper lip fully;

- Class II if lower incisors can bite the upper lip below the vermilion line thereby hiding only a part of the mucosa of upper lip; and
- Class III if lower incisors cannot bite the upper lip at all.
- Upper lip catch test (ULCT)^[25] – If the patient is edentulous, the patient tries to catch the upper lip with the lower lip. The findings are classified as:
 - Class zero (0): The lower lip gliding or rolling over the upper lip reaching as high as the columella or else positioning itself at any point *above midway* between the vermilion line and the columella;
 - Class I: The lower lip catching the upper lip, completely above the vermilion line fully covering and passing past the vermilion reaching a point midway between the vermilion and the columella;
 - Class II: The lower lip catches the upper lip at the level of the vermilion line or positioning itself just above it (2 mm); and
 - Class III: The lower lip just caresses the upper lip, but falls short of obliterating the vermilion line.
- *Thyromental distance (TMD)*^[26] – The patient is asked to extend his head as much as possible with mouth closed and without moving the shoulders back. A scale is placed between the center of the chin above to the thyroid notch below. The straight distance between these two points is the thyromental distance. If using a flexible measuring tape, then the tape should be held taut between these two points to measure the TMD.
- *Identifying cricoid cartilage* – Instead of using the popularly recommended “*laryngeal handshake*” technique.^[2] we prefer to use what AMF calls the “*laryngeal finger slide*” technique, which is as follows:
 - The airway manager asks the patient to extend his head as much as possible and gently places his nondominant hand on the patient’s forehead.
 - With the thumb and middle finger of his dominant hand, he now holds the hyoid bone at the two ends (the two greater cornua).
 - The index finger now identifies the middle part of the hyoid in the center of the patient’s neck.
 - The index finger in the midline is next slid down the midline as the thumb and the middle finger slide along the side of the larynx.
 - The first prominence felt by the index finger as it slides down in the midline is the thyroid notch.
 - As the finger in midline slowly slides down further, it meets a depression. This is the cricothyroid membrane.
 - Sliding down further, the next hard structure felt in the midline is the cricoid cartilage. The thumb and middle finger should be on the cricoid cartilage at this time.
- *Sternomental distance (SMD) (neck length)*^[8,27] – The patient is asked to extend his head as much as possible with mouth closed and without moving the shoulders back. A scale is placed between the center of the chin above to the center of the sternal notch below. The straight distance between these two points is the sternomental distance. If using a flexible measuring tape, then the tape should be held taut between these two points to measure the SMD.
- *Neck circumference (neck thickness)*^[28] – The patient is asked to sit with his head in a neutral position. The neck circumference is measured at the level of thyroid notch using a measuring tape.
- *Neck range of motion (ROM) [Figure 3]* - Ask the patient to flex her neck as much as possible by bringing her chin down to touch her chest. Mark a point on the upper margin of her pinna and another one on the opposite (lower) margin of the ear on the ear lobule. Place the edge of one of the scales touching both these marked points. The lower margin of the scale can be rested on the soft tissue below to hold it securely in position. Holding the scale in this position, now ask the patient to slowly extend her neck as much as possible without moving the shoulders back. Place the edge of the other scale in such a manner that its edge touches both these marked points and also the edge of the first scale (the edge that was in contact with the marked points). The angle formed between the two scales now is the angle of neck range of motion (ROM).