DISCUSSION

Tracheomalacia in association with esophageal atresia and tracheoesophageal fistula has been reported previously.\(^1,2\) Collapsing tracheas were held responsible for transient periods of respiratory distress characterized by stridor, cyanosis, and bradycardia for nine to 12 months in two of the 18 patients in Touloukian’s series. The necessity for prolonged ventilatory support is, however, rare in patients with tracheomalacia. The exception described in this case report was probably caused by severe cardiac disease.

Tracheal stents have been used for years in patients with tracheal stenosis. Leape\(^3\) described the use of a stent in an infant with tracheomalacia after repair of a laryngotracheoesophageal cleft, in whom removal of the tracheostomy tube had led to airway obstruction. In our patient, stenting the entire length of the trachea allowed rapid weaning from ventilatory support. Mechanical ventilation had previously been necessary to prevent tracheal collapse, which was aggravated during increased respiratory efforts accompanying cardiac failure, pneumonia, or emotional distress.

Primary tracheomalacia is a self-limiting disease,\(^4\) the majority of patients being free of symptoms by two years of age. Until that time, however, aggressive management for such infants is indicated. The persistence of tracheomalacia in our patient may have resulted from a decreased growth rate secondary to cardiac disease, or from tracheal damage from the original tracheoesophageal fistula, or both.

REFERENCES


Intraoperative Coronary-artery Embolization from Left Atrial Myxoma

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Coronary-artery embolization from left atrial myxoma is rare. Electrocardiographic evidence of acute injury after surgical removal of such a tumor prompted extraction of tumor fragments from the left coronary artery and subsequent uneventful weaning from bypass.

REPORT OF A CASE

A 51-year-old white man was admitted for evaluation of chronic congestive heart failure intractable to medical therapy. Admission medications were nitroglycerin, digoxin, furosemide and potassium chloride elixir. Digoxin was discontinued at the time of admission due to the impression of digitalis intoxication.

On physical examination the patient appeared chronically ill, but was alert and cooperative. His height was 170 cm; weight, 71.3 kg; blood pressure, 130/80 mm Hg. Pulse was irregularly irregular at 68 beats/min. Mild scleral icterus was present, and the skin appeared slightly jaundiced. Total serum bilirubin was 2.1 mg/100 ml. LDH and SGOT were moderately elevated. Serum albumin and alkaline phosphatase were normal. There were a few moist inspiratory rales in both lower lung fields.

Cardiovascular examination revealed a laterally displaced point of maximum intensity. The first heart sound was normal, the pulmonic second sound was accentuated, and an S\(_3\) was audible at the apex. Also present at the apex were a soft 2/6 holosystolic murmur and a diastolic rumble. The liver was palpable 4 cm below the right costal margin. There was 3+ edema of the lower extremities to the knees. On admission the electrocardiogram showed atrial fibrillation with a slow ventricular rate and bigeminy.

Cardiac catheterization data included a pulmonary arterial pressure of 124/48 mm Hg with a mean pulmonary wedge pressure of 32 mm Hg. Cardiac index was 1.5 l/min/m². Ejection fraction was 0.52. With the aid of angiography, mitral regurgitation was visualized, as well as prolapse of a left atrial tumor mass into the left ventricle in diastole. There was no evidence of coronary-artery disease.

The patient was scheduled for removal of left atrial myxoma with the aid of cardiopulmonary bypass. Twenty mg diazepam, po, and 10 mg morphine sulfate, im, were given as premedication.

Central venous pressure, electrocardiogram and left radial arterial pressure were monitored. Induction of anaesthesia was accomplished with thiopental sodium, 3 mg, diazepam, 10 mg, and succinylcholine, 100 mg, iv, followed by endotracheal intubation. Anesthesia was maintained with enflurane, 1.0–2.5 per cent, supplemented with N\(_2\)O/O\(_2\) (2.1 L/min) using a semiclosed circle system with carbon dioxide absorption.

Cardiopulmonary bypass was initiated and a ventricular sump was placed in the apex of the left ventricle. Esophageal temperature was lowered to 28.6 C. First, an incision was made in the left atrium; but due to difficulty in mobilizing the prolapsed tumor with its stalk, the right atrium was incised, followed by an incision in the area of the foramen ovale. The tumor was then drawn through the mitral valve into the left atrium and out the incision in the left atrium. The aorta was not cross-clamped. Tumor fragments were searched for in the ventricle; none were found.

