



Fig. 1 Introducer bougie exiting the left Murphy eye of a Parker Flex-Tip Tracheal Tube mounted on an Airtraq.

introducer bougie was passed through the PFTT into the glottis. The attempt to railroad the PFTT over the introducer bougie was unsuccessful, with definite resistance encountered after one cm, and the procedure was abandoned. The Airtraq was withdrawn in block with the PFTT and introducer bougie, and a LMA-Unique (LMA North America, San Diego, CA, USA) was inserted and converted to a standard endotracheal tube. At examination, the introducer bougie penetrated the left Murphy eye of the PFTT, preventing railroading of the PFTT into the glottis (Fig. 1).

Use of accessory airway devices with the Airtraq has been described [2,3]. The PFTT has an atraumatic pen-shaped tip and double Murphy eyes (left and right). Passage of the introducer bougie beyond the vocal cords is a blind maneuver with possible complications [4]. The unexpected and unrecognized event of the introducer bougie exiting through the left PFTT Murphy eye instead of the distal end nullified the benefits of this salvage technique. The event was not identified in vivo but the inability to slide the PFTT caused us to abort the procedure. This incident may be anticipated and identified in a timely manner, and the introducer bougie repositioned.

This case also highlights the limitations of the Cormack-Lehane glottic view grading system (which was developed for direct intubation with the Macintosh laryngoscope) on the Airtraq technique. Multiple studies have shown that the Airtraq improves the ability to generate a Cormack-Lehane grade 1 view. This finding may be misleading for an inexperienced user as it may be incorrectly interpreted as a potentially easy intubation. We modified the functional Airtraq glottic view classification. In an “Airtraq grade 1 view” (vocal cords optimally positioned in the middle of the viewfinder) we attempt intubation without any adjuncts. An “Airtraq grade 2 view” (vocal cords fully visible but suboptimally positioned in the left upper corner of the viewfinder) also translates to a Cormack and Lehane grade 1

view, and with an “Airtraq grade 3 view” (vocal cords partially visible in the viewfinder) we attempt optimizing maneuvers (the “down-back-up” maneuver). If this is unsuccessful, we use an introducer bougie or a fiberoptic scope as an accessory device to intubation. An “Airtraq grade 4 view” represents the inability to visualize the glottis.

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References

- [1] Dhonneur G, Abdi W, Amathieu R, Ndoko S, Tual L. Optimising tracheal intubation success rate using the Airtraq laryngoscope. *Anaesthesia* 2009;64:315-9.
- [2] Malin E, De Montblanc J, Ynineb Y, Marret E, Bonnet F. Performance of the Airtraq laryngoscope after failed conventional tracheal intubation: a case series. *Acta Anaesthesiol Scand* 2009;53:858-63.
- [3] Matic AA. Use of the Airtraq with a fiberoptic bronchoscope in a difficult intubation outside the operating room. *Can J Anaesth* 2008;55: 561-2.
- [4] Amdt GA, Cambray AJ, Tomasson J. Intubation bougie dissection of tracheal mucosa and intratracheal airway obstruction. *Anesth Analg* 2008;107:603-4.

Anaphylactic shock during liver hydatid cyst surgery

To the Editor:

Human hydatidosis is an anthroponosis caused by infection with metacestodes of the tapeworm *echinococcus granulosus* [1,2]. Countries of the Mediterranean region, especially those of the Maghreb, are considered countries of endemic hydatid disease. Anaphylactic reaction is a known complication of cystic hydatid disease [3]. High antigenicity may cause serious immunoglobulin-E (IgE) mediated anaphylactic reactions. Clinical events vary from urticaria to anaphylactic shock. We report a case of perioperative anaphylactic shock caused by the breakage of a hydatid cyst.

