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Laparoscopic treatment of De Garengeot hernia with Progrip

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BACKGROUND: *Many eponyms have been used to classify some rare conditions of incarceration of a hernia at the level of the groin and femoral canal. The incarceration of the appendix at the level of the groin canal was first described by Claudius Amyand, while the incarceration of the appendix inside the femoral canal is a condition known as De Garengeot hernia. The incidence of such an event is very low and surgical treatment is usually performed via inguinal approach.*
CASE PRESENTATION: *We describe the case of a 63-year-old woman who presented upon arrival at the Emergency Room a sore tumefaction in the femoral region with skin erythema. The patient had never undergone surgery for groin or femoral hernias. After performing ultrasound reporting the presence of an incarcerated intestinal loop, the patient underwent surgery. Laparoscopic exploration highlighted the presence of a De Garengeot hernia. After exploration, it was decided to continue the laparoscopic operation: at first, the hernia sac was reduced, then a self-gripping mesh was put in place. Finally, after the closure of the peritoneum, the operation was completed by performing a laparoscopic appendectomy. The patient was discharged from hospital three days from surgery with an antibiotic therapy for further two days after discharge. After three months, upon clinical examination, no recurrences of hernia were evident.*
CONCLUSIONS: *We describe a rare case of De Garengeot hernia treated laparoscopically. The treatment of such a condition is not standardized because of the few cases described. The laparoscopic approach should always be considered to perform at least an exploration of the abdominal cavity and evaluate the contents of the hernia sac. Laparoscopic hernia treatment should be carried out by experienced surgeons who are familiar with the technique and apply it routinely.*

KEY WORDS: Appendicitis, De Garengeot, Hernia, Laparoscopy

Background

Femoral hernia has an incidence of around 3% and is most frequent in females [1]. The presence of the appendix within the hernia sac in the femoral hernia is a rare event, the incidence of which is estimated at around 0.8%, but only in 0.13% of cases the appendix is inflamed [1-3]. In literature, there are about 100-200 cases of patients undergoing surgery for this pathology [3]. This pathological condition was first described in 1731 by Rene Jacques Croissant de Garengeot and a few years later Prudent Hevin performed the first appendectomy in an incarcerated femoral hernia [4,5]. The purpose of this work is to describe a case of De Garengeot hernia performed laparoscopically in a referral center for abdominal wall pathology.

Case Presentation

A 63-year-old woman, BMI 24, presented, upon arrival at the Emergency Room, pain in the right iliac pit together with the presence of a lump in the femoral groin region. She was admitted to the Department of

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ABBREVIATION

US: ultrasound
MRI: Magnetic Resonance Imaging
CT: computed tomography
TAPP: transabdominal preperitoneal research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

General Surgery and Emergency of the San Valentino Hospital, reference center for wall pathology.
The patient denied nausea and fever and had never undergone surgery before that moment. At the level of the crural region there was an irreducible swelling of about 3x3cm in size and the skin presented a rash. Blood tests showed a neutrophil leucocytosis with normal biochemistry. Ultrasound showed the presence of an incarcerated femoral hernia with the presence of an intestinal loop inside. The patient underwent transabdominal preperitoneal (TAPP) surgery to treat the incarcerated femoral hernia. The operation was carried out under general anesthesia. The urinary catheter and nasogastric tube were inserted and removed before extubation. Pneumoperitoneum was 12mmHg and the patient was tilted 15° in the Trendelenburg position. The exploration of the abdominal cavity highlighted the presence of a migrated appendix within the femoral canal; there was no evidence of free liquid. The parietal peritoneum was opened to perform the hernioplasty, while the sack of the hernia and its contents were reduced within the abdominal cavity without the need to be opened. TAPP was performed using a 16x12cm Progrip® mesh, then the peritoneum was closed with self-gripping stitching before performing the appendectomy. Appendectomy was performed laparoscopically and the appendix was removed via endobag; the drainage was placed in the abdominal cavity and was removed two days after operation. An antibiotic therapy was administered with amoxicillin and metronidazole for 5 days. The patient was discharged after three days from surgery. Histopathology confirmed acute appendicitis. During the clinical follow up at three months, there were no recurrences of hernia.

