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ED PLACEMENT OF ARTERIAL SHEATH FOR ENDOVASCULAR MANAGEMENT IN MULTIPLE TRAUMA

To the Editor:—Hemorrhage control and prevention of secondary neuronal damage are major problems in acute trauma care. We present a case of cranial epidural hemorrhage and continuous bleeding resulting from pelvic fracture. To provide temporary percutaneous aortic balloon occlusion (TABO) for hypovolemic shock in the intra-operative period of craniotomy, we performed insertion of a sheath into the right femoral artery in advance of craniotomy.

A-40-year-old woman was brought to our institution after being struck by a car. Her vital signs were as follows: temperature 36.0°C (96.8° F), pulse 88 beats/min, and blood pressure 79/38 mm Hg. She was unconscious and sustained an unstable pelvic fracture. Initial fluid resuscitation improved her hemodynamics as follows: pulse 100 beats/min and blood pressure 126/70 mm Hg. Emergency computed tomographic scan revealed acute epidural hematoma in the right hemisphere (Fig 1) and continuous bleeding as a result of pelvic fracture (Fig 2). We judged that acute epidural hematoma was of immediate concern and that, because the patient showed hemodynamic improvement, craniotomy should be performed before endovascular management of the bleeding pelvic vessels. An 8-Fr 10-cm sheath through the right femoral artery was inserted percutaneously in the ED. The purpose of this action was to facilitate immediate intraoperative TABO should the patient become unstable. We performed emergency craniotomy with the aim of evacuation of the epidural hematoma. Her postoperative vital signs were as follows: pulse 120 beats/min and blood pressure 104/46 mm Hg. We performed angiographic embolization of the branches of the left internal iliac artery through the sheath, which had been inserted preoperatively (Fig 3). The patient subsequently made a full recovery. At this time, the patient has remained asymptomatic for 11 months.

FIGURE 1. Brain computed tomography scan showing epidural hemorrhage (arrows) and extravasation of contrast media (arrow) resulting from pelvic fracture (small arrow).

The management of patients with multiple trauma is a complex task and requires a multidisciplinary approach.[1-3] The most important considerations within the first hours after trauma are adequate hemorrhage control and the prevention of secondary neuronal damage.[1,2] Although angiographic embolization for the control of hemorrhage resulting from pelvic fracture are reported to be effective, emergency craniotomy could be needed for prevention of secondary neuronal damage. Thus, the determination of the therapeutic sequence for severe multiple trauma is still difficult and controversial.[1-3]

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FIGURE 2. Computed tomography scan of pelvis showing extravasation of contrast media (arrow) resulting from a pelvic fracture (small arrow).

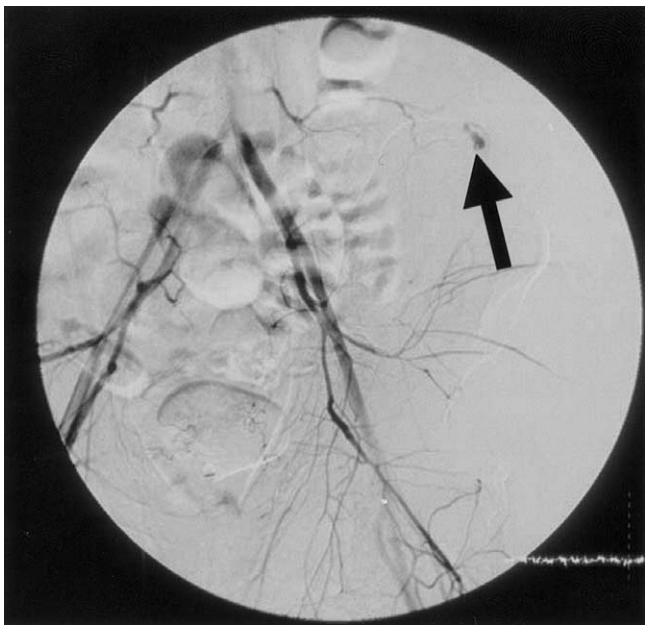

FIGURE 3. Arteriogram before embolization showing extravasation of contrast media from the branch of the left internal iliac artery (arrow).

