

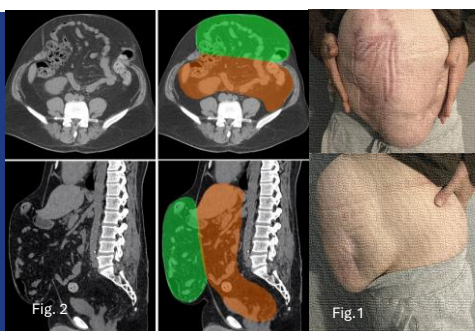
# Preoperative Progressive Pneumoperitoneum: Better in an Ambulatory Care Setting? How I do it?

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## Introduction

- Incisional hernias with loss of domain (IHLD) are challenging to treat.
- Preoperative techniques like botulinum toxin injection (BTA) and preoperative progressive pneumoperitoneum (PPP) are highly effective, potentially preventing the need for perioperative component separation in almost 90% of cases.
- PPP involves preoperative introduction of air into the abdominal cavity to increase the abdominal wall volume, aiding in diaphragmatic rehabilitation and hernia reintegration.
- This report aims to show our way of doing this procedure in an ambulatory setting



## Methods

### Patient Selection

- ✓ Patients with IHLD are considered for PPP if their incisional hernia cannot be fully reduced back into the peritoneal cavity at physical examination (Fig. 1).
- ✓ CT-scan volumetry →
- ✓ Calculate: Hernia volume, Abdominal cavity volume, Exteriorized ratio
- ✓ Indication for PPP if exteriorized ratio > 20% (Fig. 2)

### Preoperative Evaluation (~1 year)

Pulmonary, cardiac, anesthesiologic assessments and preoptimization

### Initial Catheter Placement (First Hospitalization)

Port-a-cath insertion under general anesthesia OR Catheter placement under CT-scan guidance (ambulatory setting) New CT-scan volumetry performed

Insufflation of abdominal cavity  
 Plain abdominal X-ray to confirm pneumoperitoneum  
 Abdominal binder applied  
 Botulinum toxin injections administered  
 Confirm patient tolerance  
 Discharge to home or hospital residential center for self-care

### Outpatient Insufflation Sessions

Every 2-3 days (usually 3x/week)

### Final Evaluation Before Surgery

CT-scan volumetry day before surgery to confirm preparation efficacy (Fig. 4)

### First PPP Procedure (3-Day Admission)

Air volume per session: 500cc - 2000cc based on patient tolerance

Monitoring before & during session: Blood pressure, Heart rate, Oxygen saturation, Patient supine for 20 min post-insufflation, Final monitoring after standing  
 Duration per session: 1-2 hours, Total PPP preparation time: 3-4 weeks, No prophylactic heparin or antibiotics during this period

## Discussion

PPP is likely the procedure of choice for pre-operative IHLD management. Although time-consuming and involving rare complications, PPP offers many advantages: it serves as preoperative diaphragmatic rehabilitation, tests patient tolerance against abdominal hyper pressure, increases abdominal cavity volume [3], and extends lateral muscle length [39]. It likely facilitates adhesiolysis and is effective for all IHLD types, not just median ones.

**90%**  
 of our IHLD patients,

Didn't require CST as the PPP allowed viscera restoration into the abdominal cavity and complete fascia closure with a mean volume ratio of **34%**

These results are consistent with two systematic reviews reporting

**86% to 93%**  
 complete fascia closure after PPP for IHLD

## Conclusion

- ❖ Performing PPP in outpatient care does not compromise its efficacy. Instead, it allows for longer preparation, potentially improving efficacy.
- ❖ PPP is an optimal preoperative option for IHLD, alone or with botulinum toxin injection.
- ❖ Its outpatient realization is safe, satisfactory for patients, cost-effective, and offers several advantages with minimal disadvantages.
- ❖ It has been our standard care since 2010.

Many surgeons avoid PPP due to the long hospital stay it traditionally requires, with only 15% of studies in 2021 reporting outpatient preparation. However, outpatient PPP offers key advantages: it supports physical and respiratory rehabilitation, allows patients to continue daily activities, reduces the need for anticoagulants, shortens hospitalization, and lowers healthcare costs. It may also reduce infection risks linked to prolonged hospital stays, as no prophylactic antibiotics are used. The procedure remains safe and effective, with rare complications typically occurring early during in-hospital steps. A noted drawback is that patients must return to the hospital if complications arise at home.

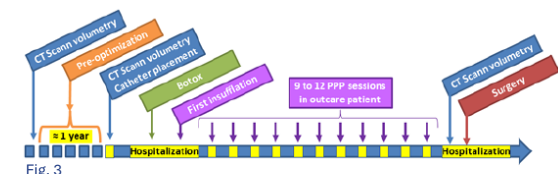


Fig. 3

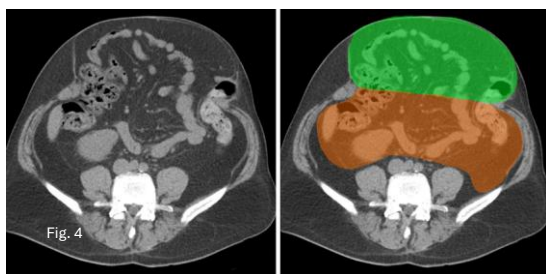


Fig. 4