

### Detachment of a venous cannula into a blood vessel

Mary Jane Hayashi<sup>1</sup>, Yuji Sakanashi<sup>2</sup>, Osamu Shimoda<sup>2</sup>, and Hidenori Terasaki<sup>2</sup>

<sup>1</sup> Department of Anesthesiology, Kumamoto National Hospital, 1-5 Ninomaru, Kumamoto 860, Japan

<sup>2</sup> Department of Anesthesiology, Kumamoto University School of Medicine, 1-1-1 Honjo, Kumamoto 860, Japan

*To the editor:* There have been a number of reports of catheter breakage, but none describing detachment of a venous cannula from the hub. We recently experienced such a detachment during acute normovolemic hemodilution. Hemodilution enables collection of autologous blood that helps limit complications from homologous blood transfusion. We cannulate a large vein, such as the external jugular vein, with a Wallace Y-Can catheter and then insert the needle attached to a blood collection bag (NiproC400) into the catheter's rubber seal. In this way, we are able to collect more than two bags of blood without repeat venipuncture.

An incident occurred in a 51-year-old woman undergoing modified radical hysterectomy for a malignant ovarian tumor. After lumbar epidural block, general anesthesia was initiated with fentanyl and thiamylal. Oral intubation was facilitated with the administration of vecuronium bromide. Anesthesia was maintained with nitrous oxide and isoflurane in oxygen. Acute normovolemic hemodilution was started by collecting a first aliquot of 400 ml of blood through the Y-Can catheter inserted at the left external jugular vein, while lactated Ringer's solution was infused through the left radial vein. No difficulty was encountered with this first extraction. However, with the insertion of the needle of the second bag into the catheter's rubber seal, there was no backward flow of blood. When the tape covering the puncture site was removed, the cannula portion of the catheter was found to be missing. Palpation of the puncture site revealed that the dislodged fragment was still present. Pressure on the external jugular

vein prevented it from being liberated into the bloodstream. Retrieval was performed surgically with little difficulty. Close examination of the broken Y-Can catheter revealed that the cannula portion was not cut but had completely detached from the hub. In a test with another Y-Can catheter, we inserted a needle through the rubber seal to where the cannula was glued to the hub (Fig. 1). The same detachment recurred. Cannula detachment in our case could have resulted from inserting the needle too deeply or from inadequate glueing of the cannula to the hub.

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### An unusual cannister defect detected by an airway gas monitor

Takasuke Imai and Sohtaro Miyoshi

Department of Anesthesiology, Gunma University School of Medicine, 3-39-22 Showa-cho, Maebashi 371, Japan

*To the editor:* We experienced an elevation in inspiratory carbon dioxide tension during general anesthesia with a standard semiclosed anesthesia circuit (anesthesia machine: MERA MD-800, Senko-Ika-Kogyo, Tokyo, Japan) while the end-tidal carbon dioxide tension was maintained around 40 mmHg by adjusting the minute ventilatory volume. Non-zero inspiratory CO<sub>2</sub> invariably indicates a circuit malfunction [1]; but no abnormalities in the anesthetic circuit, respiratory valves, or the gas monitor (OMA-8103, Nihon-Kohden, Tokyo, Japan; nondispersive infrared analyzer for N<sub>2</sub>O, CO<sub>2</sub>, and anesthetic gases) were found. However, it was observed that increasing the flow of fresh gas to the anesthesia circuit reduced the inspiratory CO<sub>2</sub> tension. Finally, it was found that a rubber connector between the expiratory gas conduit from the patient and the conduit inside the cannister which carries the expiratory gas to the bottom of cannister had been lost. As the connector between the conduits could hardly be seen from the outside of the cannister and no elevation in end-tidal CO<sub>2</sub> was produced by adjusting the minute volume, no one had noticed its misplacement, which had possibly occurred during soda lime exchange. Fortunately, the patients were not seriously affected; however, patients with poor pulmonary function would have been exposed to a hazardous situation.

We examined the relationship between the respiratory CO<sub>2</sub> tension and various levels of fresh gas flow in two patients using the same anesthesia machine with a rubber connector removed. A 6 l·min<sup>-1</sup> flow of fresh gas was supplied to a semi-closed circuit while the minute volume of the ventilator was adjusted to maintain the end-tidal CO<sub>2</sub> tension at 35 mmHg. The same minute volume was maintained regardless of the value of the fresh gas flow. Each level of fresh gas flow was maintained for at least 15 min until no further change in respiratory CO<sub>2</sub> tension was observed. When the fresh gas flow was changed from 6 to 3, 9, and 12 l·min<sup>-1</sup>, the

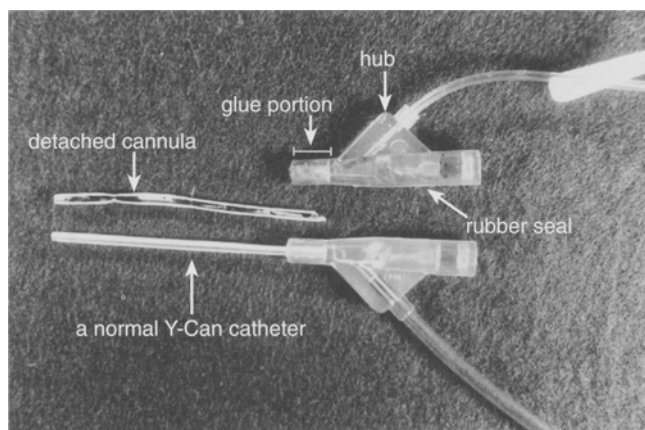


Fig. 1. Y-Can catheter