For severe hemorrhagic shock, TABO provides an alternative to thoracotomy with aortic crossclamping.[4,5] TABO before a curable hemostatic procedure is effective, and a 9-Fr balloon catheter (Block balloon; AISIN SEIKI Co., Ltd, Kariya, Japan) for TABO through a 10-Fr sheath has been developed recently.[4,5] Although insertion of the introducer into the femoral artery could fail as a result of a decrease of blood pressure and succeeding arterial spasm in severe hypovolemic shock, the exchange of an 8-Fr introducer for a 10-Fr one using the Seldinger technique is easy.[4] Thus, we performed preoperative placement of the 8-Fr sheath in readiness for immediate intraoperative TABO. Although we have not performed TABO, we believe that we can have perform craniotomy with a low risk of deterioration of the hemodynamic condition.

In conclusion, EPs should consider the preceding placement of an arterial sheath in cases of multiple trauma with active bleeding, especially in cases that require radiographic embolization.

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FATAL UPPER AIRWAY OBSTRUCTION INDUCED BY SUPERIOR MEDIASTINUM BLEEDING

To the Editor:—Cervical hematoma is one of the causes of upper airway obstruction.[1-5] We report a case of fatal upper airway obstruction possibly caused by aortic arch rupture–induced cervical internal hemorrhage.

Sudden cardiac arrest occurred in a 63-year-old man while undergoing body massotherapy in the prone position. After short-term stridor, he lost consciousness. Rapid swelling of the neck was observed. Bystander cardiopulmonary resuscitation (CPR), including mouth-to-mouth ventilation and cardiac massage, was immediately started. Nine minutes later, life-saving technicians took over CPR. No obstructing substance was found in his oral space. Ventilation through an inserted combitube airway was impossible. Pulseless electric activity on an electrocardiogram (ECG) was confirmed.

At 22 minutes after the start of CPR, the patient arrived at our emergency room (Glasgow Coma Scale: 3, pulseless electric activity on ECG). Epinephrine (1 mg intravenously) increased the heart rate on ECG from 35 to 65/min but did not increase blood pressure. Because ventilation was still impossible, the combitube airway was removed. Subsequent laryngoscopy was extremely difficult; the supraglottic and glottic areas were filled with mucosal edema and blocked by an upheaved pharyngeal posterior wall, making discrimination of the epiglottis, arytenoids cartilage, and vocal cords impossible. In contrast, no significant edema was seen in oral, nasal, and conjunctival mucosae. Immediate cricothyrotomy was executed, and control ventilation then became possible with no respiratory deficiency (results of blood gas analysis: Pa_{O_2}, 87.1 mm Hg; Pa_{CO_2}, 27.7 mm Hg; pH, 6.925; base excess, −24.0 at 10 min after the resumption of ventilation). Intravenous administration of 150 mL of 7% $NaHCO_3$ and 2 mg epinephrine after resumption of ventilation improved circulation (arterial blood pressure, 66/42 mm Hg; heart rate, 141/min). Thereafter, dopamine (15 μg/kg/min) was intravenously administrated to maintain blood pressure.

Dilation of the upper mediastinum was seen in a radiograph (Fig 1). The patient's swollen neck was strained. Cervical echograms showed bilateral, irregular-shaped, low-echo areas with unclear outlines around the internal carotid arteries. Internal juglar veins, which should appear near the internal carotid arteries, could not be discriminated in echograms (Fig 2). Inspection with a bronchofiber showed apparently normal tracheal mucosa and cartilage but a greatly upheaved tracheal membranous portion. No hemothorax was found in echograms or radiographs.

Neurologic recovery was not achieved. Dopamine administration failed to maintain blood pressure and heart rate, and the circulation thus gradually deteriorated. The patient died about 115 minutes after the start of CPR. A postmortem inquest using a

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