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Review with video of a laparoscopic transabdominal preperitoneal (TAPP) repair for giant inguinoscrotal hernia

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ABSTRACT

BACKGROUND: Giant inguinoscrotal (GIS) hernias are rarely encountered in clinical settings and are often associated with mental neglect for many years. This type of hernia is defined as “giant” if it descends below the mid-point of the inner thigh of a patient in an upright position. The laparoscopic repair approach of a GIS hernia is technically challenging. It has been claimed that laparoscopic surgery has several advantages over the open surgical approach, with less pain and an earlier recovery. The aim of this video is to evaluate the efficacy of TAPP (laparoscopic transabdominal preperitoneal) in order to treat a GIS hernia.

CASE PRESENTATION: A 65-year-old male without a relevant past medical history was admitted to the emergency service with abdominal pain, belching and nausea. He denied any other symptoms, and no previous surgical operations were recorded. Physical examination showed a large mass in the left scrotum below the mid-point of the inner thigh of the patient in an upright position. A CT scan confirmed the diagnosis of a GIS. A laparoscopic TAPP procedure was decided upon as the best course of treatment.

RESULTS: The patient underwent a successful repair procedure. The operation time was 150 min. No intraoperative blood transfusion was necessary. The patient's diet was resumed on the first day post surgery, and the postoperative hospital stay was three days.

CONCLUSIONS: Laparoscopic TAPP repair is a safe and feasible method for surgically managing GIS hernias.

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1. Introduction

Inguinal hernia repair is one of the most widely performed surgical procedures [1]. Giant inguinoscrotal (GIS) hernias are rarely encountered in clinical settings often associated with mental neglect for many years. This type of hernia is defined as “giant” if it descends below the mid-point of the inner thigh of a patient in an upright position. A GIS hernia can be classified into three types, based on the scrotum length: Type 1 – the scrotum extends below the mid inner thigh; Type 2 – the scrotum extends below an imaginary line at the lower thigh, but above the superior border of patellar bone; and Type 3 – the scrotum extends below the superior borders of the patellar bone [2].

To date, different surgical techniques have been reported in the successful treatment of hernias [3]. The laparoscopic repair approach is technically challenging and there is minimal research in the literature investigating this technique. In the last decade, there

has been an increased interest in the laparoscopic approach for inguinal hernia repair, mainly represented as the trans-abdominal pre-peritoneal (TAPP) technique [4–6].

The aim of this video is to evaluate the efficacy of TAPP in order to treat a GIS hernia.

2. Case presentation

A 65-year-old male with no relevant past medical history was admitted to the emergency department with abdominal pain, belching and nausea. He denied any other symptoms. No allergies were reported and no previous surgical operations were recorded. Physical examination of the patient showed a large mass in the left scrotum below the mid-point of the inner thigh in an upright position. A CT scan confirmed the diagnosis of GIS. A laparoscopic TAPP procedure was decided as the best form of treatment, as shown in the video. The optical port was placed at the umbilical and the operating ports were placed in the umbilical transversal line. The surgeon stood on the side opposite the hernia, at about the level of the patient's shoulder. The assistant was across the table from the surgeon, the nurse was to the side of the surgeon and the monitor was at the lower side of the patient. The hernia repair was performed using an ENDOLAP 3D mesh (DynaMesh®), fixed with Histoacryl® glue (Braun Surgical GmbH, Melsungen, Germany).

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The present case was redacted according to the Surgical case report (SCARE) guidelines [7].

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

3. Results

The patients underwent a successful repair procedure. The operation time was 150 min. No intraoperative blood transfusion was necessary. Normal diet was restored on the first day post surgery, and the postoperative hospital stay was three days. No drainage tube was placed. The patient did not suffer a postoperative increase in intra-abdominal pressure, nor was there any abdominal compartment syndrome (ACS) accompanied by respiratory dysfunction. The patient presented a seroma that was treated with compression. No recurrence or chronic pain occurred during the follow-up period.

4. Discussion

GIS hernias represent a rare entity in developed countries. Open abdominal and inguinal approaches are commonly used [8]. Inguinoscrotal hernia complications such as organ perforation can occur causing peritonitis and sepsis [9]. Early elective treatment is associated with fewer complications than emergency procedures, as early treatment can avoid visceral resection and potential prosthetic infection [10].

The TAPP approach in inguinal hernia repair has been shown to be a valid alternative to the traditional open approach [5]. Furthermore, the laparoscopic approach shows less post-operative pain and a shorter length of hospital stay [6]. To the best of our knowledge, only a few cases of giant hernias treated with a laparoscopic procedure have been reported in the literature [11–13].

The guidelines for the laparoscopic and endoscopic treatment of inguinal hernias describe that the TAPP approach is a possible therapeutic option for inguinoscrotal hernias [14].

Some authors have reported that the TAPP technique for GIS hernias has resulted in recurrences, and the authors have stressed its limitations [13]. The particular case reported was a bilateral GIS hernia, classified as a Type 2, where an open surgical approach would likely have been more appropriate.

There are several experiences published with satisfactory results using the TAPP approach. In studies published by Fujinaka et al. and Momiyama et al. the TAPP technique has been demonstrated as a safe and feasible option for the treatment of GIS hernia [11,12].

We believe that TAPP has many advantages in treating GIS hernias, with the optimal control of hernia contents from the intra-abdominal cavity. Furthermore, pneumoperitoneum, combined with the push and pull manoeuvre, can facilitate the reduction of hernia contents. In our case, the assisted external manipulation of the scrotal sac helps to avoid any testicular injuries. The internal view of the hernial orifice can help to determine the appropriate size of mesh to use, representing an additional advantage of this technique.

The TAPP procedure should be considered a relative contraindication for patients with compromised respiratory and cardiac function due to an increase of the intraabdominal pressure and concomitant ACS.

In order to avoid the development of an ACS, several authors have suggested the preoperative administration of progressive pneumoperitoneum therapy in order to help the patient adapt to breathing [3,14]. The intraperitoneal gas insufflation can be per-

formed continuously or fractionally and could require a prolonged hospital stay [15]. In the literature, other procedures are described that result in an increase of abdominal capacity as a component separation of the abdominal wall [16].

In our case, we did not need to use any procedure to avoid intra-abdominal pressure increase. Our patient was relatively young and without respiratory failure, so the increase of the intra-abdominal pressure was well tolerated.

5. Conclusion

A GIS hernia is an important and challenging surgical disease associated with an impaired quality of life. In the presence of an expert laparoscopic surgeon, TAPP repair is a safe and feasible method for the surgical management of GIS hernias.

Conflicts of interest

All authors are in agreement with the content of the manuscript. The manuscript has been read and approved by all named authors.

We declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere.

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no financial support for this work that could have influenced its outcome.

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Ethical approval

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent

Informed consent was obtained from all individual participants included in the study.

Author contribution

Riccardo Caruso proposed the study. Riccardo Caruso performed the research and wrote the first draft. The rest of the authors: Emilio Vicente, Yolanda Quijano, Eduardo Diaz, Hipolito Duran, Isabel Fabra, Luis Malave, Angelo D'Ovidio, Benedetto Ielpo, Ruben Agresott, Valentina Ferri; contributed to the design and interpretation of the study.

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Riccardo Caruso.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ijscr.2020.10.063>.

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