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# COMPLEX INCISIONAL HERNIAS - CASE REPORT TREATED BY PERFORMING PRE-OPERATIVE PROGRESSIVE PNEUMOPERITONEUM

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**Abstract:** Despite the increase in the number of minimally invasive surgeries, with a consequent reduction in incisional hernias, laparotomies and accessory incisions to remove parts maintain a high rate of incisional hernias, ranging between 15 and 20%. In this context, as a result of better surgical results and survival of patients with extensive oncological resections, abdominal vascular diseases and severe traumas, we see patients developing complex hernias

Among the criteria chosen to identify a hernia as complex, loss of home is one of the most frequent Omar Rodriguez-Acevedo 2017.

For the treatment of these large hernias, the progressive preoperative pneumoperitoneum (PPP) technique described by Goni Moreno in 1940 can be very useful, better preparing the patient to receive the contents of the hernia back into the abdominal cavity, minimizing the chance of developing intra-abdominal hypertension.

**Keywords:** progressive preoperative pneumoperitoneum (PPP), complex incisional hernia, loss of home.

## INTRODUCTION

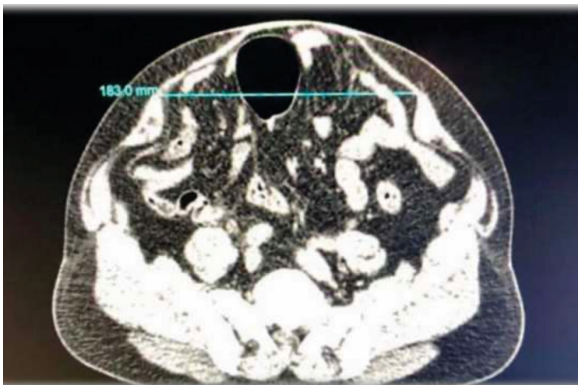
When it comes to large hernias, there is a need to create an objective criterion to recognize a hernia with loss of domicile. Of the various proposals to arrive at this definition, we used the rule described by Tanaka et al. Loss of residence is considered to be a hernia that presents a volume of hernial content in relation to the content of the abdominal cavity greater than 25%, calculated using Abdomen Computed Tomography. The VR (volume ratio) equation was formulated: 1⁄4 HSV/ ACV to calculate hernia sac volume (HSV) and abdominal cavity volume (ACV) in order to assess the need for PPP. We perform PPP especially in patients with HSV/ACV volume ratio >25% (VR C 25%). Preoperative tomography (CT) is essential in the evaluation. It is also used to evaluate the response to PPP, such as abdominal wall muscle stretching and reduction of hernial content.

The progressive pneumoperitoneum technique aims to increase the compliance of the abdominal cavity, aiming at adequate reduction of the hernial contents. The gradual increase in intra-abdominal pressure improves diaphragmatic function, allowing the stretching of the abdominal wall muscles, with the final effect of increasing the volume of the abdominal cavity. Other effects that may be beneficial are described, such as lysis of adhesions, improvement of portal, mesenteric and intestinal circulation, thus producing reactive local vasodilation with an increase in macrophages, causing a better healing response Sabbagh, C. This allows for adequate accommodation of the herniated content without great repercussion for the patient, minimizing the risk of Abdominal Compartment Syndrome, after reducing the hernial content and correcting the abdominal wall defect. On the other hand, progressive pneumoperitoneum causes respiratory discomfort due to diaphragmatic restriction and increases the incidence of deep vein thrombosis, due to abdominal hypertension. This must be avoided with the use of low molecular weight heparin and chest physiotherapy during the preoperative pneumoperitoneum protocol.

The objective of this work is to describe a case of a patient with Complex Incisional Hernia, in which the pre-operative Pneumoperitoneum technique was used, as well as discuss its indications and limitations at the Dr. Matheus Rangel General Surgery and Trauma Service of Hospital Municipal Lourenço Jorge.

## REPORT OF CASE

Patient, 61 years old, male, underwent xiphopubian laparotomy due to trauma in 2013. He developed an incisional hernia in the first year after surgery, sought the service in 2019. We performed abdominal CT scans on patients with complex hernias. In this case, we observed proximity to the bone surface, a defect greater than 10 cm laterally and loss of domicile (we considered an abdominal volume greater than 25% of the abdominal cavity). Admitted 14 days before surgery to perform PPP. (Figure 1a).




