



FIGURE Silicone T tube showing complete obstruction of distal limb.

diagnosis endotracheal intubation was not attempted. The T tube was immediately removed and replaced with a standard tracheostomy tube through which adequate oxygenation was rapidly achieved. Cardiac rhythm returned to normal. On inspection the T tube showed a completely occluded distal limb due to fragments of tumour and inspissated secretions as illustrated in the Figure. The patient made an uneventful recovery.

The silicone T tube functions both as a stent and a tracheostomy tube and in contrast to a tracheostomy tube, it provides a route for ventilation through the nasopharynx, so that humidification and phonation are maintained. Complete occlusion of T tubes can develop very quickly and patients should be instructed to notify the ward staff at the earliest hint of obstruction. Most patients require suctioning both superiorly and inferiorly several times a day and regular lavage with normal saline has been recommended. Humidified air should be used where possible and the inside of the tube carefully cleaned and encrusted material removed. One should always bear in mind the dictum, "if in doubt, take it out."

Ian R. Appadurai FRCA  
 Caroline A.H. Hewitt MBBS  
 Charles E. Gillbe FFARCS  
 Royal Brompton National Heart and Lung Hospital  
 London SW3 6NP  
 United Kingdom

#### REFERENCE

- 1 Montgomery WW, Montgomery SK. Manual for use of Montgomery laryngeal, tracheal and esophageal prosthesis: Update 1990. *Ann Otol Rhinol Laryngol* [Suppl] 1990; 150: 2-28.

## Venous gas embolism during gynaecological laparoscopy:

To the Editor:

Venous gas embolism (VGE) is recognised as a complication during laparoscopy.<sup>1-5</sup> The large number of laparoscopies performed and the paucity of reported cases suggest that it is rare. We wish to report seven possible cases of VGE observed by one anaesthetist (RLM) between March 1985 and September 1991. During this period anaesthesia was provided or directly supervised by him for 1194 women undergoing gynaecological laparoscopy.

The first case involved a 28-yr-old woman undergoing laparoscopic sterilisation. Monitoring was initially limited to ECG, BP every five minutes, and continuous palpation of the pulse. Within seconds of starting CO<sub>2</sub> insufflation the pulse decreased in volume, and it was noticed that the flowmeter bobbin of the insufflation apparatus oscillated synchronously with the pulse. Precordial auscultation revealed that the heart sounds were obscured by a loud splashing "mill-wheel" murmur. The diagnosis of VGE was presumed, insufflation was stopped and 100% O<sub>2</sub> administered. The pulse returned to normal over 30-60 sec, and by the time a BP recording was made it was equal to the previous recording. Within two minutes the murmur disappeared, and laparoscopy proceeded without gas insufflation. The patient recovered uneventfully. Subsequently all patients undergoing laparoscopy were monitored continuously with either a precordial or oesophageal stethoscope.

In six further cases, a similar change in heart sounds was heard which was sufficiently suggestive of VGE to stop insufflation immediately. Unless gas is aspirated from the right side of the heart, or gas bubbles are identified at post-mortem, the diagnosis of VGE can only be presumptive. Features of the altered heart sounds were: (a) "tinkling" in character, becoming obscured over a few seconds by a splashing "millwheel" murmur; (b) the alteration in heart sounds commenced immediately on the start of gas insufflation, and ceased shortly, but not immediately after the gas flow was stopped; (c) the stethoscope was sited either in the oesophagus or in the praecordium. In two cases puncture of the uterine fundus by the Verres needle was evident at laparoscopy. In the last case capnography was in use: a rise in PETCO<sub>2</sub> occurred *after* the murmur was identified.

While we cannot prove that any of these cases was a gas embolism, we have to report that in 1194 cases where this complication was sought, signs that could not be ignored were noted in seven cases, representing an incidence of 0.59%.

Our experience suggests that simple auscultation of the heart sounds provides a good monitor of this hazard, and should be employed routinely during laparoscopy.

S.R. Hynes MB FCA<sub>naes</sub>  
R.L. Marshall MB FFARCS  
Victoria Infirmary  
Glasgow, Scotland

## REFERENCES

- 1 Brantley JC, Riley PM. Cardiovascular collapse during laparoscopy: a report of two cases. *Am J Obstet Gynaecol* 1988; 159: 735–7.
- 2 Yacoub OF, Cardona I, Coveler LA, Dodson MG. Carbon dioxide embolism during laparoscopy. *Anaesthesiology* 1982; 57: 533–5.
- 3 Root B, Levy MN, Pollack S, Lubert M, Pathak K. Gas embolism death after laparoscopy delayed by “trapping” in portal circulation. *Anesth Analg* 1978; 57: 232–7.
- 4 Clark CC, Weeks DB, Gusdon JP. Venous carbon dioxide embolism during laparoscopy. *Anesth Analg* 1977; 56: 650–2.
- 5 Durant TM, Long J, Oppenheimer MJ. Pulmonary (venous) air embolism. *Am Heart J* 1947; 33: 269–81.

## Erratum

*I. Yee, S. Halpern, R. Pittini, C. Huh.* A comparison of two doses of epidural fentanyl for Caesarean section using carbonated lidocaine. *Can J Anaesth* 1992; 39: Supp A82.

Please note that the first author, *I. Yee* was spelled incorrectly as *I. Lee* on pages vi (Contents); A52 (Contents); A157 (Author Index); A163 (Subject Index – under “Anaesthetics – Intravenous – Fentanyl”).