

Parenchyma-Sparing Procedure and Solid Pseudopapillary Neoplasm. A Case Report

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Abstract

Solid pseudopapillary neoplasm (SPN) of the pancreas is a rare group of pancreatic neoplasms. The diagnosis and surgical management are still under discussion. This neoplasm has traditionally been managed as a malignant neoplasm that requires radical oncological surgery with involves extensive resections. However, recent studies have proposed that it is possible to perform a parenchyma- sparing procedure with surgical margins with no increased risk of recurrence or metastasis and preserving the endocrine and exocrine function of the gland.

The objective of this study is to present the case of a young woman diagnosed with SPN located in the head of the pancreas treated at our center by parenchyma-sparing surgery (enucleation) with intraoperative ultrasound and previous colocation of a plastic endoprosthesis in the Wirsung duct. The patient presented a satisfactory evolution, without endocrine or exocrine complications. Pancreatic fistula was not notified. Although radical surgery with extensive resections has been classically indicated in this type of tumor, enucleation with negative surgical margins is a valid and safe technique that must be individualized according to the characteristics of the patient and the tumor.

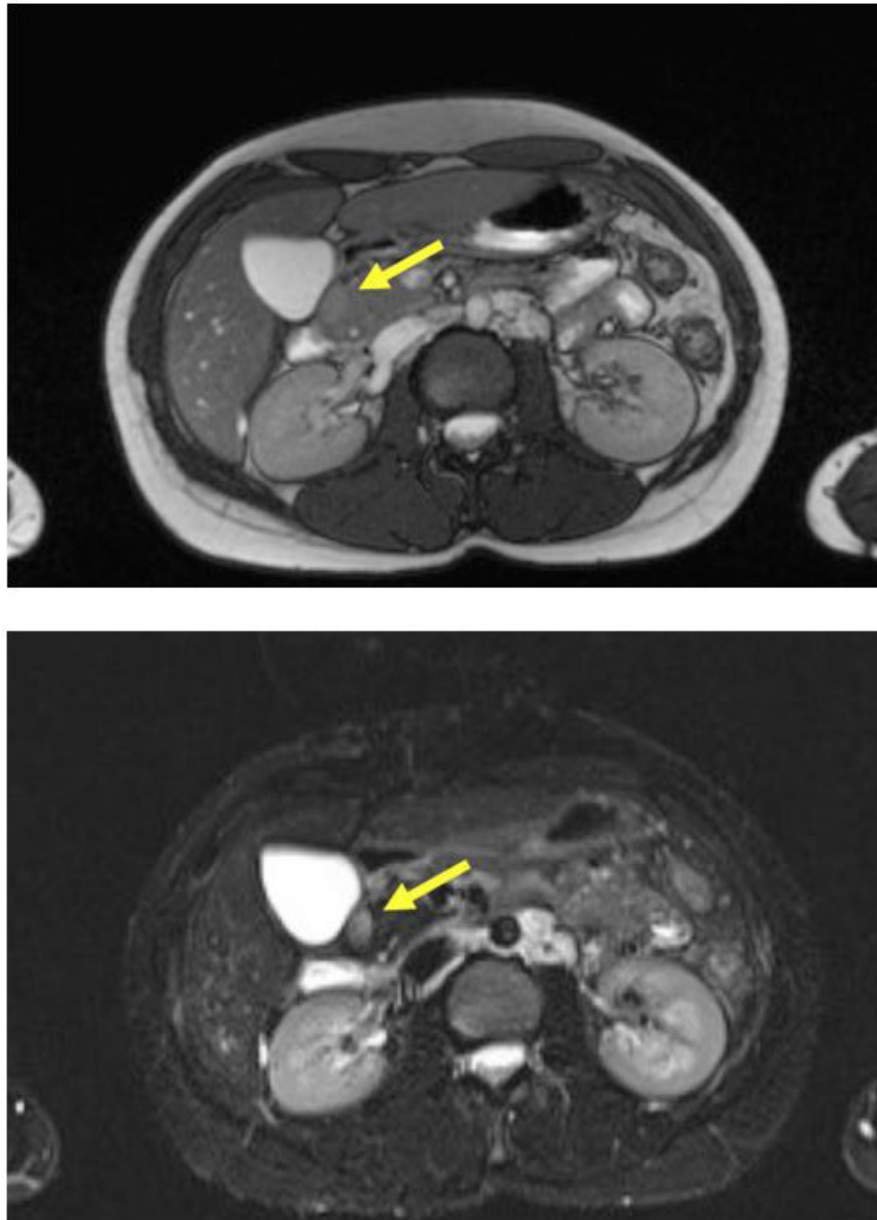
Keywords: Solid Pseudopapillary Neoplasm; Enucleation; Intraoperative Ultrasound; Immunohistochemistry; Parenchyma-Sparing Procedure

Case Report

Solid pseudopapillary neoplasm of the pancreas (SPN) is a rare pancreatic neoplasm with a low malignancy. The diagnosis and surgical management are still under discussion. The objective of this study is to present the case of a young woman with a diagnosis of SPN treated in our center by a pancreatic parenchyma-sparing procedure surgery.

