gelatin, agar, polyvinyl alcohol, silicone, polyacrylamide, or agarose; organic doped gells; paramagnetically doped gells; and reverse micelle solutions. It is used by the radiologists to check the MRI machine). The PLMA was not attracted by the MRI but interfered with the MRI images (Figure).

Finally in this case we used a LMA-C, total *iv* anesthesia and mechanical ventilation. The case was performed without problems.

We conclude that the PLMA interferes with head and neck MRI images but that it could be used for other imaging locations since it is not attracted by the magnetic field of the MRI machine.

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The spatula introducer for insertion of the flexible reinforced laryngeal mask airway (RLMA)

To the Editor:

Although Keller and Brimacombe have suggested that it is not difficult to insert a reinforced laryngeal mask airway (RLMA) if the standard recommended technique is used,¹ insertion remains more difficult than for a standard LMA, as no force can be transmitted along the shaft, especially in small sized RLMA for children. Many devices have been described to facilitate the insertion of a RLMA including a variation of the standard Magill forceps, a metal stylet, a small tracheal tube combining a stylet, and the Bosworth introducer.^{2–4} The disadvantages of these devices are: trauma to the larynx with the forceps and stylet; rotation or displacement of the mask on removal of the stylet; and the reduced tactile feedback with the Bosworth introducer. Combining a stylet in a tracheal tube can be efficient,³ however, it

FIGURE The spatula introducers for flexible reinforced laryngeal mask airway.

is not appropriate for small sized RLMA. Bearing this in mind, one of the authors designed a small spatula with a split head to ease insertion of the RLMA. Since the spatula is made of stainless steel with a thickness of 0.8 mm, it is relatively flexible and its shaft can be bent as needed prior to insertion of the RLMA (Figure). Adequate lubrication of the inner edges of the split head of the spatula allows removal of the spatula without displacing the RLMA. As with any LMA insertion, a jaw thrust can facilitate the insertion of the RLMA with this introducer. In our experience in ambulatory pediatric patients for some four years, this introducer causes no trauma or complications, and it takes only three to five seconds to insert the RLMA. Recently, a commercial RLMA introducer was described.⁵ However, its price is too high (\$135–\$163, each). We feel our spatula introducer is a useful, low cost addition to facilitate airway management with the RLMA.

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Intoxication by bleach ingestion

To the Editor:

Intoxication by bleach ingestion causes mainly gastrointestinal irritation and ear, nose and throat lesions. Usually bleach ingestions are benign, leading most toxicologists to advocate ambulatory conservative management. Rare case reports of fatal bleach ingestions with hypernatremia and hyperchloremia have been reported.¹ Chemical adult respiratory distress syndrome (ARDS) has been reported following ingestion of numerous agents such as organic solvents, fluoride or chlorine containing solutions. We present a case of ARDS following bleach ingestion and discuss the unique mechanism of bleach induced lung injury.

A 33-yr-old woman was admitted to the emergency department following an assault with sodium hypochlorite; presumably, she aspirated bleach. She presented without respiratory symptoms, a respiratory rate of 18 breaths·min⁻¹, a saturation of 97% under room air. The first chest *x-ray* performed two hours after intoxication (Figure 1A) showed a bilateral bi-basal infiltrate suggestive of aspiration pneumonia. Initial biochemistry showed a sodium of 139 mmol·L⁻¹, a potassium of 3.8 mmol·L⁻¹ and a chloride of 107 mmol·L⁻¹ and liver tests were normal. Complete blood count showed a white blood cell of 17.8 G·L⁻¹ with 75% neutrophils, 10% stab forms, vacuolated neutrophils with toxic granules.

Her respiratory status rapidly deteriorated and required ventilatory support. The chest *x-ray* (Figure 1B) showed progression to an ARDS which worsened during the next 24 hr. Evolution was marked by slow

FIGURE Chest *x-ray* at admission (A) and six hours later (B). The initial bi-basal infiltrate suggestive of aspiration developed in a respiratory distress.

recovery requiring 26 days of mechanical ventilation. There was no hypernatremia or hyperchloremia.

Bleach is a potent oxidant and has been used as a trigger for experimental lung injury. Infusion of sodium hypochlorite in an isolated rabbit lung induces a depletion of reduced glutathione.² This oxydative stress on pulmonary neutrophils triggers an endothelial response with increased pulmonary artery pressure, increased alveolar permeability and ARDS.³ Although rabbit models involved perfusion of the lungs with hypochlorite containing perfusate, aspiration of bleach could also induce an alveolar neutrophil oxydation and ARDS.

Bleach is also a strong reagent in acids: ingestion of sodium hypochlorite reacts with gastric hydrochloric acid to form chlorine gas. Very small amounts of inhaled chlorine may cause acute lung injury: in rats, exposure to 500 ppm of chlorine during ten minutes, is able to reverse the alveolar fluid shift from absorption to massive translocation.⁴ Microvascular permeability increased by 150% and extravascular lung water doubled.

Aside ENT and gastrointestinal irritation, clinicians should be aware of the unique direct and indirect pulmonary toxicity of this common household product.

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