MVTC was advanced downward into the trachea. The GS blade was withdrawn from the mouth and the MVTC was firmly held in place. The ETT was threaded over the MVTC and advanced into the trachea, before removal of the MVTC. All the procedures were performed by anaesthetists experienced in using the GS.

All patients tolerated insertion of the styletted MVTC, the GS, and the ETT. In 10 patients with an interincisor distance of 18–20 mm, the GS was able to be introduced into the mouth, but the laryngoscopy was difficult. In the remaining cases, the GS procedures were easy. The laryngeal views obtained by a GS were Cormack–Lehane grades 1 and 2 in 17 and four patients, respectively. Although the MVTC was successfully inserted into the trachea in all patients, four required two attempts to get an appropriate angle for the MVTC. In all patients, the ETT was successfully advanced over the MVTC into the trachea at first attempt. Difficulty in advancing the ETT over the MVTC occurred in three patients. This was overcome by a 90° clockwise rotation of the ETT. The mean intubation time, from the styletted MVTC insertion to ventilation through the ETT, was 74 (15) s. After the ETT was inserted into the trachea, slight cough was observed in two patients.

Postoperative follow-up showed that 19 patients had no recall of the airway procedures. Slight recall was described by one patient. A clear but not unpleasant memory of the GS and ETT insertion was described by the remaining one patient. No patient recalled pain.

Our preliminary experience suggests that under adequate sedation and airway local anaesthesia, patients with moderately limited mouth opening can be intubated successfully using a combination of the MVTC and the GS. This technique is well tolerated by the sedated patient and they are comfortable during the procedure. This may be due to less stimulation of the oropharyngolaryngeal structures during the laryngeal exposure using the GS as it does not require a ‘line of sight’ to visualize the airway anatomy. With the view of larynx provided by the GS, the styletted MVTC can often be placed more easily than the styletted ETT because of its smaller diameter. This is similar to the experiences reported by others using an introducer, Eschmann guide and modified Eschmann guide to facilitate tracheal intubation using the GS. The MVTC with a stiff metal style has more strength to maintain its desired shape during the airway manipulation than an introducer and the Eschmann guide. The method is less affected by secretions or blood when compared with fiberoptic intubation. However, this technique cannot be used in patients with an interincisor distance of <18 mm.

F. S. Xue*
Q. Y. Yang
N. He
Y. C. Xu
Beijing, China
*E-mail: fruitxue@yahoo.com.cn

Acute withdrawal syndrome in a butorphanol-treated patient: an adverse combination of opioids

Editor—We recently experienced withdrawal syndrome in a patient which was probably elicited by administration of remifentanil and butorphanol. The patient was a 58-year-old man (169 cm, 53 kg) with bronchiectasis who had tracheal intubation because of pneumonia and a tracheotomy was planned. The patient was known to have had episodes of CO2 narcosis previously. Therefore, tracheotomy under local anaesthesia was planned to avoid any residual effects from anaesthetics, narcotics, or both on the patient’s respiration after operation. During the previous 2 weeks, the patient had been routinely treated for insomnia with nocturnal (8:00 p.m. to 8:00 a.m.) administration of midazolam and butorphanol 1.2 and 0.12 mg h−1, respectively. The patient presented for surgery 7 h after the last administration. He was conscious and could communicate with gestures and lip movements. The vital signs were stable (arterial pressure 150/80 mm Hg, heart rate 90 beats min−1, \(S_{\text{PO}_2}\) 95%, and end-tidal CO2 4.8 kPa). To minimize the patient’s pain and agitation during the operation, administration of remifentanil 0.25 \(\mu\)g kg\(^{-1}\) min\(^{-1}\) was started, and after local infiltration with lidocaine 1% with epinephrine (1:300 000), a skin incision was made. Oxygen 2 litre min−1 mixed with air 4 litre min−1 was supplied and ventilation was manually supported when ventilatory frequency decreased. \(S_{\text{PO}_2}\) was kept above 94% and end-tidal CO2 was maintained at 4.8–6.4 kPa. Approximately 30 min after initiation of the remifentanil administration, severe sweating and facial twitching were noted along with
hypertension (170/85 mm Hg), tachycardia (140 beats min⁻¹), and rhinorrhea. The sweating was so severe that the sheet under the patient was drenched, and his pupils were dilated mildly. His facial expression was agonized, despite being conscious and denying any pain or discomfort. The surgery finished shortly after this and remifentanil was stopped. Within 30 min, the patient had regained sufficient spontaneous ventilation and his vital signs had returned to normal (arterial pressure 122/75 mm Hg and heart rate 115 beats min⁻¹), and he was transferred to the general ward. The butorphanol and midazolam administration were restarted and the withdrawal signs resolved without further treatment. At the postoperative visit the next day, the patient’s appearance and vital signs were unremarkable.