We present a 23 year old woman with a clinical history of ulcerative colitis and primary sclerosing cholangitis. During the routine control studies, a nodular mass of 14 millimetres, with well-defined contours, was found in the anteromedial portion of the head of the pancreas, without contact with the Wirsung duct. The radiological suspicion is about solid pseudopapillary neoplasm of the pancreas (Figures 1 and 2). Ultrasound-guided

fine needle aspiration biopsy is diagnostic and confirms radiological suspicion. After explaining the patient the nature of her illness, the surgical intervention was planned. The surgical team indication was for enucleation after placing an intrapancreatic plastic prosthesis in order to minimize the risk of fistula. Intraoperative ultrasound was performed to ensure surgical margins (Figures 3 and 4). The pathological report is definitive for a solid pseudopapillary neoplasm of the pancreas with a maximum axis of 1.4 centimetres. Immunohistochemistry is positive for Beta-Catenin, CD 10, CD 56, and progesterone receptors. There are no evidence of endocrine or exocrine insufficiency or pancreatic fistula. In the postoperative period, the patient presented data of local infection of the surgical wound requiring ambulatory cures, with good evolution. On the following radiological studies since 2020 no tumor recurrence has been reported.



Figures 1 and 2: A well-defined lesion is described on MRI, with dimensions of 14.3 x 10 millimetres without invasion of adjacent structures or dilatation of the wirsung duct compatible with Solid pseudopapillary neoplasm (SPN)

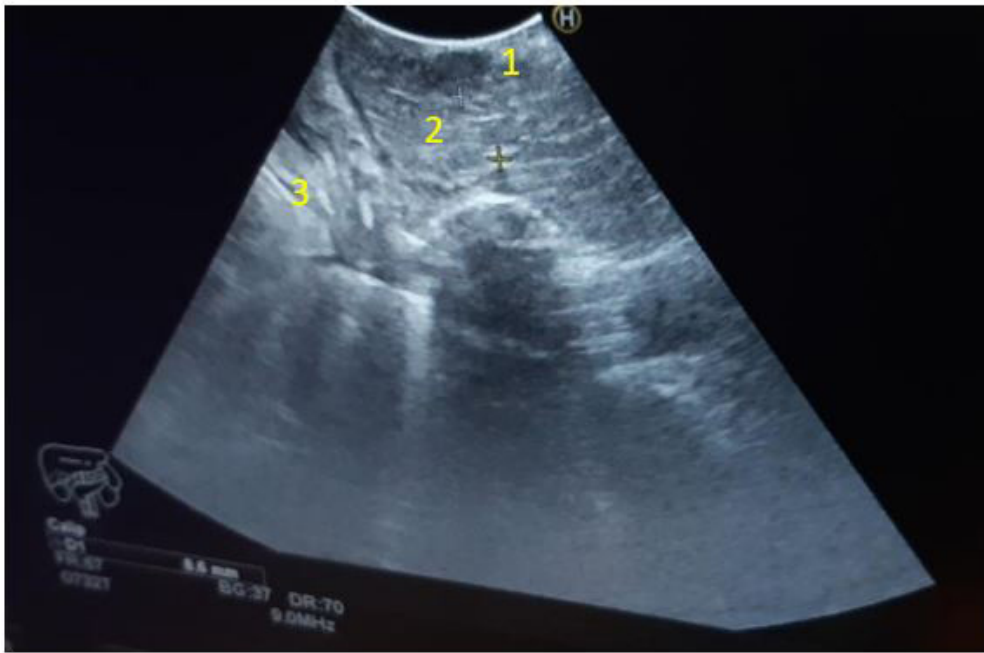


Figure 3: Intraoperative ultrasound: (1) Hypoechoic tumor mass with a maximum axis of 14 mm in the head of the pancreas; (2) Wirsung's canal with endoprosthesis. Note the double rail image; (3) Second duodenal knee

