

Anterior Transperitoneal Laparoscopic Approach of Retroperitoneal Tumour - Clinical Case

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Rezumat

Abordul laparoscopic transperitoneal anterior al unei tumori retroperitoneale - caz clinic

Prezentăm experiența personală în abordul laparoscopic transperitoneal anterior al unei tumori cu localizare retroperitoneală. Cazul luat în discuție este al pacientei P.V. de 48 de ani cu rinichi unic congenital stâng. Pacienta prezintă o formațiune tumorală retroperitoneală a flancului drept. În urma investigațiilor (ecografie, CT cu contrast) tumora pare bine delimitată, de mici dimensiuni (aproximativ 6-7cm diametru) și fără raporturi anatomice cu vasele mari retroperitoneale (vena cavă inferioară). Pentru extirparea laparoscopică a tumorii s-a folosit un dispozitiv operator adaptat după cel folosit în hemicolecomia dreaptă. După decolare coloparietală accesul în flancul drept retroperitoneal pe cale laparoscopică este bun prin procedeul nostru. Intervenția chirurgicală este rapidă și cu caracter minim invaziv. Evoluția postoperatorie este favorabilă, fără complicații, pacienta se externează la 48 de ore. În situațiile anatomice în care formațiunea tumorală este bine delimitată, fără raporturi anatomice cu vasele mari retroperitoneale și dimensiunea este acceptabilă, tentativa de extirpare pe cale laparoscopică transperitoneală este opțiunea preferabilă.

Cuvinte cheie: tumoră, retroperitoneal, laparoscopic.

Abstract

We present our personal experience in the anterior transperitoneal laparoscopic approach of a retroperitoneal tumour. The case we have in view is that of a 48-year old female patient P.V., with congenital single left kidney. The patient has a retroperitoneal tumour mass of the right flank. Following investigations (ultrasound, CT with contrast), the tumour appeared well defined, of small dimensions (approximately 6-7 cm diameter) and without anatomical relationships with large retroperitoneal vessels (inferior vena cava). For the laparoscopic excision of the tumour, we used an operating device adapted from the one used in right hemicolectomy. After the coloparietal dissection, the access into the right retroperitoneal flank by means of laparoscopy is achieved by applying our procedure. The surgical intervention was quick and of a minimally invasive nature. Postoperative evolution was favourable, without any complications; the patient was discharged after 48 hours. In anatomic situations where the tumour anatomy is well defined and its size is acceptable, without dangerous anatomic relationships with large retroperitoneal vessels, attempted laparoscopic transperitoneal removal is the preferred option.

Key words: retroperitoneal, tumour, laparoscopic

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Introduction

Primitive retroperitoneal tumours (PRT) are rarely found in surgical pathology but they are extremely varied both morphologically and evolutionally. Therefore, they are of special interest both in terms of diagnosis and treatment. In

most cases the main treatment is represented by surgery which must be applied at the optimal moment and adapted to the type of tumour and its characteristics (primary-recurrent, malignant-benign, and cystic-parenchymatous) (1). Lately, the advantages of laparoscopic surgery, as a minimally invasive technique, have led to the implementation of this procedure in an increasing number of surgical conditions; however, a protocol towards the laparoscopic approach of different retroperitoneal lesions has not been clearly defined so far. The absence of a standard in laparoscopic technique of retroperitoneal tumours is caused by many factors related to: frequently large dimensions of these tumours, anatomical relationships with large retroperitoneal vessels and mainly, the difficult access by this procedure in many retroperitoneal areas (2,3).

We present our personal experience in the transperitoneal anterior laparoscopic approach of a retroperitoneal tumour.

Case presentation

The case we have in view is that of a 48-year old female patient P.V., with a congenital single left kidney, who presents uncharacteristic, predominantly right lumbar pains. After imagistic investigations, we discovered a tumoral mass in the right retroperitoneal flank, which had not been present at previous periodical investigations.

CT scan with contrast highlighted the tumour as well defined, of small dimensions (approximately 6-7 cm diameter), partially calcified and without anatomical relationships with large retroperitoneal vessels (inferior vena cava) (Figs. 1, 2, 3). We assessed the tumour excision and considered the laparoscopic approach the best option in this case, based on the tumour's characteristics already mentioned.

For the laparoscopic excision of the tumour we used an operating layout adapted from the one used in right hemicolectomy. The patient was placed on the operating table in reverse Trendelenburg position and rotated to the left with the lower limbs abducted, and the left arm next to the body, in order to allow the cameraman (second assistant) and assistant a better mobility. The surgeon was positioned between the

patient's legs; the cameraman was at the surgeon's right side and the assistant at the cameraman's right side. We considered that it was useful to use two monitors: one for the surgeon, placed at the patient's head and another one for the cameraman and assistant at the patient's right.