We diagnosed opioid withdrawal syndrome based on the modified Himmelbach’s scale. Withdrawal syndrome from midazolam was also considered. However, benzodiazepine withdrawal signs are characterized by hallucinations and restlessness and are quite different from what we observed in our patient; therefore, it was excluded from our diagnosis. Butorphanol is an opioid agonist–antagonist, which may cause withdrawal syndrome when given to patients in combination with high-efficacy opioids. Its elimination half-life after bolus administration is 3–5 h. However, the pharmacokinetics are different after long-term use, since this lipid soluble accumulates in tissue. Chronic administration has been reported to induce tolerance to its mu-agonist property and to antagonize other mu-agonists. Our patient had daily administration for 2 weeks. No clinical signs or symptoms were observed before operation, thus we propose that it was not due to stopping butorphanol but by its combination with remifentanil.

Development of acute abstinence syndrome has been reported separately with the administration of either remifentanil or butorphanol. However, in this case, the syndrome was precipitated by a combination of the two narcotics. Although the withdrawal symptoms precipitated by butorphanol were less potent compared with other mu-agonists such as naloxone, we should be aware that some combination of opioid agonist and antagonist may synergistically cause unexpected side-effects in patients.

A. Igarashi*
S. Amagasa
N. Yokoo
M. Sato
Shinjo, Japan
*E-mail: igarashi-ayu@umin.ac.jp

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Snakebite in pregnancy: preliminary study

Editor—The worldwide occurrence of envenomation by snakebite in pregnancy is rare according to the medical literature. We have undertaken a preliminary study of snakebite cases in pregnant women to evaluate the frequency of snakebite envenomation cases by Viperidae and the obstetric consequences. We conducted this study based on the medical records of 175 patients (age 15–50 yr) who were admitted to the ICU of the Institute of Medical Sciences, Banaras Hindu University, Varanasi, India, from March 2003 to October 2007. These patients presented with an epidemiological and clinical diagnosis of snakebite envenomation by the Viperidae group. Of the 175 patients, 11 (6.29%) were pregnant, two of them were in the first trimester of pregnancy, seven in the second trimester, and two in the third trimester of pregnancy. The severity of the envenomation was graded as mild in six cases. Presenting symptoms included (in descending frequency) local pain, local or ascending oedema, blistering,

Table 1 Obstetric consequences of snakebite by Viperidae, severity and time elapsed before treatment in 11 pregnant women

<table>
<thead>
<tr>
<th>Serial no.</th>
<th>Snakebite severity</th>
<th>Obstetric consequences</th>
<th>Time elapsed before treatment with anti-venom (h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mild</td>
<td>Absent</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Mild</td>
<td>Absent</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Mild</td>
<td>Absent</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Mild</td>
<td>Absent</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Mild</td>
<td>Absent</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Mild</td>
<td>Absent</td>
<td>14</td>
</tr>
<tr>
<td>7</td>
<td>Moderate</td>
<td>Vaginal bleeding with less fetal movements</td>
<td>23</td>
</tr>
<tr>
<td>8</td>
<td>Moderate</td>
<td>Vaginal bleeding with uterine contraction</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Severe</td>
<td>Vaginal bleeding, abruptio placenta</td>
<td>14</td>
</tr>
<tr>
<td>10</td>
<td>Severe</td>
<td>Vaginal bleeding, abruptio placenta, absence of fetal heart beat</td>
<td>16</td>
</tr>
<tr>
<td>11</td>
<td>Severe</td>
<td>Vaginal bleeding, abruptio placenta</td>
<td>10</td>
</tr>
</tbody>
</table>