A 32 year old, ASA physical status 1 woman with a hydatid cyst of the liver was scheduled for surgical resection. She had no history of allergy or asthma. Standard monitoring included electrocardiogram (ECG), pulse oximetry, and noninvasive blood pressure. Her vital signs while breathing room air were heart rate (HR) 78 beats per minute (bpm), blood pressure (BP) 125/70 mmHg, and oxygen saturation (SpO₂) 98%. General anesthesia was induced with thiopental sodium, sufentanil, and rocuronium, and maintained with isoflurane.

The operative procedure was started without difficulty. Vital signs were stable until breakage of the cyst. Heart rate increased to 170 bpm, BP was not recordable; peak airway pressure increased to 45 cmH₂O. Decreased compliance with hand ventilation, desaturation, and bilateral wheezing were suggestive of bronchospasm. A vast erythema occurred. The diagnosis of anaphylactic shock was made due to the sequence of events. The inhalation agent was stopped and symptomatic treatment was started. She was ventilated with 100% oxygen, and received 1,200 µg of epinephrine combined with an infusion of 1,500 mL of crystalloid fluid, multiple doses of intratracheal salbutamol, and 200 mg of hydrocortisone. Hemodynamic and respiratory stability were restored 20 minutes later, and a continuous infusion of low-dose epinephrine was used to stabilize the vital signs. The surgeon performed a rapid excision of the cyst with abdominal closure, after which the patient was transported from the operating room to the intensive care unit. She made an uneventful recovery with full awakening two hours later, and she was extubated several hours later.

Leakage of cyst contents into the blood circulation is a known triggering factor for anaphylaxis. Anaphylactic reactions may range from mild reactions to severe anaphylactic shock as a result of high antigenicity. Clinical signs include circulatory collapse, bronchospasm, or generalized erythema. Differential diagnoses include anaphylactic shock to drugs or to latex; carcinoid syndrome; perioperative pneumothorax; and cardiogenic shock [3,4].

Echinococcus-specific IgE is present in most of these patients, and anaphylactoid reaction may be secondary to activation of the complement with liberation of anaphylatoxins [5].

Blood sampling allows for confirmation based on diverse reactions of immunofluorescence, immunoelectrophoresis, and hemagglutination [4].

Treatment is similar to other anaphylactic reactions and consists of rapid volume expansion and epinephrine administration titrated to symptom severity. Epinephrine is the most useful drug to give, as it is effective in treating both bronchospasm and cardiovascular collapse. If the bronchospasm is epinephrine-resistant, intravenous salbutamol 5 µg/kg or salbutamol 5 mg may be nebulized and the dose

repeated as required. Antihistamines and corticosteroids are usually administered after the acute phase [6-8].

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References

- [1] McManus DP, Zhang W, Li J, Bartley PB. Echinococcosis. *Lancet* 2003;362(9392):1295-304.
- [2] Boussoufara M, Sallem MR, Raucoules-Aimé M. Anesthesia for surgical removal of a hydatid cyst of the liver. *EMC Anesthésie-Réanimation* 2005;2:132-40.
- [3] Jakubowski MS, Barnard DE. Anaphylactic shock during operation for hydatid disease. *Anesthesiology* 1971;34:197-9.
- [4] Sola JL, Vaquerizo A, Madariaga MJ, Opla JM, Bondia A. Intraoperative anaphylaxis caused by a hydatid cyst. *Acta Anaesthesiol Scand* 1995;39:273-4.
- [5] Perrigone R, Fontana L, De Coralis C, Ottaviani P. Activation of alternative complement pathway by fluid from hydatid cysts. *N Engl J Med* 1980;302:808-9.
- [6] Levy JH, Yegin A. Anaphylaxis. What is monitored to make a diagnosis? How is therapy monitored? *Anesthesiol Clin North Am* 2001;19:705-15.
- [7] Hepner DL, Castells MC. Anaphylaxis during the perioperative period. *Anesth Analg* 2003;97:1381-95.
- [8] Mertes PM, Tajima K, Regnier-Kimmoun MA, et al. Perioperative anaphylaxis. *Med Clin North Am* 2010;94:761-89.