Discussion

The femoral canal ring, unlike the one in the groin, is tightened from the back by the groin ligament, from the front and sideways by the comb ligament and in the middle by the femoral vein. Such anatomical shape makes it easier for the contents of the hernial sac to be imprisoned inside [6]. Indeed, surgical treatment of De Garengeot hernia is generally performed with urgency [3]. The pathogenesis of De Garengeot hernia has been widely debated and some authors regard the presence of a malrotation or positioning of the caecum in the pelvis as a predisposing condition. The presence of a mobile and dilated caecum could push the appendix into the femoral canal [7]. Other predisposing conditions could be major weight loss or significant physical exertion [8]. The clinical picture of this condition often mimics that of an incarcerated hernia and not always is preoperative diagnosis simple nor straightforward, especially in obese patients where the groin and femoral region is difficult to assess. The symptoms that mostly accompany this pathology, besides the presence of tumefaction, are hyperemia of the skin and pain, whereas fever is less frequent [3]. Cases presenting abscesses, subcutaneous emphysema and fasciitis are extremely rare and most likely depend on the time between an acute event and surgical treatment. In fact, the incarceration of the appendix in the femoral canal probably tends to limit infection avoiding intraabdominal spread. Liner et al. showed that CT diagnosis is correct in 68% of cases in which it is performed, while ultrasound revealed the presence of the appendix in the hernial sac only in one case [3,9]. However, the use of radiological examination should be taken into consideration in order to rule out the presence of vascular diseases or to assess the presence of an intestinal loop in the hernial sac, and, in doing so, determine how urgent the surgical operation is rather than simply highlight the possible presence of an imprisoned appendix. The use of MRI in the diagnosis of De Garengeot hernia is described only in one case in literature [10]. MRI can be considered exclusively for pregnant women, paediatric patients or in case of patients allergic to iodate-based contrast media. In literature, surgical treatment was generally performed via inguinal approach and, to facilitate the surgery, the groin ligament can sometimes be dissected. In some cases, a second laparotomy was needed to perform the appendectomy when access from the same spot was impossible. Some authors describe other approaches to the treatment of De Garengeot hernia. In fact, are cited other three approaches: the infra-inguinal by Lockwood Low, the preperitoneal by McEvedy, and the trans-inguinal by Lotheissen [11]. The TAPP technique to treat hernia was performed in two cases, while the preperitoneal approach was used only once after performing the trans-abdominal appendectomy. Possible complications due to the triangle of pain and doom, the cost of surgery and the long learning curves, can discourage the laparoscopic approach for this type of pathology. Urgent laparoscopic treatment of an incarcerated hernia is determined by the confidence with the laparoscopic technique and the skill of the surgeon. In fact, laparoscopic hernioplasty, in our view, may be considered more difficult than, for example, left laparoscopic colectomy for cancer. However, we believe that the laparoscopic approach can always be considered in order to, at least, assess the abdominal cavity and the contents of the hernia sac that can leak into the abdomen after the

induction of anesthesia. Additionally, this approach may allow, at least, to perform the appendectomy in the case of De Garengeot hernia, wash the abdominal cavity, empty any liquid and place a drainage. The low rate in use of the laparoscopic technique for the urgent treatment of De Garengeot hernia cannot be explained only due to the risk of mesh contamination. In fact, there has been only one case of preperitoneal treatment of De Garengeot hernia, where the mesh was placed outside the possible contamination area [12]. The placement of a mesh or plug via inguinal approach was not considered safe by several authors. In fact, in the series of studies by Linder et al., in 22 patients only was a mesh placed in order to correct the defect [3].

While the infection rate in the treatment of De Garengeot hernia is 5%, infections of the mesh were not reported. Chia et al. showed that the risk of an infection after emergency femoral hernioplasty is 12% [11]. This difference was explained only by the antibiotic therapy for the presence of the appendix in the sac of De Garengeot hernia. However, from the analysis of the national register carried out by Dahlastrand and colleagues, the rate of intestinal resections during the treatment of an incarcerated femoral hernia reached 23% and in these cases an antibiotic therapy was carried out [13]. The use of a mesh in De Garengeot hernia can be taken into consideration if there is no abscess or perforation of the appendix; in fact, this reduces the rate of recurrence of the hernia.

Conclusions

De Garengeot hernia is an event that a surgeon is rarely faced with, however it requires serious consideration, mostly in case the patient is found with an incarcerated femoral hernia and has not undergone any appendectomy. Preoperative diagnosis is not always simple and the use of CT should be considered in obese patients. The few cases in literature and the heterogeneity of treatment do not allow to have a standardized treatment. However, dealing with femoral hernia, we believe the operation can be performed laparoscopically with the placement of a mesh. The transperitoneal approach is probably the safest to reduce the risk of mesh infection, however, the same approach is believed the most suitable also for appendectomy. We believe that the risk of appendix perforation is the only downside to the positioning of a mesh being that recurrence is definitely a minor complication compared to mesh infection.

Riassunto

Molti eponimi sono stati utilizzati per classificare alcune condizioni rare di incarceramento di un'ernia a livello del canale inguinale e femorale. L'incarceramento dell'appendice a livello del canale inguinale è stato descritto per la prima volta da Claudius Amyand mentre l'incarceramento dell'appendice all'interno del canale femorale è una condizione che conosciuta come ernia di de Garengeot. L'incidenza di tale evento è molto bassa e il trattamento chirurgico è solitamente eseguito per via inguinotomica

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