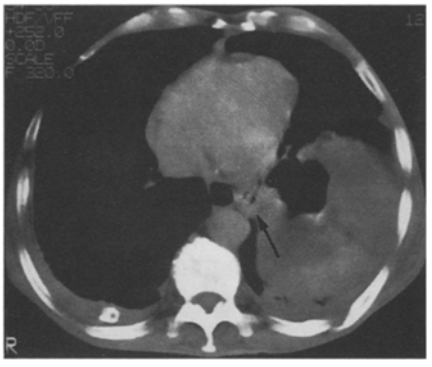

Fig. 1 Thoracoabdominal CT-Scan showing a small-density image in the left lower lung parenchyma, with gas bubbles in its interior, which communicates with the gastric fundus crossing by the diaphragmatic dome

tient underwent a left thoracotomy and a gastrobronchial fistula was confirmed. The abnormality was repaired and the gastric fundus and diaphragm were sutured. The patient recovered uneventfully.

A gastrobronchial fistula usually presents as an acute episode, although there can also be subacute or chronic episodes, such as the case described here. The diagnosis is usually confirmed by means of upper gastrointestinal contrast studies, fiberoptic gastroscopy, fiberoptic bronchoscopy, or other methods such as methylene blue or pH measurement in bronchial secretions [4]. The suspicion of fistula arose after we simultaneously analyzed gastric and ventilator gas samples. The analysis of a gas sample obtained through a nasogastric tube in an intubated patient undergoing mechanical ventilation may be a valid technique to diagnose an abnormal communication between airways and the digestive tract, provided that the FIO_2 delivered by the ventilator is higher than 0.21 and the fistula is located below the endotracheal tube cuff. The thoracoabdominal CT-scan allowed us to confirm the diagnosis of fistula and also to rule out underlying diseases.

The etiology of the fistula diagnosed in this patient was not fully established. The biopsy specimen and the surgical intervention excluded commom causes such as subphrenic abscess, pancreatitis and neoplasms. We wonder if this patient had a gastric ulcer that perforated without producing acute peritonitis. Once the patient was intubated and mechanically ventilated, the high pressure gradient between airways and gastric cavity favored the movement of gas from lung to stomach.

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Microbial contamination of intravenous and arterial catheters

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Sir: Many studies have implicated colonisation of stopcocks and catheter hubs as important factors in the pathogenesis of sepsis associated with central venous (CVC) or arterial catheters [1, 2]. The causative organisms are thought to originate from the patient or hospital staff and migrate from the hub intraluminally to the distal tip, resulting in colonisation and subsequent infection. We have carried out a study to determine how many stopcock entry ports attached to CVC or hubs of arterial lines were contaminated with microorganisms. The relationship between the number of times the stopcock/hub was manipulated and microbial contamination was also assessed. Two hundred stopcock entry ports attached to 70 CVC and 76 arterial line hubs were sampled using absorbent swabs made of Porex [3]. The swabs were inserted into the entry port/hub and rotated through 180°, ten times. The number of microorganisms adsorbed by the swab was then determined as previously described [3]. We found that 22% (44/200) of the stopcock entry ports and 31% (24/76) of the arterial line hubs were contaminated with microorganisms. Although the rate of contamination was higher for the arterial line hubs, this did not reach statistical significance ($P>0.1$, chi-square test). *Staphylococcus epidermidis* was isolated from 67 swabs and diphtheroid bacilli from 1 swab. There was a positive correlation between the frequency of sampling through the stopcock/hub and the number of contaminated entry ports (Fig. 1 a, b).

From the data produced it appears that the frequency of entry port contamination is related to the number of manipulations of the stopcock. Organisms

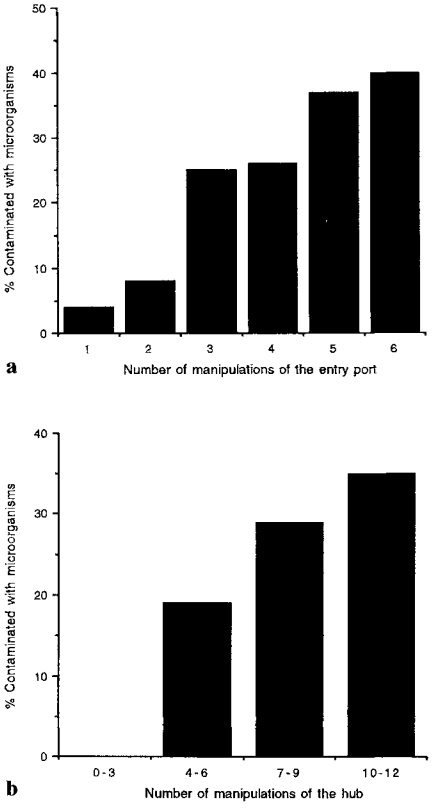

Fig. 1 a The relationship between contamination of stopcock entry ports attached to central venous catheters. **b** The relationship between microbial contamination of arterial catheter hubs and the number of times that the stopcock/hub was manipulated

from either the patient's skin or the hospital staff are easily transferred to the entry ports during the handling procedure. A stopcock entry port attached to a CVC, that has been opened on six occasions is approximately ten times more likely to be contaminated with microorganisms than one that has been opened only once. An in vitro drip model has demonstrated that bacteria can persist in entry ports for prolonged periods following contamination despite regular fluid injections [1] and that residual fluids in ports, particularly blood, blood products or nutrient containing solutions, may encourage the growth of organisms. Indeed, the higher rate of contamination of arterial catheter hubs may have resulted from the fact that arterial lines are used mainly for blood sampling.

The results of the present study not only highlight a need to ensure that strict aseptic techniques are followed when manipulating hubs/stopcocks, including spraying of the hub/stopcocks with antiseptics prior to manipulation and replacing the leur cap afterwards, but also suggest that new methods need to be developed and put into practice in an attempt to prevent contamination via this route.

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