Low-Pressure with Continuous-Flow Insufflation during Transanal Minimally Invasive Surgery

Andrea Hernandez-Moreno[1];Daniel Aillaud-De Uriarte[2]; Diego C Marines-Copado, MD, FASCRS[3]
1. Universidad Anáhuac Puebla; 2. Universidad de las Américas Puebla; 3. Houston Methodist Willowbrook Hospital

Background

- Transanal minimally invasive surgery (TAMIS) has been recently advocated as an alternative to transanal endoscopic surgery for removal of mid and low anterior rectal tumors. (Atallah, S., et Al, 2021).
- Pneumorectum in such reduced space can be challenging.
  - Difficulty of movement due to the anatomy of the cavity
  - Limited usage of suction devices
- This leads to the presence of excessive diathermy-induced smoke. (Hompes R. et. Al, 2014)
- Standard pressure (8-15 mmHg) has been preferred over **low pressure (5-7 mmHg)** because pressure in the pneumorectum can be constantly fluctuating. (Angioli R, et. Al, 2015)
- **CO2 absorption** can affect the acid-base balance, cardiovascular physiology, pulmonary physiology and release of cytokines (Umano G. et. Al, 2021)

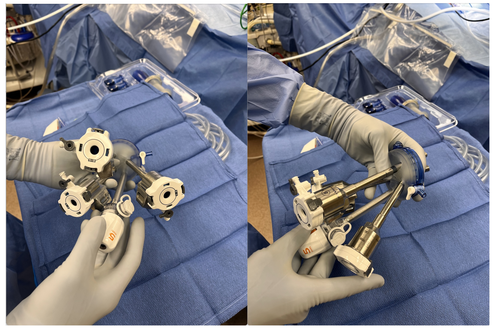
Objective

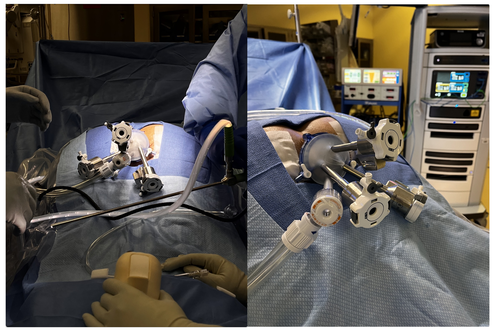
- The development of a new type of insufflator, such as AirSeal has **reduced the instability of pneumorectum** by supplying **continuous pressure** (Bucur P., et Al, 2016), such as the pelvic cavity.
- In consequence, we reduce the exposure to CO2 and its consequences.

Method of application

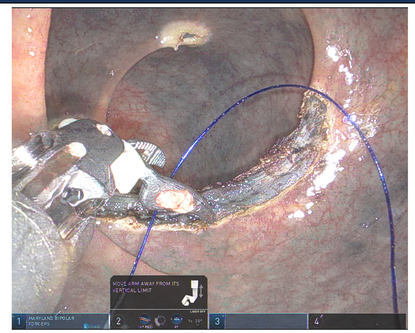


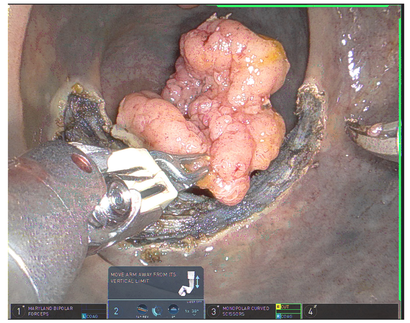
- The patient is placed in a jackknife/prone position.
- This position prevents collisions and is useful for dissection and sew close





- AirSeal system includes **three lumen filter tube set** connected to one valveless Airseal Trocar, providing stable pressure, **constant smoke evacuation** and valve-free access.
- GELPOINT is placed into the anal canal with the three ports.
- Soon after, the filter canister of the tube is placed into the iFs control unit.
- Modification of pressure should be considered throughout the case and considering the patient's characteristics.







Low-Pressure insufflation during TAMIS allows to have clear visualization

Preliminary Results

- Low pressure pneumoperitoneum has been shown to **decrease peak respiratory pressure and CO2 absorption** during laparoscopic surgery. (Saway, J., et Al, 2022).
- During PAROS trial it was reported to improve postoperative recovery, shortening the duration of hospitalization and decreasing postoperative pain and analgesic consumption. (Celarier, S., et. Al, 2021)
- As preliminary results are not available yet, while literature review was conducted there are not any reported trials on low pressure TAMIS.

Conclusion

- The adoption of Low Pressure TAMIS may benefit the patient's **postoperative recovery.**
- Having considered that low pressure insufflation has been successfully applied in other colorectal surgical procedures, further investigation of its usage during TAMIS is necessary.
  - Future clinical trial of low pressure TAMIS should be done, specially to determine the inclusion criteria.

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