Comparison of the C-Mac video laryngoscope with the McGrath Series 5 video laryngoscope concerning an extremely difficult airway

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A 51-year-old patient was admitted to the University Hospital for middle ear surgery. Six years earlier the patient had undergone a thyroidectomy due to cancer, followed by radiation therapy to the neck area. Potential difficult intubation associated with post-radiation lesions was tested and revealed a mouth opening of approximately 2 cm, reduced neck mobility and highly positioned larynx resisting movements.

As airway manipulations under local anaesthesia were poorly tolerated by the patient, inhalation anaesthesia with sevoflurane was provided with spontaneous breathing preserved [1]. Due to the small mouth opening, the attending anaesthetist attempted to use the Total-Tack video laryngoscope (Medcomflow, Barcelona, Spain). Unfortunately, the attempt failed because of very restricted mouth opening (Fig. 1). It was decided to use the McGrath Series 5 instead (Aircraft Medical, UK). Although the blade was successfully placed in the mouth, only the epiglottis was visualized (Fig. 2). Due to postradiation lesions, the larynx was immobilized and the pressure exerted on the organ did not improve the vision visualization of entrance to larynx. A decision was then made to use the C-Mac D-blade video laryngoscope (Storz, Germany) and the laryngeal aperture was visualized (Fig. 3). Unfortunately, the laryngeal lumen was found to be considerably narrowed by neoplastic proliferation. The Frova introducer (Cook, Great Britain) was inserted into the larynx, ensuring ventilation through its lumen, and jet ventilation was applied using a Ventrain ventilation device (Dolphys Medical, Eindhoven, Holland). At the same time tracheotomy was started, which, however, was extremely difficult due to technical problems — post-radiation lesions. Indeed, an experienced laryngologist had serious problems identifying the trachea. The anaesthesiologist performed a tracheal puncture, inserted the introducer and a (surgical) tracheotomy was performed. After restoration of airway patency and consultations with surgeons, it was decided to postpone the procedure and the patient was admitted to the intensive care unit for observation and diagnosis of neoplastic proliferation of the larynx. A chest x-ray revealed pneumothorax on the left side, which was secured. Moreover, an ultrasound of the larynx was performed which revealed a larynx with proliferating cells (Fig. 4).

Patients with potentially difficult airways should have them secured using awake intubation or pre-operative tracheotomy under local anaesthesia. However, if a patient does not tolerate airway manipulations under local anaes-
Anaesthesia, general anaesthesia with spontaneous breathing preserved should be performed [1].

The Total Track video laryngoscope, a new device on the market, has many interesting characteristics — it enables ventilation during attempts at visualizing the larynx and intubation. Unfortunately, the device, although dedicated also for patients with small mouth openings, was found to be ineffective as an attempt to place it in the patient’s mouth failed. Another video laryngoscope — the McGrath Series 5 — recommended for “difficult intubations” did not allow satisfactory visualisation of the laryngeal aperture either — a CL 3/4 image was obtained. Full visualization was achieved with the C-Mac Storz D-blade — CL 1 scale. The D-blade is designed for extremely difficult intubations; it is bent at a larger angle than the blades of the Macintosh type (Fig. 5). There are no literature reports comparing the technical characteristics of the various video laryngoscopes or their use in patients with extremely difficult airways. According to the only study available carried out on patients with potentially difficult airways, the results obtained with the McGrath and C-Mac video laryngoscopes were similar: a higher percentage and shorter time of successful intubations were reported for the C-Mac [2].

In the case discussed here, ventilation was performed using a Ventrain device through the Frova introducer. This option is described by the producer and may be used as an alternative to intubation with an endotracheal tube [3].

Surgical tracheotomy can be difficult, especially in patients with altered anatomy, e.g. after radiation therapy, as in our case. Airway ultrasound, which is a simple and non-invasive procedure, enables visualisation of the larynx and trachea and can help perform tracheotomy in very “difficult” patients. Ultrasound of the larynx and trachea is recommendable in all patients with potential difficult airway [4].

In conclusion, video laryngoscopes differ in technical characteristics, including the intensity of light and field of vision. The case reported by us has demonstrated the superiority of the C-Mac with a D-blade over the McGrath Series 5; the former provides better visualisation of the laryngeal aperture, as compared to the latter.

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References:

Commentary to "Remifentanil for labour pain relief"

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To the Editor,

It was with great interest that we read the review paper entitled “Remifentanil for labour pain relief” by Dr Joanna Solek-Pastuszka et al., published in issue no. 1/2015 of Anaesthesiology Intensive Therapy [1].

The problem of labour pain relief remains an important issue that requires our constant attention and improvement. The disadvantages of pethidine listed in the article are undisputable. However, we should ask ourselves whether, despite its popularity, or maybe precisely because of it, we should talk more decisively about the necessity to stop using it altogether in the delivery room. Next year, two decades will have passed since the publication of Olofsson’s article in the British Journal of Obstetrics and Gynaecology, in which he made it very clear that the use of pethidine during labour is unethical and medically erroneous [2]. In 1997, in The Lancet, Raynolds and Crowhurts equally strongly opposed the use of opioids (pethidine and morphine) for labour pain relief, finding it unjustified [3].

In light of their findings, remifentanil seemed a good alternative, which had been demonstrated by numerous studies from the beginning of the 21st century to which the authors refer [1]. However, it should also be pointed out that during the second decade of the 21st century, opinions as to the administration of this drug are no longer so clear [4, 9, 10].

Firstly, the use of remifentanil during labour can lead to sedation and respiratory depression. The literature has reported numerous cases (concerning as much as 27% of study participants) in which SpO2 in mothers dropped to 91−92% and the use of oxygen was necessary [4]. In recent years even more alarming reports have been published. These concern cases of severe respiratory depression, or even respiratory arrest, in parturients administered intravenous remifentanil [6, 7].

Secondly, the question should be asked whether patients treated with this method have the same comfort of labour as when neuraxial anaesthesia is employed. This comfort does not only refer to pain but also the possibility of “walking analgesia”, of moving and assuming different labour positions, which is restricted by the necessity of continuous HR, RR and SaO2 monitoring, as well as an additional intravenous line (a pump with remifentanil), often in addition to an already working pump with oxytocin. Moreover, it is of importance that the parturient is affected by opioid sedative action, which may have significant impact on the psychological labour and birth experience.

Thirdly, the hyperalgesic potential of remifentanil, as demonstrated in animal studies, should be taken into account [8].

Although the above findings do not erase the advantages of remifentanil, they do tell us to approach this method with more caution. Experts have pointed out “significant side effects” and recommend very scrupulous and continuous monitoring of vital signs, as stated by Van Der Velde in his article in Current Opinion in Anesthesiology of March 2015 entitled “Patient-controlled intravenous analgesia remifentanil for labor analgesia: time to stop, think and reconsider.” [9, 10].

Another issue raised by the authors concerns contraindications for central blocks in parturients which are the gold standard of anaesthesia in spontaneous delivery [1].

At our hospital, epidural anaesthesia is performed in 85% of spontaneous deliveries. Therefore, based on many years of experience, we believe that obesity should not be treated as a “technical contraindication”. We also anaesthetise (epidural, CSE, CSA, spinal) patients undergoing spontaneous delivery, whose BMI exceeds 45 kg m-2, and we even had a recent case of a BMI of 65 kg m-2. It should only be remembered that in such parturients epidural anaesthesia ought to be performed as skillfully and safely as in other anaesthetic procedures. Therefore, in patients with a BMI exceeding 40 kg m-2 ultrasonographic identification is routinely used during central blocks (epidural, CSE, CSA). Moreover, it is