

ANESTHESIA CHALLENGE IN DENTAL ABSCESS INDUCED TRISMUS: A CASE REPORT

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Introduction

Trismus is the inability to normally open the mouth. Inflammation of soft tissue around impacted third molar tooth is the most common cause of trismus. Other causes include tetanus, inflammation of muscles of mastication, peritonsillar abscess, temporomandibular joint disorders, as a temporary side effect of many stimulants of the sympathetic nervous system and some recreational drugs. Trismus is an anesthetic challenge particularly for airway management. If general anesthesia is induced, difficult ventilation and/or intubation may lead to morbidity or mortality 1-5. We present the case of a patient with a trismus who was in need of incision and drainage and tooth extraction. The case report has been approved for publication from the IRB (HMC, DOHA, QATAR).

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Case scenario

A 44 years old patient had a trismus because of dental abscess. The patient was scheduled for incision and drainage (I&D) and tooth extraction under general anesthesia. The huge abscess was extending into left submandibular area, left cheek and left half of floor of the mouth which was indurated with a limited mouth opening of less than 1 cm. ETT was expected to be difficult, therefore, remifentanyl infusion plus local xylocaine adrenaline were successfully used to allow perfect abscess drainage. Dental extraction was delayed to be done under local anesthesia at another date. The patient was saved the risk of general anesthesia and difficult airway.

Discussion

A 44 years old male patient was admitted through HMC Emergency Department due to a submandibular swelling of the left side of the neck (Figure 1). The swelling had been progressively

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increasing in size over the last 4 days. Symptoms started with toothache in the left side with difficulty and pain when swallowing, but there was no breathing difficulty. Examination showed that a trismus with a small mouth opening of less than 1 cm, and neck swelling involving submandibular, sublingual and submental area on the left side with fever of 38.5°C. Orthopantomogram (OPG) x-ray showed a decayed bed of 3.7 and 3.8 tooth (Figure 2). The case was diagnosed as Ludwig angina of dental origin. An emergency abscess incision and drainage and tooth extraction under general anesthesia were planned. The anesthesiologist described the risks of general anesthesia and airway management to the surgeon and the patient.

In the present case, there were no respiratory symptoms which most probably exclude upper airway involvement. In other situations when an upper airway involvement or deep abscess near big vessels in the neck that needs careful drainage, securing airway with a cuffed endotracheal tube is recommended. In such cases, awake flexible fiberoptic nasal intubation under local anesthesia is the safest way to secure the airway before induction of general anesthesia. When mouth opening is so limited, it is difficult to advance laryngeal mask airway, the blade of McIntosh laryngoscope, glidescope, Bullard scope or Bonfils retromolar scope. As the surgeon is operating on the mouth, it is preferable to resort to nasal intubation. Unfortunately, the flexible fiberoptic intubation was not available. Likewise, because of limited mouth opening as well as hard floor of mouth, general anesthesia was excluded. The problems of general anesthesia included difficult airway maintenance as well as difficult intubation. Repeated trials could end with cannot intubate cannot ventilate life threatening problem^{3,5}. Rupture of the abscess into the oral cavity could compromise the airway or pollute the lungs with pus. Local abscess examination showed a stretched skin over the cheek. Therefore, the anesthesiologists raised the idea of abscess incision and drainage using local anesthesia and remifentanyl analgesic sedation. The decrease in abscess size would release pus tension and decrease the chance of abscess rupture inside the mouth. This possibly would help mouth opening and decrease hardness of the floor of the mouth. Thereafter, general anesthesia could be induced under better conditions with nasal intubation. Fortunately, the

surgeon and the patient were cooperative. The patient was monitored with standard monitors and an oxygen nasal catheter and end-tidal carbon dioxide catheter were applied. Remifentanyl infusion was started and titrated according to the patient's respiratory rate to be between 10 and 15 breaths/minute, pain level and sedation score. Four millilitres of 2% xylocaine with adrenaline were injected by the surgeon at skin incision site. With this remifentanyl/xylocaine technique, the surgeon could incise, drain, dissect deep tissue planes and fix a drain at the end. The patient was happy and smiling during the procedure, with normal SpO₂. Antibiotics and analgesics were prescribed after the operation and the patient was discharged home after a few days. Another appointment for tooth extraction under local anesthesia was arranged.

Fig. 1
Limited mouth opening



Fig. 2
OPG x-ray



Local anesthesia is not so efficient in the presence of pus because of acidotic pH. Therefore, a potent analgesic is needed to augment the effect of the local anesthetic to allow deep tissue dissection. Remifentanyl is a strong ultra-short acting mu-agonist which has been used for analgesia and sedation and as a component of balanced anesthesia⁶⁻⁹. It has also been used as a sole analgesic for patient controlled analgesia during labor. With proper dose titration and careful monitoring of respiratory rate, oximetry, end tidal carbon dioxide and talking to the patient, remifentanyl could be used safely. These precautions are important in similar difficult airway cases to avoid respiratory depression. In the present case, naloxone

0.4 mg mixed with normal saline up to 10 ml, was prepared to be used in case of unintentional respiratory depression, however, it was not needed. The sedative effect of remifentanyl is mild and patients can answer questions during the procedure. There is no cumulative effect when remifentanyl is used. Remifentanyl has been used to supplement multiple loco-regional anesthetic techniques. In the present case, the abscess was successfully drained using local anesthesia and remifentanyl analgesic sedation. Due to the severe trismus, it was not possible to remove the decayed tooth bed. Postoperatively the patient was treated with i.v. antibiotics for the following 4 days and then discharged with marked improvement. The swelling completely subsided and mouth opening was more than 2 cm. In the OPD department, after complete

recovery, the decayed tooth bed was removed under local anesthesia. Reviewing the literature, we could not find a similar case report. This anesthetic technique and the two stage surgery can be used for similar cases, and can be the subject of a prospective study.

Conclusion

In cases of trismus caused by a rather superficial dental abscess with no airway involvement, we recommend the use of this two stages procedure. The first stage is to perform incision and drainage under local anesthesia and remifentanyl infusion and the second stage would involve dental extraction under local anesthesia at a later date. This definitely saves the patient the risk of morbidity or even mortality.

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