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Original research

Retrospective analysis of short term outcomes after spleen-preserving distal pancreatectomy for sodid pseudopapillary tumours

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ABSTRACT

Solid pseudopapillary pancreatic tumour (SPN) is a rare pancreatic tumour representing 0.1%–3% of all exocrine pancreatic tumours. Most SPN show benign and low-grade malignant behaviour; malignant degeneration is observed in 10–15% of the patients. More than 40% of SPN involve the tail of the pancreas leading to a minimal invasive distal pancreatectomy approach.

In this report we present the case of a young 22 Caucasian woman suffering from SPN who successfully underwent laparoscopic spleen-preserving distal pancreatectomy.

Postoperative course was uneventful.

A CT scan control at six months was negative for recurrences.

We have also made an analysis of all the laparoscopic treatment of SPN reported in English literature.

1. Introduction

Solid pseudopapillary pancreatic tumour (SPN) is a rare pancreatic tumour representing 0.1%–3% of all exocrine pancreatic tumour [1,2].

It seems to arise from pluripotent pancreatic stem cells (like acinar cells, ductal epithelium or endocrine cells) or from the cell lines of the female genital bud [4,5].

The histological hallmarks of this pathological entity are both solid and pseudopapillary cells without an increased mitoses or cytological atypia [6–8].

The common expression of progesterone receptor and the strong predilection for young females (which represent 89% [9] of the affected patients) suggest that it might be an hormone dependent tumour [10].

Most SPNs show benign and low-grade malignant behaviour. Malignant degeneration is observed in 10–15% of the patients [2]. More than 40% SPN involve the tail of the pancreas, leading to a minimal invasive distal pancreatectomy approach.

Patients undergoing surgical complete resection show a 5 years overall survival (OS) of 97%.

Death ascribed directly to the tumour is rare and long-term survival is described even in the presence of asymptomatic disseminated disease [5].

We present the case of a young Caucasian woman who successfully underwent laparoscopic spleen-preserving distal pancreatectomy.

2. Case report

A 22-years-old female, in a good overall health, was referred to our department due to epigastric pain. Apart from a slightly elevated white cell count, haematological and biochemical exams were unremarkable.

A transabdominal ultrasound examination showed a

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hypoechoic 32 mm round mass in the body of the pancreas characterized by solid and cystic components. Tumour markers CEA, CA 19-9 and Alfa Feto-Protein (AFP) were within normal ranges.

Few days later an abdominal MRI confirmed an encapsulated solid mass occupying the body and the tail of the pancreas measuring 42 × 30 × 41 mm. No lymphadenopathy or other pathological findings were seen. Laparoscopic spleen preserving distal pancreatectomy was performed. The postoperative recovery was uneventful; the patient was discharged on the postoperative day 6th.

A 5 cm SPN tumour with free resection margin was confirmed on histological examination.

The immunohistochemistry was positive for vimentin, progesterone-receptor, NSE, CD 56, CD10, with focal expression of synaptophysin and cytokeratin AE1-AE3.

CT scan control at six months was negative for recurrences.

3. Surgical technique

A general anaesthesia was performed. The patient was placed in a supine position according to French laparoscopic approach. A laparoscope was inserted through the umbilicus. Carbon dioxide (CO2) was insufflated into abdomen reaching a 12–14 mmHg pressure. One 10 mm trocar was positioned in the umbilicus, one in the midline in the epigastrium, one in the left flank, and one just below the left costal margin in the medioclavicular line. Two monitors were used in the operating room. To gain access to the pancreas, the gastrocolic ligament was divided. The pancreas was mobilized initially with the dissection the lower pancreatic margin and subsequently the superior and the posterior surface of the gland. Vessels incorporated in the pancreatic parenchyma were not isolated. The gland was dissected from the retroperitoneum medially to laterally. Finally, the parenchyma gland without the splenic vein was transected using 45 endoGIA. Clips were used to control back bleeding from the divided splenic vein. The gland was accessed from the medial part of pancreatic section and the splenic vessels are identified and dissected from the posterior portion of the resected pancreatic gland (body/tail of the pancreas). Short gastric vessels were carefully conserved as well as potential collaterals from the omentum and splenic flexure of the colon. Then pancreas was dissected from the retroperitoneum, placed in an endobag, and removed from the abdomen using the umbilical incision. Fibrin sealant was applied to the pancreatic stump and a single.

