

CASE REPORT

Is Enucleation Sufficient Treatment for Solitary Insulinoma?

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ABSTRACT:

Enucleation is the traditional surgical procedure for removal of sporadic insulinoma, but this may associated with recurrence. This is a case report of thirty-five years old woman, who underwent enucleation for solitary insulinoma at the head of pancreas three years ago. Recently, she was complaining from recurrent attacks of hunger pain, dizziness, sweating, convulsion, behavioral changes and loss of consciousness. Endoluminal ultrasound revealed that there are bilobed mass or probably two masses related to the head/neck region of the pancreas about 1.5 cm in diameter. So the diagnosis of recurrent insulinoma was made and she was treated by complete resection with 1cm safety margin by harmonic scalpel guided by intraoperative ultrasound. The recurrent insulinoma reported in this article and others may give attention to change the strategy of treating solitary insulinoma by local resection with good safety margin rather than by enucleation to prevent recurrence.

KEYWORDS: insulinoma, islet cell tumor, enucleation.

INTRODUCTION:

Enucleation is the traditional surgical procedure for removal of sporadic insulinoma^(1,2,3,4,5), since the majority are benign and solitary^(1,4,5). But in certain circumstances more extensive surgery is performed like pancreaticoduodenectomy or distal pancreatectomy especially if the tumor size more than two centimeter or near the pancreatic duct⁽⁶⁾. However, some surgeons prefer to do resection rather than enucleation by removal of normal pancreatic tissue outside the tumor capsule^(7,8), to prevent residual tumor and to ensure complete removal of rare malignant tumor.

This is a case report and review of articles of recurrent benign solitary insulinoma after simple enucleation to emphasize the importance of more radical procedure.

CASE REPORT:

Thirty-five years old woman, presented with recurrent attacks of hunger pain, dizziness, sweating, convulsion, behavioral changes and loss of consciousness. These attacks were exaggerated by fasting and relieved by drinking of sweetly juice or by giving the patient intravenous dextrose solutions. The condition became more prominent in the last six months.

The story of this lady actually started before three years when she was underwent enucleation for solitary insulinoma at the head of pancreas for the same above symptoms which was localized at that time by MRI. The histopathological report of the enucleated mass was: Islet cell tumor showing solid nests and trabeculae of uniform epithelial cells separated by fibrous stroma, the tumor has extended to the margin of excision. The postoperative period was uneventful. The patient was asymptomatic during one year of follow up and her blood sugar was normal frequently.

After recurrence of her condition, the patient was admitted to the hospital for evaluation. She was slightly overweight and the blood sugar was below 2.7mmol/l during the attacks. The neuroglycopenic symptoms occurred when the intravenous dextrose solutions was prohibited for few hours. Abdominal ultrasound revealed that there is hypoechoic mass at the head of the pancreas 1.2cm in diameter. Endoluminal ultrasound revealed that there is bilobed mass or probably two masses related to the head/neck region of the pancreas about 1.5 cm in diameter, the rest of pancreas and the pancreatic duct was normal and there is no vascular invasion (figure 1)

According to these clinical and radiological findings, the diagnosis of recurrent insulinoma was made, which is due to either incomplete resection or second missed tumor.

However, the patient was explored by midline incision and there is bilobed yellowish-brown nodule at the posterior aspect of the pancreatic head exactly at the same site of the original tumor (the author surgeon was the second assistant in the first operation), so the opinion of the recurrence because

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of incomplete resection was strengthened. Intra-operative ultrasound (IOUS) revealed that the mass was 1cm away from the main pancreatic duct and the rest of pancreas was normal, so the decision was changed from pancreaticoduodenectomy to a local resection. Thanks for ultrasonic scalpel complete excision of the mass with 1cm safety margin of normal pancreatic tissue was performed to prevent second recurrence (figure 2), minor pancreatic ducts

and blood vessels were ligated separately. There were no complications postoperatively and the blood sugar frequently was normal, she discharged to home on 5th postoperative day.

