

soldiers developed while carrying backpacks for prolonged periods. The costoclavicular space is bounded anteriorly by the inner third of the first rib and posterolaterally by the superior border of the scapula.⁵ This space is narrowed when there are anomalies—congenital or acquired—of the clavicle, first rib, or a cervical rib. The narrowed costoclavicular space often leads to the costoclavicular syndrome. However, when the shoulders are drawn backwards, dampening of the radial pulse may result in certain normal individuals by compression of the artery between the clavicle and first rib (fig. 1).⁵⁻⁷ The treatment of this entity is weight reduction, and physiotherapy to strengthen the elevators of the shoulders, improve posture, and avoid hyperabduction.⁷ The majority of the patients will benefit from the above-mentioned conservative management, although a few patients need resection of the first rib to alleviate the symptoms.⁸

Compression of the neurovascular bundle secondary to assuming the sitting position has not been reported before. We recommend that whenever a surgical procedure is to be performed with the patient in the sitting position, both the radial pulses be checked

before and after positioning the patient. Even if the pulses are not dampened, the shoulders not be allowed to droop downwards, as there is always the possibility of compression of the brachial plexus without compression of subclavian artery, which could result in paresis or paralysis of the arm during a long surgical procedure.

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Hemorrhage and Cardiac Arrest during Laparoscopic Tubal Ligation

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Two cases of hemorrhage from aortic injury during laparoscopy were recently reported.¹ The following case report deals with massive hemorrhage and cardiac arrest during a laparoscopic tubal ligation.

REPORT OF A CASE

A 38-year-old, 60-kg woman, ASA I, was scheduled for a therapeutic abortion and laparoscopic tubal ligation at an outpatient facility. The fetus was estimated to be of 8 weeks' gestation. History and results of physical examination were otherwise unremarkable. Laboratory data included hemoglobin 12 g/dl and hematocrit 31 per cent.

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Following administration of atropine, 0.6 mg, im, and fentanyl, 0.1 mg, iv, 100 mg methohexital were given iv. Infusion of 0.2 per cent succinylcholine was started while the dilatation and curettage was performed. Following intubation of the trachea, anesthesia was maintained with 66 per cent nitrous oxide. Blood loss during dilatation and curettage was 200 ml. Vital signs remained stable, with blood pressure 100/60 torr and heart rate 73 beats/min, while the Verres laparoscopic needle was inserted and the abdomen was insufflated with carbon dioxide. The heart tones then became less audible. Nitrous oxide administration was discontinued and administration of 100 per cent oxygen was started. Blood pressure and pulse rate were unchanged. The laparoscope was introduced without problem; however, systolic blood pressure then decreased to 60 torr and heart rate increased to 100 beats/min. Neosynephrine, 0.1 mg, was given iv. The surgeon, when informed of the hypotension, saw no abnormality intraabdominally through the laparoscope, and found no free blood or perforations of the uterine wall. The blood pressure and heart tones became unobtainable, and cardiopulmonary resuscitation was started, during which lactated Ringer's solution, 3,000 ml, was administered. After stabilization of vital signs, the patient was transferred to our hospital for observation.

On admission, hemoglobin was 5 g/dl. The abdomen was tender, with increasing distention; an exploratory laparotomy was then planned. Whole blood, 1,500 ml, was given prior to transfer of the patient to the operating room.

The patient arrived in the operating suite obtunded, with systolic blood pressure 80 torr, heart rate 120 beats/min. The trachea was intubated following administration of succinylcholine, 100 mg, iv, as a bolus. Anesthesia was maintained with 40 per cent nitrous oxide with infusion of 0.2 per cent succinylcholine during abdominal exploration.

Approximately 1,500 ml of clotted blood were present in the peritoneal cavity. A 4-mm tear in the distal aorta near the origin of the right iliac artery was identified and repaired after a large retroperitoneal hematoma was opened.

Whole blood, 8,500 ml, 5 per cent albumin solution, 500 ml, and lactated Ringers solution, 2,400 ml, were given during the procedure. Postoperatively the patient had slight pulmonary edema, which subsided in 48 hours. She was discharged ten days postoperatively.

DISCUSSION

The tear in the aorta was caused by the Verres needle or the laparoscopic trocar. Anterior perforation of the aorta would tend to bleed more than posterior perforation done with lumbar aortography. The blood extravasated from the posterior perforation is trapped and tamponaded by the periaortic connective tissue.

Phillips reviewed more than 100,000 pelvic laparoscopies from the literature and found a 0.64 per cent incidence of hemorrhage and a 0.3 per cent incidence of cardiac arrest.² McDonald *et al.*¹ reported two cases of hemorrhage and hypotension following aortic injury during pelvic laparoscopy. Injury to the aorta oc-

curred from a 16-gauge Touhy needle which was used for the insufflation of carbon dioxide. McDonald *et al.* suggest that aortic injury is more likely if the angle of the pneumoperitoneal needle is vertical, and recommend a 45-degree angle. McKenzie³ reported a case of massive hemorrhage (3,000 ml) during pelvic laparoscopy for tubal ligation. At laparotomy a tear in the broad ligament was discovered.

Ivankovich reported four cases of cardiovascular collapse and cardiac arrest during pelvic laparoscopy.⁴ One patient had pneumothorax, another a ruptured ectopic pregnancy and hemorrhage, a third a carbon dioxide embolism of the coronary and carotid arteries via a patent foramen ovale, and the fourth had vena caval compression from increased abdominal pressure.

Severe complications, though rare, can occur during anesthesia for laparoscopy. When laparoscopic tubal ligations are done at an outpatient facility, the ability to do an emergency laparotomy for massive hemorrhage and facilities for massive transfusion should be available.

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Rectal Methohexital Premedication in Children, a Dose-comparison Study

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Despite favorable results, the rectal administration of methohexital (Brevital®) for premedication in pediatrics is not widespread.¹⁻³ However, we believe it can be used successfully as a premedication-induction agent while eliminating the pain associated with

parenteral drug administration. Separation anxiety for both the parents and the child is decreased, since the drug may be administered in the presence of the parents and the child allowed to fall asleep before being taken to the operating room. With this technique, a smooth atraumatic induction of anesthesia

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