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Pulmonary complications in cardiac and cardiac surgery patient

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Both cardiac and cardiac surgery patients commonly have pulmonary complications of the restrictive pattern. Patients with rheumatic heart disease (RHD) and patients underwent valvular surgeries are more affected with pulmonary complications than patients with ischemic heart disease (IHD) and patients who underwent coronary artery bypass surgery (CABG). Pulmonary complications of RHD patients are showed inform of reduction of ventilatory functions (vital capacity, forced vital capacity, forced expiratory volume in the first second, and a relation between forced expiratory volume in the first second and forced vital capacity) than patients with IHD. Cardiac surgery appeared to cause more reduction of ventilatory function especially after valvular surgery than after CABG. Mechanical deficiency of the rib cage, because of the rib retractor used during the cardiac surgeries, was claimed to negatively affect the full chest expansion. The chest incisional pain was also quested to be limiting factors of full chest expansion and ventilatory complication after cardiac surgery. This assumption was rejected by a study that examined the hypothesis that reduction of postoperative chest pain intensity would be associated with improvement in the ventilatory functions for patient underwent CABG. The study found no significant relationship between the chest pain intensity and ventilatory functions at any of the three postoperative days. Phrenic nerve injury is another common complication of cardiac surgery that causes pulmonary complication inform of diaphragm weakness or paralysis. Use of cold cardioplegia, cardiac ischemic time, topical cooling and cardiopulmonary bypass time are factors that interfere with the phrenic nerve injury. Incentive spirometer (IS) is a breathing exercise tool that is commonly used during phase I of cardiac rehabilitation. One study showed that ventilatory functions after CABG surgery were significantly positively related to patients' perceived benefits from the IS, patients perceived self-efficacy to use IS, and their performance accuracy in the use of the IS.

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