Acute salivary gland swelling may occur following oesophagoscopy and stricture dilatation under general anaesthesia, which can be alarming for both the surgeon and the anaesthesiologist. Although this swelling is usually harmless and resolves without any residual complications, the possibility of its occurrence should be kept in mind.

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Tourniquet-associated cardiac ischaemia in a healthy patient undergoing trauma hand surgery

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EDITOR:
Surgical tourniquet use is commonplace in orthopaedic, plastic and trauma theatres. Complications are well recognized. Here we describe an unusual and previously undescribed complication during hand surgery on a fit, healthy young male.

Case report

A 25-yr-old male smoker (10 cigarettes per day) with no previous medical history and muscular body habitus underwent tendon and nerve repairs of his fourth and fifth right-hand digits following an accident with a knife. The patient was fasted and anaesthesia was induced with propofol, midazolam and fentanyl. A size 4 disposable laryngeal mask was inserted and anaesthesia maintained with isoflurane and nitrous oxide. Intravenous (i.v.) morphine was given (total of 10 mg over 4 h) along with diclofenac (75 mg) and paracetamol (1 g). The patient received 2 L of Hartmann's solution during the first 3 h in theatre.

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The tourniquet was deflated after 2 h at 250 mmHg. This coincided with a rise in end-tidal CO_2 and then, around 20 min following tourniquet deflation, ST segment depression was clearly noted on the ECG tracing in leads II and III. This progressed over the final hour of the operation such that gross ST segment depression was noted (up to 7.5 mm) in leads I, II and III and was associated with relative hypotension (mean arterial pressure (MAP) falling from around 70 to 55 mmHg). This was refractory to a further 1 L of Hartmann's solution and 1.5 L of Gelofusine. Ventilation was continued with oxygen and isoflurane at the onset of ST depression.

The patient was catheterized and a temperature probe was inserted (patient was normothermic throughout). On chest auscultation, air entry was equal bilaterally and breath sounds vesicular. I.V. nitrates were commenced cautiously (approximately 0.3 $\mu g\,kg^{-1}\,min^{-1}$) with no further drop in MAP and slight improvement in the electrocardiogram (ECG). Blood samples were sent for full blood count, urea and electrolytes. The patient was taken to theatre recovery for 12 lead ECG and further management.

In recovery, a 12 lead ECG confirmed global ST segment depression, and a cardiological opinion was sought. An echocardiogram was unremarkable and showed good left ventricular systolic function. The patient awoke not complaining of any symptoms

and the ECG signs completely resolved within 20 min of leaving theatre. An arterial blood gas sample taken immediately in theatre recovery showed a metabolic acidosis (pH 7.30, base deficit 7), and electrolytes revealed serum potassium of 5.9 mmol L^{-1}. The patient left theatre recovery 3 h postoperatively, with a completely normal ECG and repeat bloods, which showed resolution of the previous discrepancies. The patient made a full recovery and was discharged home 2 days later.

Discussion

The timing of these events, the biochemical findings and, perhaps, the patient's muscular body habitus, lead us to suggest a cause for this event attributable to the surgical tourniquet. We hypothesize that a relatively long tourniquet time and its placement on the muscular arm of our patient led to muscle ischaemia with accumulation and release of lactate and intracellular mediators following tourniquet deflation. The onset of signs around 20 min following deflation coupled with the raised serum potassium and metabolic acidosis support this idea. These circulating mediators can be implicated in causing a degree of coronary vasospasm sufficient to produce the noted ECG appearances, but also explain the relatively rapid resolution of the problem. Literature review reveals studies that support our hypothesis of metabolic and haemodynamic insult associated with prolonged tourniquet inflation [1,2].

In addition, there are reports in the literature of vasospasm involving the limb on which the tourniquet had been placed causing ischaemia [3] and a report of acute renal failure secondary to rhabdomyolysis in a fit and muscular young male due to tourniquet application [4]. We are not aware of any reports of cardiac ischaemia, which may likely be attributable to similar mechanisms in our muscular young patient.

Although we cannot state with certainty that this was indeed the mechanism of cardiac ischaemia, on ruling out other common intraoperative triggers as possibilities and on reviewing the literature, we feel that this is a plausible and most likely explanation and is of importance and interest to those working with patients using surgical tourniquets.

It is difficult to say how our management of a similar case in the future may change with respect to this experience. The tourniquet is required to facilitate good surgical conditions and the procedure was necessarily prolonged. Surgeons, anaesthetists and theatre staff are always attentive to duration of tourniquet use, and it may be impossible to eliminate all associated complications.

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Use of the Airtraq® in the difficult airway

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EDITOR:
The Airtraq® (Prodol Meditec, Vizcaya, Spain) [1,2] is an optical laryngoscope which obtains views of the glottis without the need for alignment of the oral, pharyngeal and laryngeal axes (Fig. 1). It consists of two channels, one which houses an endotracheal tube and another which contains an optical system. The device is inserted in a similar fashion to insertion of an intubating laryngeal mask airway with the tip of the Airtraq® eventually sitting in the vallecula. In this position, the glottis is viewed indirectly through a proximal viewfinder and the endotracheal tube

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