

CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a new department in ANESTHESIOLOGY. In it will appear invited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

ANNOTATIONS ON THE HANDLING OF CARBON DIOXIDE ABSORBING SUBSTANCES

Since the introduction of the carbon dioxide absorption method into clinical anesthesia there has been lively debate regarding almost every physical, physiological and mechanical principle involved in its use. Canisters of various shapes and sizes intended to be placed either close to the inhaler or at a distance from it have been recommended.

Soda lime has been the absorbent considered most satisfactory, and Wilson's preparation, of 4×8 mesh, has been the standard. Clinical and laboratory tests indicate that certain other brands are not inferior. "Indicator" soda lime, which changes color as it reacts with carbon dioxide, is now available, as is "Baralyne," a preparation of compressed pellets of barium and calcium hydroxide.

Observations made during the past ten years in the course of teaching anesthesia and of visiting a representative group of North American hospitals, have removed any doubts regarding the need of special care in the handling of carbon dioxide absorbing substances.

GENERAL CONSIDERATIONS

A technic which permits the inhalation of dust or powder from a carbon dioxide absorbing substance, even though it is not caustic, is open to condemnation. The technic recommended by manufacturers is conducive to the formation of dust. If dusty absorbent is used, some dust will be inhaled by the patient regardless of the location of the canister, but more will be inhaled with the "to and fro" than with the "circle" apparatus.

If the following precautions are taken the inspired gases will be free from dust: 1. Avoid filling the canister with dusty absorbent material. 2. Fill the canister in such a manner that subsequent handling will not cause the absorbent to fragmentate. 3. Test the canister for the presence of dust after each filling and also before each period of use.

THE PAIL

Soda lime is supplied commercially in pails containing approximately 37 pounds of material. The lid of the pail is held firmly in place by flexible fenestrated cleats, and an air-tight fit is obtained by a rubber cushion imbedded in the lid. There is a small orifice in the lid which is closed by a tightly fitting cap.

The lid may be very quickly removed by inserting a screw driver into the fenestration of each cleat and elevating it, using the rim of the pail as a fulcrum. The lid, having been removed in this manner, should be replaced after each filling of the canister in order to assure an air-tight seal of the pail during storage. The cap on the lid of the pail should not be removed because pouring the soda lime through the small orifice causes fragmentation of the particles and dust formation.

FILLING THE CANISTER

Soda lime should be ladled out by hand and gently put into the canister. Any small particles or dust which may remain in the palm of the hand should be discarded. After the introduction of each

second or third handful of soda lime into the canister its wall should be tapped with the fingers. The canister should be slightly rotated after each tapping. This maneuver should be repeated until the canister has been filled. These suggestions apply to all types of canisters. Canisters for circle filter assemblies are now ready to place on the anesthetic machine and are subject to immediate use. The "to and fro" canisters require certain additional attention. Firstly, it is essential that the cover screen be placed on the canister in such a manner as to exert just enough pressure on the soda lime to keep the granules from being displaced during handling. The anesthetist must avoid the practice of over-filling the canister and then forcing the screen cover down over it, thus causing the screen to bulge.

Under-filling results in the "bean bag" type of canister, with resulting fragmentation of the granules and dust formation. Over-filling results in the "flour sifter" type of canister. Fragmentation and dust formation are produced by compression of the granules of soda lime. Secondly, the

resistance offered to the patient's respiration is appreciably increased. The likelihood of aspirating dust is even greater than with under-filling.

TESTING THE CANISTER FOR THE PRESENCE OF DUST

All "to and fro" canisters should be tested for the presence of dust both immediately after they are filled and prior to each period of use.

Testing may best be effected by forcefully blowing into the outlet of the canister while intermittently occluding and freeing its inlet with the palm of the hand. The position of the canister should then be reversed by blowing into its inlet. This procedure should be continued until no dust is recovered in the palm of the hand. When a canister has been properly filled forcefully blowing through it once or twice in each direction will remove any dust present.

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CASE REPORT:

FATAL PULMONARY EMBOLISM OCCURRING DURING OPERATION

A man, age 48 years, white, was admitted August 17, 1942. He was mildly intoxicated but fully conscious. There were lacerations of the forehead and a fracture of the neck of the right femur. He was placed in bed and Buck's traction was applied. The blood pressure was 132 mm. systolic and 80 mm. diastolic, the pulse rate 90 and the temperature varied between 99 and 100 F. for five days. Examination of the urine gave negative results. Blood studies were not recorded. Roentgenograms showed an impacted fracture of the neck of the right femur, with some displacement and poor alignment. The temperature was normal for four days before operation. There was no swelling or edema of either leg.

Reduction and pinning of the fracture was carried out August 23. Preanesthetic sedatives were given at 8:00 a.m.; they consisted of morphine, 1/4 grain, and atropine, 1/150 grain.

Anesthesia was begun at 9:05 a.m. Nitrous-oxygen-ether sequence with the semi-closed method was employed for induction, with a change to the carbon dioxide absorption technic (circle type) and oxygen-ether anesthesia. Coughing occurred during induction; otherwise the patient's condition was satisfactory. At 9:25 a.m. relaxation was not adequate for manipulation. The method of administration was changed to the open drop ether method. At 9:30 a.m. relaxation was satisfactory. The blood pressure was 150 mm. systolic and 85 mm. diastolic, pulse rate 96 and respiration was unobstructed. An oral pharyngeal airway was in place. Following manipulation the blood pressure could not be obtained by auscultation. The pulse was 54 and weak, the color satisfactory. The method of anesthesia was changed to oxygen-ether by the absorption technic. The blood pressure apparatus was readjusted and the systolic pressure was 60