The histopathological report was islet cell tumor of predominant glandular components with pushing borders. Considering the tumor size, a benign biological behavior is expected. A rim of uninvolved pancreatic tissue was identified around the tumor (figure3)

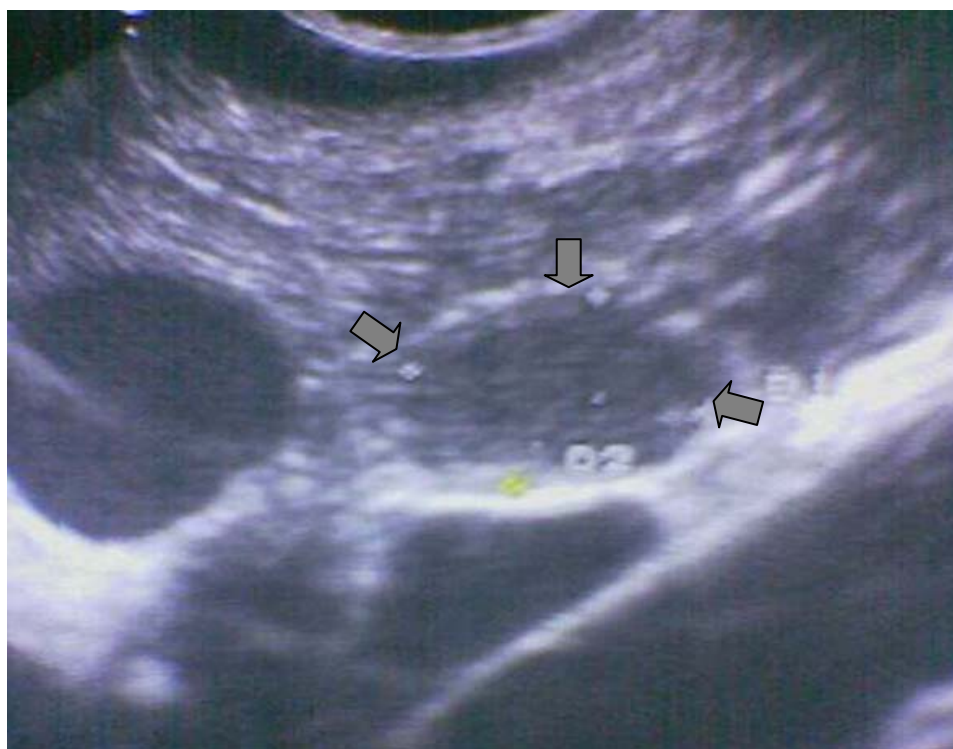


Figure 1: Endoluminal ultrasound revealed that there is mass related to the head/neck region of the pancreas about 1.5 cm in diameter.

DISCUSSION:

Complete surgical resection remains the only chance for cure of insulinoma. However, aggressive major pancreatic resection (pancreaticoduodenectomy or distal pancreatectomy) may be associated with adverse perioperative outcomes. Moreover, enucleation of sporadic insulinoma is associated with reported recurrence^(9,10). Service FJ *et al* found that among those 242 patients with sporadic insulinoma who were treated surgically the recurrence rate was 7

%⁽¹¹⁾. This may be due to inadvertent fracture of the capsule during enucleation⁽⁹⁾.

However, the availability of IOUS and harmonic scalpel recently allow more radical surgery to be performed with little morbidity to prevent the recurrence with little morbidity, that is to say more than enucleation and less than slandered major pancreatic resection.