J-P tube was placed into the abdomen. Postoperative recovery was uneventful and there was no evidence of post-operative pancreatitis or pancreatic fistula.

4. Discussion

Performing a web search on Pubmed database, including English papers published up to 18 September 2013 using the key words “laparoscopic distal pancreatectomy” (LDP), a total of 371 papers were found. Focusing our attention only to the articles which dealt cases of SPN, we identified 29 papers.

For each author we considered only the latest and the largest series in order to avoid the duplication of cases.

Literature concerning LDP for SPN is relatively poor including only case reports and small case series. After the first case reported in 2003 [14] only few additional articles have been published.

Following the increasing use of robotic surgery in other fields of general surgery, some robot-assisted pancreatic resection have been yet reported in literature [11–14]. Most of the studies analysed did not provide sufficient data to make an accurate analysis. In particular the largest series works did not clarify whether patient who suffered from SPN underwent laparoscopic distal pancreatectomy with splenectomy or spleen preserving.

Based on the analysed data we observed only one reported case of male, confirming a high prevalence of women, 34 laparoscopic spleen preserving distal pancreatectomy and 2 robot-assisted laparoscopic spleen preserving distal pancreatectomy. We also pointed out the attention to Chang's study [15] who performed a single port laparoscopic spleen preserving distal pancreatectomy for cystic tumour of pancreatic body. This approach, commonly described for cholecystectomy and appendectomy, has gained attention for its minimal invasiveness and aesthetic results. Of course we hoped for the spread of this minimally invasive surgery, always respecting the oncologic resection. (Table 1).

SPN is one of the most uncommon histotypes of pancreatic tumours, indeed in English Literature are reported more than 700 cases of SPN [2].

Surgical resection is the standard of care in its management. The first surgical resection of pancreatic SPN was performed by Grosfeld and described by Hamoudi in 1970 [16].

LDP is the most common minimally invasive surgical procedure used for the treatment of SPN due to their most frequently location interesting the body and the tail of the pancreas. The early experience with LDP was performed by Gagner who published in 1996 the first series with laparoscopic resection of islet cells tumours including eight cases. Minimally invasive surgery has largely replaced open surgery in a wide range of procedure. Despite this trend, laparoscopic pancreatic surgery has slowly gain acceptance probably due to the technical difficulty involved and the high-tech devices required. Despite the first case of LDP being reported 15 years ago [14], only about 2000 cases of LDP have been reported in English literature [17,18].

Spleen preservation is somewhat controversial in the literature mainly due to the treatment of cancer patients [33]. Lillemoe [19] and Andrén-Sandberg [20] recommended always to perform a splenectomy when distal pancreatectomy is performed for cancer. A different opinion comes from Weber [27], who reported how splenectomy is joined to higher rate of complications and major pancreatic fistula (61% vs 25%, 14% vs 8%).

We support that a distal pancreatectomy preserving spleen, due to the low grade malignancy of the SPN, could be better than splenectomy because it doesn't cause any haematological abnormalities like postoperative thrombocytosis and guarantees the role of the spleen in the immunological system. For this reason and due to the well-encapsulated lesion we decided to perform this surgical technique. To date the rate of splenic conservation of LDP is reported to be between 32 and 84% [21,22].

Distal pancreatectomy spleen preserving could be performed in two main techniques. Warshaw's [23] technique is based on splenic vessels ligation so that blood flow to the spleen is guaranteed through short gastric vessels. Blood supply to the spleen may be insufficient resulting in complications such as splenic infarction or abscess. LDP preserving splenic vessels, instead, is an advanced and more laborious laparoscopic procedure, performed in few centre in the world. Splenic vessels preservation guarantee good splenic blood flow reducing the risk of the above mentioned complications. To ensure fewer complications we adopted the second technique described. A variant of this technique is “Hirota's method, a modification of hand-assisted laparoscopic pancreatectomy: a method of spleen and gastrosplenic ligament preserving distal pancreatectomy, in which pancreatic resection is performed under direct vision extracorporeally [24].

As evident from the previous English Literature review, LDP is performed only in specialized centres and by surgeons with extensive experience in pancreatic and laparoscopic surgery.