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Anesthesiology

V 47, No 3, Sept 1977

CLINICAL REPORTS

301
Partial bypass was instituted, but there was inadequate myocardial contractility, which did not improve in response to a brief infusion of dopamine. At this time the ECG showed marked S-T segment elevation. The left ventricle was dusky in appearance, and insertion of a 23-gauge needle into the distal left anterior descending coronary artery obtained no flow of blood. Hypothermia was re-instituted immediately with cardiopulmonary bypass. Iced Ringer's lactate solution was placed around the heart since the left ventricle was not cooling properly. The aorta was cross-clamped, and a transverse aortotomy in the ascending aorta led to the discovery of a tumor fragment 1 cm in greatest dimension in the left coronary cusp. After removal of the mass, no back-bleeding from the left coronary artery was seen. A number-2 Fogarty catheter was inserted in the left coronary artery and upon withdrawal, a tumor fragment 0.4 cm in greatest dimension was removed. This was immediately followed by brisk back-bleeding from this vessel.

Soon after this, the ECG pattern changed to that of ischemia with S-T segment depression and inverted T waves. By the end of the operation the ECG pattern had returned to normal. The patient was taken off bypass without difficulty; central venous pressures ranged from 15 to 22 cm H₂O. Examination of the patient after bypass revealed normal cardiac and superficial temporal pulses bilaterally. Pupils were equal, slightly constricted, and slowly reactive to light.

Postoperatively, the patient's course was complicated by congestive heart failure and slowly resolving left hemiparesis. The latter was ascribed to intraoperative cerebral emboli. He slowly regained consciousness, was able to converse coherently, and had bladder and bowel control.

The patient was discharged with instructions to take lanoxin, furosemide, and potassium chloride supplement. The latest chest x-ray revealed a marked decrease in heart size; ECG showed sinus rhythm and right ventricular hypertrophy. He was transferred to Veteran's Administration Hospital for continued rehabilitation, but is still unable to ambulate without assistance.

**DISCUSSION**

Reports of coronary emboilization arising from left atrial myxomas are rare. Gleason¹ reported a 13-year-old girl found at autopsy to have a left atrial myxoma with healed infarcts in the left ventricular myocardium. Adjacent small coronary arteries contained tumor fragments. Two of five patients discussed by Harvey² were found to have coronary emboli at autopsy. Sybers and Booke³ reported one case in which there were numerous systemic emboli, including emboli in the right retinal and coronary arteries. An unproven, but possible, case of coronary artery embolization during operation was described in 1961.⁴ There was difficulty in defibrillation and the ECG showed an ischemic pattern. The patient's recovery was complicated by continued signs of myocardial damage on ECG. In this instance there was no attempt to diagnose the causative factor at operation.

To our knowledge, this is the first report of a case of intraoperative embolization of the coronary arteries arising from a left atrial myxoma in which early diagnosis and treatment averted permanent myocardial injury. This occurrence further emphasizes the need for careful measures to prevent such embolization, as well as the need for constant patient monitoring.

**REFERENCES**


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**A Possible Hazard in the Use of a Scavenging System**

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Scavenging systems are incorporated into anesthetic circuits in order to protect personnel from possible hazards related to exposure to anesthetic gases. Such a scavenging system has presented a hazard to the patient.

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**REPORT OF A CASE**

A 9-year-old boy was anesthetized for reduction of a dislocation of the left elbow and fractures of the ulna and radius. A circle-absorber system was used, with a Dupaco Clean OR$ scavenging system (fig. 1). The patient was breathing spontaneously through an endotracheal tube.

X-ray films were taken after attempted reduction. As the anesthesiologist turned to seek protection from x-ray exposure it was noticed that the rebreathing bag (fig. 1) had collapsed completely. This was corrected by flushing the system with oxygen.

When a second set of x-ray films were taken, the hazard was prevented by disconnecting the scavenging bag (fig. 1).

$ Dupaco Clean OR Exhaust Collector, #39935, Dupaco Incorporated, P.O. Box 98, San Marcos, California 92069.