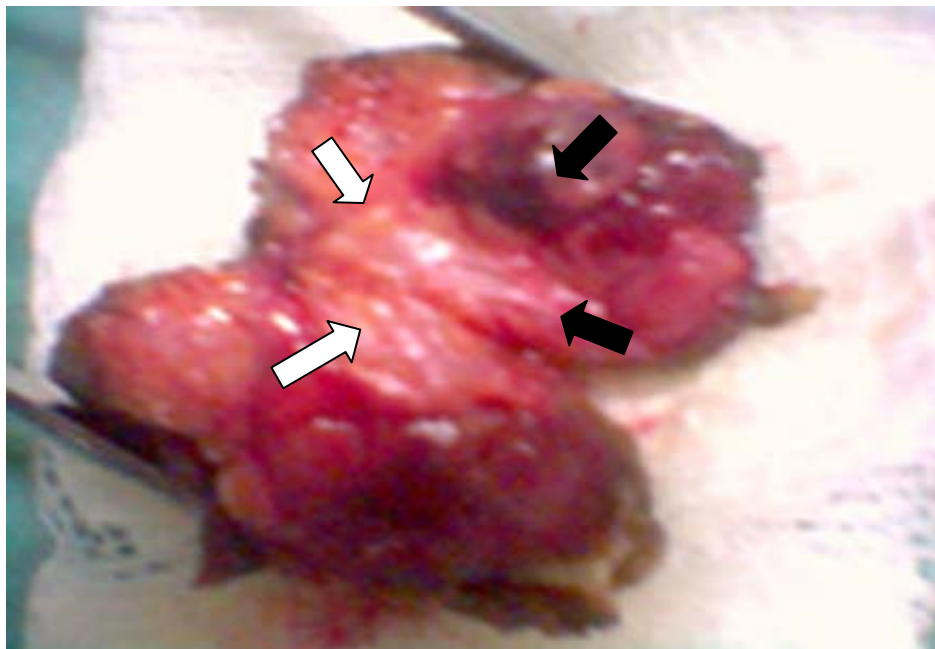


Figure 2: Photograph of bisected specimen revealed bilobed tumor (black arrows) with normal surrounding pancreatic tissue (white arrows)

Harmonic scalpel is an instrument that uses ultrasound technology to dissect tissue in bipolar fashion with only minimal collateral tissue damage. The device vibrates at high frequency, usually around 55000/sec. to cut tissues. Because of this unique capability to dissect tissue and coagulate blood vessels all at once, this device is effective in pancreatic procedure with minimal damage to surrounding tissues⁽¹²⁾.

Intraoperative ultrasound allows the surgeons to localize the lesion, clarify tumor margin and avoid unnecessary dissection of blood vessels and ducts. The device is very sensitive in detection small lesions, as small as 5mm, and defines its relation ship to other structure so facilitate resection, reduce operative time, and frequently alter the surgeon

operative strategy^(4,13,14). Some experienced surgeons consider IOUS is even more beneficial in reoperation in which palpation is severely compromised by postoperative scarring⁽³⁾.

So the availability of these devices nowadays allow the surgeons to perform more precise excision of insulinoma with good safety margin without injury to the main pancreatic duct. This was proved by Jian-cun huai et al who found that the incidence of pancreatic fistulas was reduced from 25% to 10% after introduction of IOUS⁽¹⁴⁾.

This case report may give attention to change the strategy of treating solitary insulinoma by local resection with good safety margin rather than enucleation to provide long term cure to the patient and prevent recurrence.

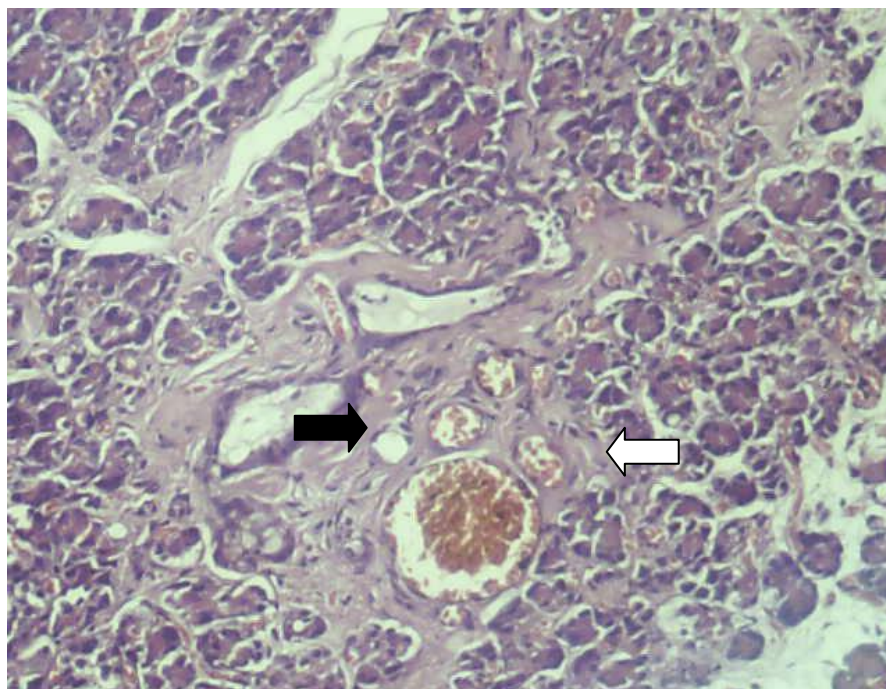


Figure 3: Histopathological photograph of the tumor shows nest of pleomorphic and hyperchromatic islet cell (white arrow) separated by highly vascular fibrous stroma (black arrow).

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