The instruments we used consisted of a laparoscope with a 45° lateral view, two atraumatic grasping forceps, dissection and haemostasis forceps (monopolar and bipolar), the electrocautery "hook", a suction-lavage system with electrocautery, "LigaSure" device and an extraction bag for tumour removal. We also used four trocars which were placed as follows: the 10 mm optical trocar immediately under the umbilicus (T1), the working trocar for the surgeon's left hand of 10 mm (with reduction up to 5 mm) on the right mid-clavicular line under the umbilicus (T2), the working trocar for the surgeon's right hand of 12 mm (with reduction to 10-5 mm) on the para-umbilical left mid-clavicular line (T3), and the assistant trocar of 5 mm on the anterior axillary line below the left costal margin (T4) (Fig. 4).

Working trocar placement both for the surgeon and the assistant was under direct visualisation after the introduction of the optical trocar and the inspection of the peritoneal cavity so that this placement could be as ergonomic as possible and prevent any intra-abdominal damages.

The operating timelines were as follows: we started with the colo-parietal dissection and the traction towards the left of the right colon, then we went through the retroperitoneal space, step by step, towards the site of the tumoral mass (Figs. 5, 6).

The tumour, being well defined, was prepared in front and rear until it remained attached only by a less important and small vascular pedicle. The tumour was sprained intra-peritoneally and the pedicle was sectioned by the haemostatic forceps "LigaSure" (Fig. 7). The tumour detached from the pedicle was placed in an extraction bag in order to avoid contact with the internal organs and with the abdominal wall. The extraction of the tumour was performed through a mini-laparotomy placed on the site of the assistant's trocar. After the removal of the tumour, cleaning and drainage of the



Figure 1. Transversal CT-scan image



Figure 2. Front CT-scan image



Figure 3. 3D CT-scan image

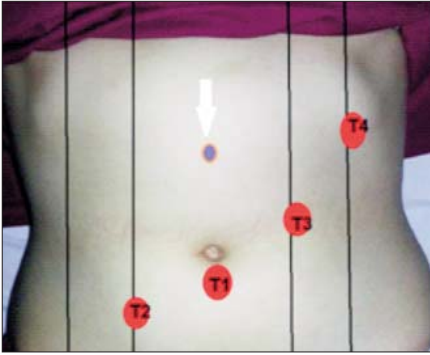


Figure 4. Placement of trocars

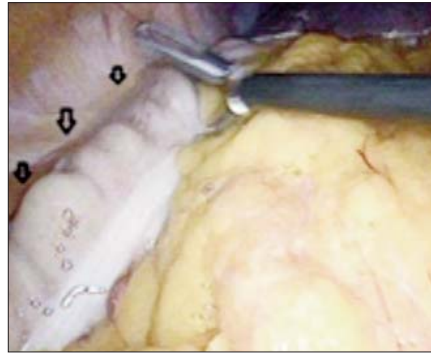


Figure 5. Right colo-parietal dissection



Figure 6. Tumour dissection

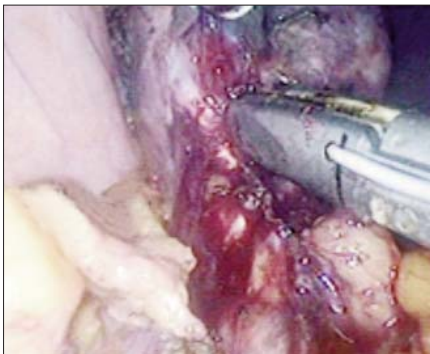


Figure 7. Pedicle sectioning by the haemostatic "LigaSure" forceps

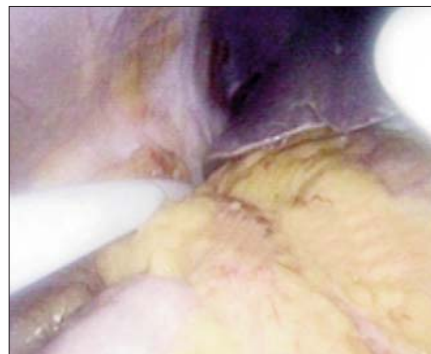


Figure 8. Drainage of the area



Figure 9. Tumour removal by a small laparotomy

Figure 10. Final aspect



Figure 11. Operatory specimen

area finalized the intervention (Figs. 8, 9, 10).

