In the prospective, non-randomised study the research hypothesis that use of VieScope laryngoscope (VS) may improve visualisation of entrance to larynx comparing to MCL was evaluated.

Materials and methods: 57 morbidly obese patients (BMI>40 kg/m2) were included into study. After induction to anesthesia with propofol, ketamine, lidocaine and rocuronium the evaluation of visualisation of glottis in direct laryngoscopy using Cormack-Lehane scale (CL) in the same patient was performed using two laryngoscopes: first MCL and then VS. Intubation was performed using VS. During intubation efforts patients received oxygenation via nasal CPAP to maintain proper oxygenation [2] and additional dose of propofol was administrated after 1 min. Because of study design time of intubation was not measured. First pass intubation success was noted only for VS.

Results and discussion: Mean demographic data were: age 41.9 ±8.2 yrs, hight 171.2 ±10.2 cm , weight 129.9 ±21.6 kg. Obtained view of entrance to larynx was for MCL: CL 1 in 34/57 cases; CL 2 in 7/57; CL 3 in 12/57; CL 4 in 4/57. This means that CL 3 and 4 was observed in 21% of cases when using MCL. For Vie-scope in all cases CL score was 1. First pass intubation success was in 56/57 of patients using VS. No complications were observed.

Conclusion: The use of Vie-scope laryngoscope for endotracheal intubation in paraglossal technique significantly improves visualisation of entrance to larynx in morbidly obese patients comparing to intubation using standard Macintosh laryngoscope.

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11AP02-02
Efficacy and safety of three inflation methods of the laryngeal mask airway Ambu AuraOnce®: a randomised controlled study

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Background and goal of study: Laryngeal mask (LMA) is commonly used for airway management. A hyperinflation of the cuff was associated with complications, poor ventilation and increased risk of gastric insufflation. This single-center, prospective, randomized, double-blind, 3-arm, trial was performed to compare 3 cuff inflation methods of AuraOnce® LMA during bronchoscopy and Ebus procedures.

Materials and methods: 210 consenting patients scheduled for general anesthesia using AuraOnce® LMA were included. Before insertion, the LMA cuff was randomly filled with a cuff inflating method: half the maximum inflation volume (group MV), resting volume after opening the pilot balloon valve to equalize with atmospheric pressure (group RV) or unchanged volume group (group NV). Parameters regarding insertion, intracuff pressure (IP), airway leak pressure (OLP), leakage volume (LV) and positioning of LMA with fiberscope view (1 to 4 score) were collected. Postoperative complications (PC) were assessed.

Results and discussion: 201 of210 included patients completed the study. Patients in MV group presented lower mean IP than those in groups RV and NV (MV: 59.4±32.4 cm H_2O; RV: 75.1±21.1 cm H_2O; NV: 83.1±25.5 cm$H_2$0; p<0.01), with a mean IP difference of 15.6±4.6 cm$H_2$0 (p=0.02) between groups MV and RV, and 23.7±4.6 cmH_2O (p<0.01) between groups MV and NV. The incidence of IP >60 cmH_2O was lower in the MV group compared to the other two (MV: 20/65(30.8%); RV:47/69 (68.1%); NV 48/67 (71.6%); p<0.01).

There were no differences between groups concerning the ease of insertion, insertion time or maneuver for LMA adjustment. The first-attempt placement rate was similar between groups (MV: 93.8%, RV:84.1% and NV:89.6%; p=0.38). The overall insertion success rate was 96.7% (203/210), and 89,6% (180/201) at first attempt.

Patients had acceptable fiber-optic view scores of 3 or 4 [94%(189/201)] with no significant difference between groups (p=0,46). The requirement for adjustment maneuver after the insertion of the LMA was associated with a worse fiber-optic view (p=0,016). The OLP (p=0,53) and LV (p=0,26) did not differ between groups despite the significant differences in IP. The incidence of PC did not differ between groups and were not correlated with the IP (p=0,16).

Conclusion(s): When a cuff manometer is not available, the partially inflated cuff method of AuraOnce® LMA, using half the maximum recommended inflation volume seemed the best option.

Trial Registration: ClinicalTrials.gov: 04769791

References:

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11AP02-03
Development of machine learning system for airway prediction from facial image with mobile device

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Goals: A reliable prognostic tool for a difficult airway (DA) may enhance patients' safety during orotracheal intubation by decreasing unanticipated DAs.We aim to examine the applicability of an Artificial Intelligence-Deep Learning (AI-DL) algorithm to measure airway's anatomy, and to predict DA based on published models.

Materials and methods: Observational prospective cohort study with n=503 patients recruited at Galdakao-Usansolo and Basurto University Hospitals (Biscay, Spain) between 2018 and 2020. Two pre-operative photos for each patient were collected: a frontal view, in which patients were instructed to open their mouth completely; and a lateral view, with head in vertical extension.

Smartphones with general-purpose cameras were used, and a cue card was added to the scene as reference. Patients' medical records were logged. After intubation, HAN score and IDS-ASA criteria for intubation difficulty [1] were collected.

