LAPAROSCOPIC RESECTION OF THE PANCREATIC TAIL WITH PRESERVATION OF THE SPLEEN IN A PATIENT WITH A LARGE PSEUDOPAPILLARY TUMOR OF THE PANCREAS

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ABSTRACT

Laparoscopic resections of the pancreas have gained in popularity in the last few years. Those preserving the integrity of the spleen are performed very rarely and are a challenge for every surgeon. We hereby report a case of laparoscopic resection of the pancreatic tail with preservation of the spleen and the integrity and the blood supply to the spleen in a 26 year-old patient with a large pseudopapillary tumor of the pancreas. Postoperative recovery was quick and without complications. The functional and aesthetic result was satisfactory. Laparoscopic resection of the pancreas is a safe and effective therapeutic procedure in selected patients.

Key words: laparoscopic resection, pseudopapillary tumor of the pancreas

INTRODUCTION

Solid-pseudopapillary tumor (SPT) of the pancreas is a relatively rare disease of low malignancy, occurring usually in female patients between the age of 15-25 years. It accounts for approximately 1-3% of the primary tumors of the pancreas. Unlike other malignant pancreatic neoplasms, SPT is resectable, and has a favorable long-term prognosis in more than 90% of cases.
Laparoscopic resection of the distal portion of the pancreas in the presence of benign tumors and in certain malignancies have gained in popularity in the last 5 years. It is a safe and effective procedure with results comparable to open surgery.\textsuperscript{5,6}

In this paper we present a laparoscopic resection of the pancreatic tail in a 26-year old female patient with a large SPT. The integrity of the spleen and its blood supply were preserved.

CASE STUDY

The patient was admitted to hospital in 2010 for elective ambulatory surgery of an identified solid tumor in the area between the lower pole of the spleen and the hilus of the left kidney. During the two-year follow-up three CT scans were obtained which recorded an increase in size of the formation of 1.5 cm.

After admission to the clinic the physical examination showed no clinical signs. Laboratory biochemical blood tests and specific tumor markers (carcinoembryonic antigen and carbohydrate antigen 19-9) were within reference norms. The control CT with intravenous contrast revealed the presence of a solid, heterodense tumor with a generally well expressed capsule, located between the spleen hilus and the upper pole of the left kidney probably originating from the tail of the pancreas. No regional lymphadenomegaly was detected. The rest of the gland parenchyma was intact (Fig. 1).

Laparoscopic resection of the pancreatic tail with preservation of the integrity of the spleen

Figure 1. CT of the abdomen and axial reconstructions.

Figure 2. Dissected tumor formation.

Figure 3. Resection line.
was performed.

Under general anesthesia with endotracheal intubation, the patient was placed in the Fowler position with 30 degrees tilt and legs apart. The operator stands between the legs of the patient, the two assistants are on both sides and the monitors (two) are above the right shoulder and head of the patient. After insufflation of the peritoneal cavity with CO$_2$ to 11 mm Hg by Veres needle in the sub-umbilical area, a 10 mm camera port was placed with optics front (0°) and a flexible head. Two other 10 mm ports were placed under visual control in the left and right sub-costal zone along the anterior axillary line and one 5 mm port in the epigastrium to the right of the midline.

After penetration into the bursa omentalis the tumor formation was removed from the surrounding tissues and adhesions. A “window” into the pancreas was formed with a size sufficient to permit resection into healthy pancreatic tissue (Fig. 2).

The pancreas itself was incised by a vascular linear stapler.

Direct visual control of the resection line did not register suspected possible bleeding (Fig. 3).

Drainage of the operative field was achieved by a polyethylene 22 Charrière drain in the right 10 mm port without switching to active aspiration. The operative time was 125 minutes with minimal blood loss (15-20 ml).

The postoperative course was smooth with no evidence of pancreatitis (normal amylase serum level), without liquid collection and/or development of pancreatic fistula. Hospital stay was 5 days.

On the third postoperative month a control CT showed no abnormalities, normal exocrine and endocrine pancreatic function and a satisfactory aesthetic result.

Macroscopically, the tumor had a rounded, firm and well-marked capsule, to which there was attached a 2.5 cm piece of pancreatic tissue from the tail of the pancreas (Fig. 4).

Microscopic appearance – an encapsulated tumor sized 6.0/6.5/7.5 cm. In some areas composed of pseudopapillary structures lined with small bright cells, and with trabecular structures of larger bright cells in other areas (Fig. 5).

Immunohistochemistry – a further immunohistochemical examination showed the following results: NSE - positive response in a high percentage of the tumor cells, progesterone - positive expression in the nuclei of about 60%, vimentin - strong positive expression in almost all tumor cells.

**DISCUSSION**

SPT was described in the medical literature for the first time in 1959 by Frantz as a papillary carcinoma of the pancreas.7

Due to subsequent conflicting descriptions of this tumor in specialized publications, the World Health Organization classified it as a solid pseudopapillary tumor of the pancreas in 1996.8

This is a neoplasm of low malignancy, with a very good prognosis if radically removed, with very rare metastases to regional or distant lymph nodes.9

Pathomorphological verification of the tumor is performed by means of immunohistochemical constellation: positive β-catenin in the nuclei of the tumor cells, CD10 (+) and lack of E-cadherin expression.10

Laparoscopic operative procedures on the pancreas have gained in popularity in the last five
years. Laparoscopic resections of tumors of the pancreatic body and tail have become the method of choice with results comparable to those of open surgery.\(^5,6\) Cases aimed at preserving the integrity of the spleen are especially challenging. Two methods have been described to carry it out. The first method, described by Warshaw et al., includes ligation and cutting of the splenic hilar vessels while \textit{aa. gastricae breves} are preserved.\(^11\)

Insufficiency of arterial splenic blood flow resulting in splenic infarction and/or formation of an abscess is frequent with this method.\(^12,13\)

With the second method splenic major vessels are preserved through precise dissection of the spleen hilus. This requires extended operating time, a high level of surgical skills and a specific set of tools and equipment. However, the method ensures an adequate blood supply with a zero percentage of infarction and/or abscess of the spleen, which is of particular importance in adolescents and young patients.

Despite the exquisite view on the operative field, the proportion of procedures with a conversion to open surgery reaches 30%.\(^11\)

Most often the reason for conversion is the presence of massive adhesions between the tumor and spleen hilus, which we did not observe in our case.

Management of the pancreatic stump remains a challenge for contemporary surgery. Liquid collection and/or pancreatic fistula occurs in approximately 10-25% of laparoscopic resection cases and is comparable as a result to open surgery.\(^14,15\)

The use of a linear stapler as a method of cutting the pancreatic tissue and the formation of a pancreatic stump is strongly recommended.\(^16,17\)

CONCLUSIONS

In conclusion, we can share our belief that laparoscopic resection of the pancreatic tail preserving the integrity of the spleen is a possible, safe and effective surgical procedure in the majority of cases of SPT.

REFERENCES