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Mini Review

Common patient positioning in gastrointestinal endoscopy

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Abstract

Gastrointestinal endoscopic procedure is routinely utilized for diagnosis and treatment of gastrointestinal abnormalities. The optimal positioning for this procedure is to offer the best operative access while minimizing potential risk to the patient. Changing the patient's position could improve the probabilities of successful endoscopy. However, each position carries some degrees of risk and this is applied in each procedure. Commonly approved positions include lateral, prone and supine. This article addresses the common patient positions used for gastrointestinal endoscopic procedures.

Keywords: Gastrointestinal endoscopy, Gastrointestinal abnormalities, Endoscopic procedures

Introduction

Gastrointestinal endoscopic (GIE) procedure is one of the most common interventional medical procedures. The majority of these procedures are done by endoscopists under anesthesia. The types and techniques of anesthesia vary according to the patients' conditions, familiarity of anesthesiologists and endoscopists' satisfaction [1,2]. Several positions are used for various GIE procedures. Positioning patient is an important daily routine for physicians to facilitate surgical access or a number of procedures. Different positions could produce a wide range of physiological stresses. Particular care is needed for positioning anesthetized patients to avoid passive movements that would not normally be tolerated. Poor positioning can create pressure necrosis and peripheral nerve damage.

Lateral Position

Lateral position is commonly performed in GIE procedures. In spontaneously breathing patients, the dependent lung is proficiently perfused and ventilated. In anesthetized patients, the dependent lung is quite under-ventilated and over-perfused, while the nondependent lung is over-ventilated and under-perfused. A pillow is placed between the legs to prevent peripheral nerve damage, with the lower leg flexed and the upper leg retained neutral. In right-hand physicians, the left lateral position is usually used for esophagogastroduodenoscopy and colonoscopy procedures.

This lateral position is also applied for the patients who cannot tolerate the prone position such as obese patients and pregnant women.

In patients with difficulty in prone position, endoscopic retrograde cholangiopancreatography (ERCP) could be achieved in left lateral position. However, the left lateral position for this procedure increases rates of unintended pancreatic duct cannulation [3]. Batheja and colleges evaluated the safety and efficacy and safety of ERCP in the left lateral position. They confirmed that ERCP performed in left lateral position permitted deep bile duct cannulation in 90% of patients without significantly increased procedural time or complication rate as compared to prone position. [4] Consequently, the lateral position may reduce the risk of pulmonary aspiration. This position is recommended for endoscopists who perform ERCP without intubation [5].

Prone Position

Many of the physiological changes occur in the prone position. Intra-abdominal pressure is increased in this procedure. The work of breathing is increased in the prone position, causing ineffectively spontaneous ventilation. This position increases systemic vascular resistance and decreases in venous return. Importantly, obese patients are prone to progress respiratory difficulty during endoscopy as well as to develop hypoxia during sedation.

Generally, prone position is the standard position for endoscopic retrograde cholangiopancreatography (ERCP) procedure. This position offers the best fluoroscopy and radiologic imaging. A systematic review and meta-analysis of several studies was done to compare the prone position with the supine position by Mashiana and coworkers. This study demonstrated that the prone position for ERCP procedures had a higher technical success rate with a slightly lower mean duration but a higher number of adverse events [6]. However, the prone position is difficult to move rapidly into lateral or supine position for resuscitation. For this reason, general anesthesia with tracheal intubation is used for ERCP in the morbidly obese patients [7].

Supine Position

In supine position, lung volumes are impaired by cephalad movement of the abdominal contents. Additionally, the reduction of functional residual capacity is observed. The main complications are upper airway obstruction and reduced tidal volumes. Moreover, there is an increased risk of regurgitation of gastric contents. Supine position is used for percutaneous endoscopic gastrostomy. In ERCP procedure, the supine position could be more comfortable for the patient and might facilitate airway management.

The differences between the patient supine and prone, in terms of technical features and complications for ERCP procedure were assessed by Tringali and colleges. They established that ERCP success rate and complications in both supine and prone positions were comparable, even in the differing skill operators [8]. Previous studies demonstrated that technical success of therapeutic ERCP in the supine patient positioning was high and no increased need to use needle-knife papillotomy [9]. However, ERCP performed with the patient in the supine position was often more difficult technically more requiring for physicians used to work with patients. Supine position also created a higher risk of adverse events in the non-intubated patients when compared with the patient prone [10,11].

Summary

The common patient positions for GIE procedures are lateral, prone and supine positions. Several factors influence the optimal positioning for this procedure. However, each position produces some forms of adverse events. The patient's position varied as needed to complete the GIE procedures.

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