The tumour had a diameter of 7 cm, reddish brown, well defined, hard consistency and was sent compact block for pathological examination (Fig. 11). The histopathological result was a surprise. We were expecting a tumour of renal origin according to congenital single kidney but the histopathological exam revealed a myositis ossificans, probably a post-traumatic one. Postoperative evolution was favourable, without any complications; the patient was discharged after 48 hours.

Discussions

Myositis ossificans or heterotopic ossification is the abnormal formation of bone tissue in muscle, tendon, fascia or other soft tissue. There are three causes described of ectopic bone tissue.

Progressive myositis ossificans or fibrodysplasia ossificans

progressiva (Münchmeyer disease) is a severe inherited disorder with autosomal dominant transmission with onset in the first decade of life and is characterized by the appearance of disseminated periarticular ectopic ossification. This condition is progressive, with a natural evolution to aggravation.

Neurogenic heterotopic ossification occurs in patients with brain or spinal injuries. The pathogenesis seems to be related to joint immobility and increased muscle tone. This type of heterotopic ossification also occurs in tetanus, poliomyelitis, Guillain-Barré syndrome or extensive burns.

Traumatic myositis ossificans is the appearance of ectopic bone tissue after trauma or surgery (especially orthopedic surgery).

In our case we have no arguments for the diagnosis of fibrodysplasia ossificans progressiva, nor have we identified neurological causes that may lead to the appearance of heterotopic ossification, so the only occurrence cause of ectopic

bone tissue in the retroperitoneum is post traumatic.

The incidence of post traumatic myositis ossificans on large samples is shown especially in orthopedic surgery, radiology and traumatology studies which describe ectopic ossification in variable percentages in patients who suffered orthopedic surgery or various trauma. These patients have a hereditary predisposition to develop this condition, especially in certain muscles (pelvic girdle muscles, thigh muscles, deltoid muscle or the adductors). Most authors argue that in post traumatic myositis ossificans there is a significant number of patients (40%) where the traumatic event can not be identified. They agree that a sustained muscular effort is sufficient, highlighting the recurrent nature of the disease in case of repeated trauma (4,5).

In general surgery there are only a few studies of myositis ossificans, all of them on a small number of cases. Most frequently retroperitoneal ectopic ossification is associated with spinal trauma or malignant disease and the cases presented are singular.

In our patient we suspected a tumor developed from the remains of vestigial tissue of the urinary system possibly located at that level or a fibrosarcoma, tumor that can grow with periferic ossification or calcification.

Two particular elements are significant for this case: a rare benign tumor (myositis ossificans) with uncharacteristic location in the retroperitoneum and the anterior transperitoneal laparoscopic approach to the removal of the tumor. This technique reduces muscle trauma, very important in order to avoid relapse.

The surgical intervention was quick and of a minimally invasive nature. If the suggested operating layout is used for the laparoscopic approach of the retroperitoneum, the access to the area is good. The placement of working trocars is accomplished in full view after the inspection of the peritoneal cavity, the focus being on good access to the retroperitoneal area occupied by the tumour as well as good visualisation of the large retroperitoneal vessels that might have an anatomical relationship with the tumoral mass (6,7,8). During surgery we considered the possibility of introducing a supplementary optical trocar (marked with arrow in Fig. 4) on the xipho-umbilical line for a better visualisation of the inferior pole of the tumour and its relationship with the retroperitoneal vessels, ultimately this was not deemed necessary (6). To prepare the retroperitoneal space up to the peritumoral zone and for the dissection and the sectioning of the tumour pedicle, the use of the haemostatic forceps "LigaSure" is very important. Thus an operating field with minimal bleeding is obtained, allowing a better visibility together with the increase in the surgery's safety. Before the surgery, we also took into consideration the possibility of applying layout which uses a direct retroperitoneal approach or a transperitoneal one, similar to those used in nephrectomies or suprarenalectomies. We considered that these procedures do

not provide a similarly good access to the retroperitoneal space which surpasses the renal area, mainly its lower posterior area (9,10,11).

Conclusions

After the colo-parietal dissection, the access into the right retroperitoneal flank by means of laparoscopy is achieved by applying our procedure. In anatomic situations where the tumour anatomy is well defined and its size is acceptable, without dangerous anatomic relationships with large retroperitoneal vessels, attempted laparoscopic transperitoneal removal is the preferred option. The patient benefits from all the advantages of minimally-invasive surgery: reduced pain, improved digestive tolerance with more rapid resumption of the bowel pathology, absence of plague pathology; all these reduce length of hospitalisation and ensure faster socio-professional reintegration.

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