

Kraske or jackknife position

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Introduction

In this variation of the prone position, the patient's head and feet are both lower than the hips. The jackknife position is used most frequently for proctologic procedures. It is also the gold standard in anorectal surgical procedures (Kneedler & Dodge, 1994).

Positioning

The patient is either anesthetized supine and turned prone, or is placed in position before spinal anesthetic is administered. The hips are on a pillow or towel directly over the table break and the table is flexed 90°, with the head and legs down. The patient's arms are on arm boards with hands toward the head. The buttocks may be separated by wide tape placed at the level of the anus on both sides and secured to the table. The patient is taken out of the position by first flattening the table and then reversing the order of movements into the prone position. Arms are usually positioned over the head for turning (Bailey & Snyder, 2000).

Anesthesia Factors

One of the most common concerns about the prone jack knife position is the safety of the airway during anesthesia. Patients are occasionally placed in lithotomy position rather than the preferred prone jack knife position because of the concern for the airway. While patient safety is a prime concern, there are no reports of the loss of control of airway during repositioning. Although this lack of evidence does not exclude individual episodes, it does indicate that the heightened awareness has probably

minimized the risk to the patient to an acceptable level (Jaffe & Samuels, 2004).

Patient Factors

Individual physical limitations of the patients occasionally prevent the use of the jack knife position. Physical factors that would prevent a patient from lying prone on the operating table, such as obesity, pregnancy, and tense ascites, may require the use of a different position. Orthopedic considerations, such as hip and knee joint problems, long leg casts, and kyphosis may be contraindications to this position. In these relatively rare circumstances, consideration should be given to the lateral position.

Perhaps the single most important patient factor is the shape of the buttocks (or depth of the gluteal cleft). It was found to be an important factor in determining the patient position and type of anesthesia to be used in the procedure (Spry, 1997).

Surgeon Factors

The primary reason that many surgeons prefer the prone jack knife position is the excellent visibility provided during anorectal procedures. The exposure provided for office procedures, such as excision of thrombosed external hemorrhoids or drainage of abscesses is not equaled by other positions. In the operating room, whether the surgeon is dissecting the rectum off of the prostate or vagina in an abdominoperineal resection or preserving the internal sphincter during a mucosectomy for ulcerative colitis, visibility and lighting are key factors. Since the gluteal cleft is in horizontal rather than a vertical orientation in the prone jack knife position, illumination can be

provided with overhead lights rather than headlamps. Similarly, more than one person can visualize the operating field without crowding or being in an awkward body position (Bailey & Snyder, 2000).

Physiologic Factors

The jack knife position has been described as the most precarious of surgical positions. Both respiration and circulation can be most adversely affected. Vital capacity is reduced due to restricted diaphragmatic movement and increased blood volume in the lungs, reducing lung compliance (Kneedler & Dodge, 1994).

Careful positioning of patients when they are under anesthesia is crucial. Most surgeons focus on the avoiding damage to peripheral nerves from prolonged pressure when positioning patients. However, an even more significant risk to overall patient well-being can result from the unintended consequences of anesthesia that may affect patient physiology. They include compression of arteries, impairment of venous return, limitation of ventilation, and blood pooling. Many authors have examined the prone jack knife position to assess the potential physiologic impact.

There are mixed reports about the cardiac effects of the prone jack knife position. If the patient is improperly positioned, transmitted pressure on the vena cava may cause blood pooling in the lower extremities and result in decreased venous return. In one study, when patients were turned from the supine to the prone position there was a temporary decrease in cardiac index; however, when the patients were placed in the prone jack knife position the cardiac index returned to the level seen in the supine position.

There was no change in heart rate, mean arterial pressure, and systemic vascular resistance with change from the supine position to the prone jackknife position, but there was a decrease in the left ventricular stroke work index and a significant increase in the pulmonary capillary wedge pressure. Overall, the effects of the jack knife position were comparable to other surgical positions and were believed to be manageable by experienced anesthesiologists.

The effect of posture on pulmonary physiology in general and the specific effect of the prone jack knife position on vital capacity have been examined. When patients in the sitting position are considered to be baseline, there is a 9% decrease in vital capacity in the supine position, a 12.5% decrease in the jack knife position, and an 18% decrease in the lithotomy position. The reduction in vital capacity is due to obstruction of the movement of the diaphragm and to a lesser extent to the restriction of the anteroposterior movement of the ribs. This modest decrease is tolerated by most patients but merits careful monitoring during conscious sedation and general anesthesia (Bailey & Snyder, 2000).

References:

Bailey, H. R., & Snyder, M. J. (2000). *Ambulatory Anorectal Surgery*. New York: Springer.

Jaffe, R. A., & Samuels, S. I. (2004). *Anesthesiologist's Manual of Surgical Procedures* (3rd ed.). New York: Lippincott Williams & Wilkins.

Kneedler, J. A., & Dodge, G. H. (1994). *Perioperative Patient Care: The Nursing Perspective* (3rd ed.). Sudbury, Massachusetts: Jones and Bartlett Publishers.

Spry, C. (1997). *Essentials of Perioperative Nursing* (2nd ed.). Gaithersburg, Maryland: Jones and Bartlett Publishers.