Combined use of HELP/ramped position pillow and Bean Bag in a morbidly obese patient undergoing robotic pelvic surgery

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Introduction

Morbid obesity increases the risk of difficult airway management, aspiration, and postoperative respiratory compromise, for which the HELP (head elevated laryngoscopy position) or ramped position can improve airway alignment, enhance ventilation, and reduce aspiration risk.
We report a case in which a ramp pillow was kept atop a vacuum bean bag for the entire procedure, eliminating the need for repositioning after intubation and before extubation.

Case Presentation

- A 56-year-old female with Class III morbid obesity (BMI 55 kg/m^2; 180 kg, 180 cm) underwent a robotic hysterectomy with bilateral salpingo-oophorectomy.
- PMH: HTN, HLD, T2DM, grade 3 steatosis, GER, diaphragmatic hernia, OSA (on CPAP).
- Preoperative evaluation: central obesity, large breasts, neck circumference of 48 cm, and Mallampati I airway.
- Surgery lasted 213 minutes in steep Trendelenburg (27°) and lithotomy, with both arms secured alongside the torso.
- Positioning was challenging due to her body habitus and surgical demands.
- A 90 cm-wide vacuum bean bag, bilateral shoulder restraints, and a 30° HELP pillow were used to establish a stable ramped position and prevent slippage (Figure 1a, 1b).
- The HELP pillow remained throughout the procedure, rather than removed after intubation.
- At the end of surgery, the patient was returned to a supine ramped position and extubated uneventfully, with no intraoperative or postoperative complications.

Figure 1a: Photograph of patient showing labeled axis alignment.
Figure 1b: Photograph of patient showing labeled anatomical alignment planes and degrees of each plane from the horizon.

Discussion

The combination of **morbid obesity,** increased abdominal pressure from the **pneumoperitoneum** and prolonged **steep Trendelenburg position** necessary in robotic pelvic surgery significantly decreases FRC, increases V/Q mismatch, and increases risk of hypoxemia and hypercapnia.
The following strategies were used to minimize perioperative respiratory and airway challenges:

SNIFFING position (Figure 2)

- Aligns the oral, pharyngeal, and laryngeal axis
- Aligns horizontally the glabella-chin plate and external auditory meatus-suprasternal notch
- Improves intubation view
- Improves oxygenation and ventilation

HELP (figure 2)

In obese patients, the sniffing position is achieved by the ramp position, which:

- Reduces aspiration risk
- Improves ventilation & oxygenation
- Decreases diaphragmatic pressure
- Increases FRC

BEAN BAG

- Prevents patient displacement
- Minimizes pressure and nerve related injuries

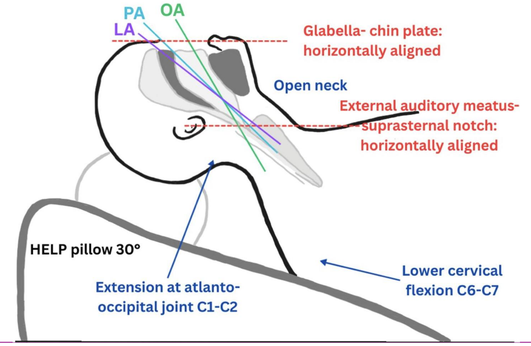

Figure 2: Three-axis and anatomical plane alignment during the sniffing position in a morbidly obese patient at a 30° ramp
OA: Oral axis, PA: Pharyngeal Axis, LA: Laryngeal Axis

Maintaining the HELP pillow

Usually, the HELP pillow is removed after intubation to improve surgical access. Maintaining it:

- Eliminates risk of airway and line displacement during repositioning
- Reduces staff strain during repositioning
- Improves post-extubation oxygenation and ventilation
- Facilitates a smooth transition from induction to surgery to emergence.

Problems of maintaining the HELP pillow throughout the procedure and their mitigating strategies

Problems	Considerations
Challenges in robotic arm docking from the raised final bed height.	Offsetting the OR table to prevent interference of surgical lights and robotic arms.
Difficult patient access by the surgical staff due to the elevated final bed height.	Provide step platforms to assist staff access to the patient.
Increased risk of pressure sores due to reduced bean bag contact area with the patient.	Use additional foam pads to reduce the risk of pressure injuries.
Increased slippage risk due to reduced bean bag contact area with he patient.	Mold the bean bag around the patient and the HELP pillow to maintain stability. Apply additional shoulder braces to minimize patient slippage.
Mild lumbar flexion can limit surgical access and create suboptimal operating conditions.	

Learning Points

1. Combining the HELP pillow and bean bag optimizes airway management, positioning stability, and respiratory function in morbidly obese patients.
2. Retaining the HELP pillow throughout robotic surgery reduces the need for repositioning, prevents accidental dislodgement of medical devices, and minimizes staff strain.
3. Customized positioning techniques can enhance safety and efficiency during prolonged procedures requiring steep Trendelenburg.

References

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