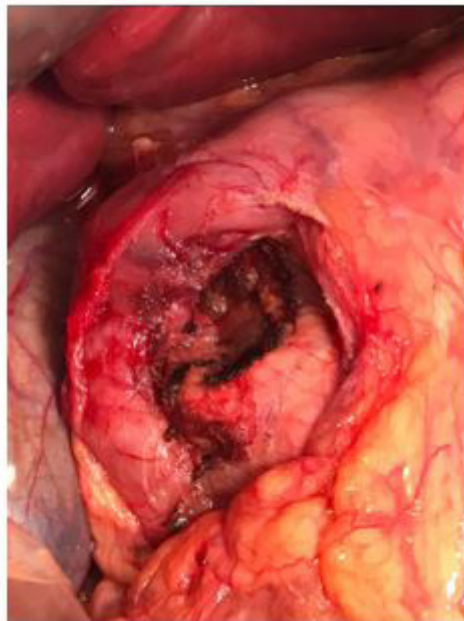


Figure 4: Head of pancreas after the enucleation ensuring free surgical margins

SPN represents 1-2% of all exocrine tumors located in the pancreas but up to a third of all pancreatic tumors in women under 40 years of age⁴. It was first described by Frantz in 1959 as "a benign or malignant papillary tumor of the pancreas" [1]. Since then, various terms have been used to describe this pathology [1]. Considered for many years as a benign or "borderline" tumor, recent studies have shown genetic alterations that allows the tumor the ability to metastasize, turning this entity into a low-risk malignant tumor [6].

The clinical factor associated with a poor prognosis is male sex and advanced age, while tumor size and vascular invasion show contradictory results in various studies [1]. Recently, it has been postulated that the expression of Ki-67 with values higher than 4% acts as a predictor of tumor recurrence [8].

They are more frequent in young women, with an average age of 28 years. The male-female ratio is 1: 9.5 and it is usually diagnosed between the 2nd and 3rd decades of life [2].

The most frequent location is in the head of the pancre-

as followed by the tail [2]. Although its etiology and pathogenesis are still unclear, a hormonal origin has been postulated and it may derive from pluripotent stem cells of the genital ridges that become attached to the pancreas during embryogenesis [2]. Most of the cases are asymptomatic and without laboratory abnormalities [1,5].

Currently, magnetic resonance imaging (MRI) is better than computerized axial tomography (CT) to detect solid or cystic components of the tumor, as well as cystic degeneration [1-3]. Likewise, 18F-FDG PET-CT may be useful in cases of distant and lymphatic infiltration or metastasis [9]. The histological study by cytology helps to differentiate the pseudopapillary tumor of the pancreas from other tumors [2].

Traditionally, radical surgery, which includes extensive resections, has been the gold standard treatment for these types of tumors². However, the latest publications and trials starting to point to a new paradigm. Short and long term results after comparing radical extensive resections with pancreatic preservation procedures ensuring free surgical margins show us significant differences [4,7].

Being a less aggressive technique and with greater preservation of the pancreatic parenchyma, pancreatic enucleation is presented as a valid and safe technique for this type of tumors [4,7]. The results are consistent in terms of less intraoperative blood loss and shorter surgical time [4,7]. Likewise, it reduces the risk of endocrine and exocrine complications in the postoperative period without a significant increase in pancreatic fistula [4,7]. In long term results, an increase in recurrence or metastasis has not been demonstrated [4,7]. Therefore, the benefits in terms of a better quality of life, especially in young patients, is a factor to take into account [4,10].

The surgical planning of the case requires a multidisciplinary team. The images obtained by MRI rule out infiltration of the Wirsung duct, which reinforces the indication for tumor enucleation. The placement of a preoperative plastic endoprosthesis is proposed in order to reduce the risk of pancreatic fistula and also facilitates intraoperative ultrasound, which shows the prosthesis located in the Wirsung duct, with its characteristic image of a "double rail sign". This helps the measurement of tumor size, as well as the distance to the pancreatic duct, facilitating the resection margins and minimizing its injury and, consequently, reducing the risk of pancreatic fistula.

In conclusion, SPN is a neoplasm with a generally benign course, which appears predominantly in young women and whose evolution is favorable with surgical treatment¹. Preoperative diagnosis of SPN with radiological studies is necessary to decide the surgical strategy. Although radical extensive surgery has been classically indicated in this type of tumors, enucleation with negative surgical margins appears to be feasible and safe for preserving exocrine and endocrine function of the glands with no increased risk of tumor recurrence and decreasing the associated morbidity. According to the characteristics of the patient and the tumor, intraoperative ultrasound acquires fundamental importance in order to ensure surgical margins.

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