POSITIONERINGS RELATERADE RISKER VID ROBOTKIRURGI

Carina Surell

Anestesisjuksköterska och utbildningsledare

KORREKT POSITIONERING AV PATIENT I SAMBAND MED ROBOTKIRURGI

- BIBEHÅLLA PATIENTENS LUFTVÄG OCH CIRKULATION
- GOD ACCESS TILL OPERATIONSOMRÅDET
- BEKVÄM OCH PATIENTSÄKER POSITIONERING
- FÖREBYGGA TRYCKSÅR, NERV- OCH MUSKULOSKELETALA SKADOR
- FÖREBYGGA POSTOPERATIVA KOMPLIKATIONER

RISKER ASSOCIERAT MED TRENDELENBURGLÄGE

- SKJUV, FRIKTION & TRYCK
- KOMPARTMENTSYNDROM
- NERVSKADOR
- POSTOPERATIVA LUNG-KOMPLIKATIONER
- HEMODYNAMISKA EFFEKTER

TRENDELENBURGLÄGE

- **POSTOPERATIVA PULMONELLA KOMPLIKATIONER 3-19 %**
- **HÖGA TOPPTRYCK + ÅLDER**

-> ASSOCIERAT MED ÖKAD RISK FÖR PPC

BJA

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Review Article

RESPIRATION AND THE AIRWAY

Ventilation strategy during urological and gynaecological robotic-assisted surgery: a narrative review

Davide Chiumello[1,2,3,*], Silvia Coppola[1,2,3], Isabella Fratti[2], Marc Leone[4,5] and Bruno Pastene[4,5]

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Summary

Robotic-assisted surgery has improved the precision and accuracy of surgical movements with subsequent improved outcomes. However, it requires steep Trendelenburg positioning combined with pneumoperitoneum that negatively affects respiratory mechanics and increases the risk of postoperative respiratory complications. This narrative review summarises the state of the art in ventilatory management of these patients in terms of levels of positive end-expiratory pressure (PEEP), tidal volume, recruitment manoeuvres, and ventilation modes during both urological and gynaecological robotic-assisted surgery. A review of the literature was conducted using PubMed/MEDLINE; after completing abstract and full-text review, 31 articles were included. Although different levels of PEEP were often evaluated within a protective ventilation strategy, including higher levels of PEEP, lower tidal volume, and recruitment manoeuvres *vs* a conventional ventilation strategy, we conclude that the best PEEP in terms of lung mechanics, gas exchange, and ventilation distribution has not been defined, but moderate PEEP levels (4–8 cm H_2O) could be associated with better outcomes than lower or highest levels. Recruitment manoeuvres improved intraoperative arterial oxygenation, end-expiratory lung volume and the distribution of ventilation to dependent (dorsal) lung regions. Pressure-controlled compared with volume-controlled ventilation showed lower peak airway pressures with both higher compliance and higher carbon dioxide clearance. We propose directions to optimise ventilatory management during robotic surgery in light of the current evidence.

Keywords: gynaecological surgery; mechanical ventilation; pneumoperitoneum; respiratory mechanics; robotic surgery; Trendelenburg position; urological surgery

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PEEP 4-8 cm H²O

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BMI RISKFAKTOR FÖR:

- HÖGA TOPPTRYCK
- MINSKAD COMPLIANCE

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- **Bättre syresättning intraoperativt**
- **Ingen skillnad i spirometri post-operativt**
- **Öka PEEP under RM**

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Tryckstyrdventilation
VKTS/ PCV-VG

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OPEN

REVIEW ARTICLE

Challenges for anaesthesia for robotic-assisted surgery in the elderly

A narrative review

Paola Aceto, Claudia Galletta*, Chiara Cambise*, Giovanni Punzo, Ersilia Luca, Chiara Schipa and Liliana Sollazzi

Steep and reverse Trendelenburg positions are often used in robotic-assisted surgery (RAS) to improve surgical access. The elderly are particularly vulnerable to the cardiovascular effect of the combination of pneumoperitoneum and these extreme positions. Falls in both cardiac output (CO) and mean arterial pressure (MAP) caused by pneumoperitoneum are enhanced in reverse Trendelenburg. Hypotension with dangerous cerebral and myocardial hypoperfusion may occur. Caution should be exercised in patients with low cardiac reserve and the degree of peri-operative risk should dictate the level of haemodynamic monitoring employed. The effects of pneumoperitoneum on CO are less pronounced in the standard Trendelenburg position due to gravity, but head-down combined with pneumoperitoneum can increase both MAP and systemic cardiovascular resistance. However, in patients with impaired myocardial contractility, the head-down position may lead to cardiac failure. In addition, the adverse respiratory effects of pneumoperitoneum, which include reduction of pulmonary compliance and functional residual capacity, may be exacerbated by steep Trendelenburg. At the same time, hypercarbia resulting from CO_2 insufflation can lead to an increase in stasis of brain blood flow and intracranial pressure with possible repercussions on cognitive functions in the elderly. Another problem is the increase in intra-ocular pressure during steep Trendelenburg, and injury to the optic nerve has been reported after robot-assisted prostatectomy. Finally, strategies to use the lowest possible pneumoperitoneum pressure are considered to reduce possible complications. Moreover, the extreme positions should be limited only to the time strictly necessary for surgery and should be avoided in high-risk patients.

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INTRA- OCH POSTOPERATIVA RISKER MED ÄLDRE OCH SJUKARE PATIENTER.

Riskpatienter är äldre hjärt- eller lungsjuka

Inga uppmätta neurologiska komplikationer hos friska patienter

Hjärnans autoregulation av hjärnans blodflöde är snävare då man söver patienterna med Sevofluran

Användande av djup muskelrelaxation kan minska användning av höga insufflationstryck

Mer forskning behövs