(Figure 1a)

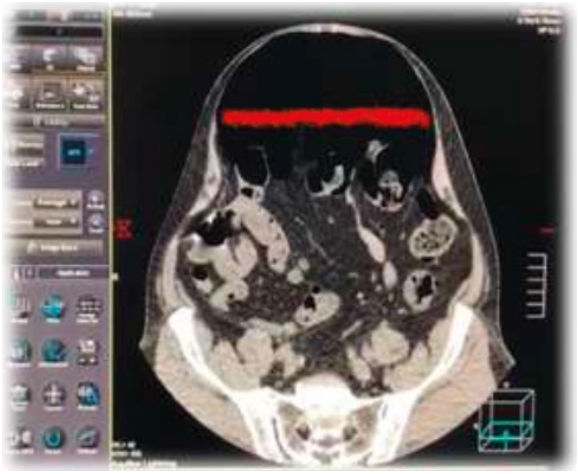
PPP performed in a surgical center under local anesthesia and sedation. We used the placement of a Seldinger catheter under direct vision of the cavity, at Palmer's point, through a small incision. Our protocol is to use room air, insufflating 2000 ml on the first day in the surgical center and 800 to 1000 ml daily in the ward, depending on the patient's tolerance, with a smaller volume being insufflated or even interrupting the insufflation if there is significant discomfort or pain, which normally presents as low back pain. We maintain daily insufflation for 10 to 14 days before surgery, with the patient admitted to the ward. (Figure 1b). In this case, after 10 days the patient was referred to surgery. (Figure 1c).

(Figure 1b)

(Figure 1c)

In the preoperative period we use low molecular weight heparin and respiratory physiotherapy. We use imaging exams for evaluation during the PPP protocol. (Figure 2a)

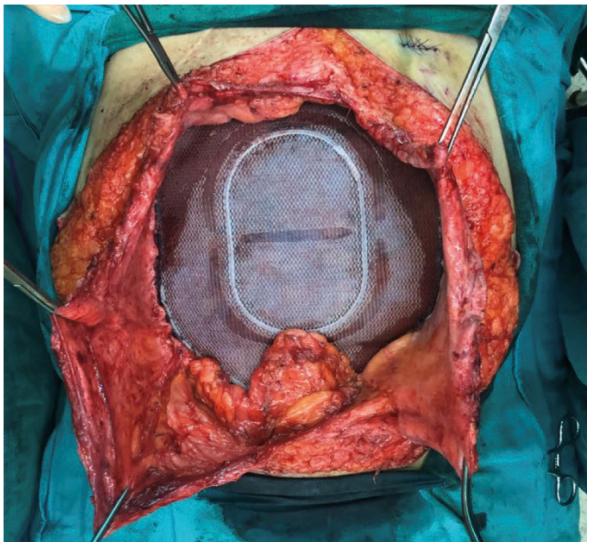
(Figure 2a)



(Figure 2a)

In this patient, even with all the preparation, it was not possible to close the midline, so a double-sided mesh was used that allows contact with the handle. This material is one of the limitations of a public service for repairing hernias of this complexity. (Figure 2b). Within 7 days, the patient was discharged from the hospital and returned to the outpatient clinic for review 22 days after the surgical procedure. (Figure 3).

(Figure 2b)



(Figure 2b)

(Figure 3)

## DISCUSSION

Recognizing a complex hernia with loss of domicile is essential to minimize postoperative complications. Proper planning of this surgery directly influences the result to be achieved.

As part of patient preparation and optimization, we highlight weight loss, smoking cessation and treatment of chronic infections preoperatively.

Preoperative tomography (CT) is essential in the evaluation of this patient. In addition to allowing the identification of a hernia with loss of domicile, it can be used to evaluate the response to PPP, such as muscular stretching of the abdominal wall and reduction of hernial contents.

The use of botulinum toxin has shown excellent results in the preparation of these patients with large hernias, lateral muscle retraction and large defects. The toxin is usually used on the lateral abdominal muscles, 3 to 4 weeks before surgery. It can be used concomitantly in patients undergoing PPP in patients with large defects or when the intention is to reduce preoperative hospitalization time: *Ibarra-Hurtado TR*.

## CONCLUSION

The use of progressive preoperative Pneumoperitoneum has been shown to be efficient in the preparation of patients with hernia and loss of residence. It is an accessible, cheap resource, with little complication, and often the only resource available on the public network.

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