Our anaesthesiology team defined a set of relevant orofacial landmarks, whereas our data-science team developed an AI-DL algorithm, trained to identify locate them automatically within the images. In a previous evaluation, the system achieved an accuracy comparable to the consensus of two human annotators [2]. Landmark positions output by the AI-DL method were subsequently used by

the system to extract two anatomical measurements: thyromental distance and interincisor gap. Finally, these two were integrated into a published model for DA prognosis: Naguib et al. 2006 [3], which also employed patients' height and Mallampati score.

Results and discussion: The estimated incidence of DA was 6.36% (32 out of 503 patients) according to the IDS-ASA criteria. Naguib's model, when used in combination with our automatic AI-DL based measurements, achieved 53.12% sensitivity and 79.83% specificity; compared to clinicians' subjective assessment, who obtained 25.00% sensitivity and 93.63% specificity.

Conclusion(s): In this work, we evaluated an AI-DL method to predict DA for intubation, with two pre-operative photos and Naguib's model. Our results complemented expert judgements' predictive ability in terms of sensitivity, substantially lowering false negatives; at the expense of a restrained loss in specificity (false positives).

Thus, our proposal may provide anaesthesiologists with an automatic, objective and accessible decision support tool for the prognosis of DAs.

11AP02-05
Epiglottic cyst – a "silent" cause of unpredictable difficult airway

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Background: Unexpected difficult airway is the most important cause of major anesthesia-related morbidity.

Case report: A 57-year-old male patient, ASA II (smoking history) was scheduled for elective open right hemicolectomy under combined anesthesia (lumbar epidural block plus balanced general anesthesia).

On the pre-anesthesia examination, the patient denied respiratory symptoms. Airway examination was unremarkable as we did not find any difficult airway predictors. General anesthesia was induced with propofol and fentanyl. Shortly after the administration of the neuromuscular blocking agent, mask ventilation became progressively more difficult, yet it was possible to maintain adequate ventilation and oxygenation. Direct laryngoscopy resulted in a Cormack-Lehane grade 3 with a large, floppy epiglottis, lying in complete apposition to the posterior wall of the pharynx, blocking the view of the glottis and being unable to be lifted.

Fig1. Epiglottic cyst visualized during videolaryngoscopy.

Face mask ventilation was resumed and a second attempt was performed with the hyperangulated blade of videolaryngoscope that highlighted a round, yellowish structure in the lingual aspect of epiglottis. The posterior commissure of laryngeal inlet was visualized and orotracheal intubation was successfully performed.

At the end of the surgery, the patient was extubated uneventfully, and no respiratory difficulty occurred postoperatively. Further evaluation by the otorhinolaryngologist confirmed the diagnosis of epiglottic cyst.

Discussion: Epiglottic cysts constitute only 5% of all benign laryngeal lesions. However, their actual incidence is unknown as most epiglottic cysts in adults are asymptomatic and discovered incidentally during workup, induction of general anesthesia or at postmortem.[1] They are potentially dangerous as they can cause airway obstruction, which may lead to difficulty in ventilation, intubation or both.

References:

1. Lam HC, Abdullah VJ, Soo G. Epiglottic cyst. Otolaryngol Head Neck Surg 2000;122:311PMID:10652415.

Learning points: Anesthesiologists must be knowledgeable of this entity as a potential cause of unpredictable difficult airway.

11AP02-06
Perioperative management of a patient with Madelung's disease and undiagnosed obstructive sleep apnoea syndrome – a case report

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Background: Madelung's disease (MD) is a rare clinical entity characterised by accumulation of adipose tissue in a diffuse and symmetric manner, affecting upper trunk, thighs, and cervical region. This tissue may compress aero-digestive structures resulting in dyspnoea, dysphagia, hoarseness and obstructive sleep apnoea (OSA) signs.

Case report: We report a case of a 66-year-old man diagnosed with MD, proposed for elective surgical cervical lipectomy. He had alcoholic habits and symptoms of dysphonia and hypersomnia, presenting bilateral large cervical masses. The airway evaluation showed several signs predicting a difficult airway and the baseline saturation was 95% on room air. CT scan showed marked adipose content occupying almost all cervical spaces.

An awake nasal fibroscopy was proposed to the patient. Airway rescue plans were established after an airway ultrasound scan. Topical anaesthesia with lidocaine 1% was performed while preoxygenation was initiated. During fibroscopy we could observe the dynamic collapse of the airway with ventilation. After checking the correct tube positioning, induction of general anaesthesia was performed with propofol and remifentanil. No incidents were recorded during surgery.

On the postanesthetic unit, several episodes of desaturation were noticed during sleep periods (minimum observed SpO_2: 65%), restored to basal oxygen saturation levels with verbal stimulation of the patient and return to wakefulness. Given the high risk of respiratory complications, the patient was transferred to an intermediate care unit and nocturnal continuous positive airway pressure (CPAP) was started with a progressive improvement of the desaturation periods. Polysomnography was requested for diagnostic confirmation after hospital discharge.