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Whipple Procedure in Morbid Obesity – Case Report

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Abstract

Background
Whipple procedure, or cephalic pancreaticoduodenectomy is a complex and major surgery reserved for pancreas head cancer or pancreatic ductal carcinoma. The intervention can be completed successfully, with low rates of morbidity and mortality in high volume medical centers or by experienced surgeons. Although this solution was reserved for early stages, it has now been applied increasingly in cases which benefited from neoadjuvant chemotherapy.

Case presentation
The patient is a 68-year-old male, of 130 kg weight and BMI 40 (Class III Obesity). He was diagnosed with pancreatic head cancer and was proposed the surgical treatment of Whipple Procedure. He underwent the intervention of cephalic pancreaticoduodenectomy, Blumgart pancreato-jejunal anastomosis with trans-Wirsung stent. The gastro-enteric anastomosis was completed in an antecolic position, with a long limb Braun anastomosis, to prevent delayed gastric emptying.Visceral adipose tissue complicates the procedure in terms of identification of anatomical structures and haemostasis management. The patient tolerated the procedure well, with uneventful post-operative course. He was discharged in good health on the 8th post-operative day.

Discussion
Obesity is a well-known risk factor for complications following major surgeries, including Whipple procedure. The number of obese patients is increasing and specialists should take in consideration the technical aspects and complications following surgical procedures in this group. Most common complications include: longer hospital stay, delayed wound closure and infection, higher tendency for haemorrhage and increased rate for anastomotic fistula.

Conclusion
Whipple procedure can be successfully completed in overweight patients. However, care must be taken to mitigate the well evidenced risks of higher intraoperative blood loss, delayed hospital stay, wound complications and pancreatic fistula. Several studies establish a relationship between higher BMI and complications following Whipple procedure, but this parameter alone (high BMI) should not be an exclusion criterion.
Keywords: General Surgery, Pancreas Cancer, Morbid Obesity, BMI, Whipple Procedure.

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1. Introduction

Whipple procedure, or cephalic pancreaticoduodenectomy is a complex and major surgery reserved for pancreas head cancer or pancreatic ductal carcinoma.

The intervention can be completed successfully, with low rates of morbidity and mortality in high volume medical centres or by experienced surgeons. Although this solution was reserved for early stages, it has now been applied increasingly in cases which benefited from neoadjuvant chemotherapy.

Several risk factors have been identified, such as: smoking, chronic pancreatitis, liver cirrhosis, H. pylori infection and diabetes. Diagnostic evaluation is completed through endoscopic ultrasound with biopsy, CT

scanner and magnetic resonance cholangio-pancreatography.

Surgical resection so far is the only option for a possible curative treatment, however at the time of diagnosis most of the pancreatic cancers are not-operable. A multidisciplinary approach is advised for correct staging and proper management, to provide the best solution yielding the best quality of life.

2. Case presentation

2.1 Medical history

The patient is a 68-year-old male, of 130 kg weight and BMI 40 (Class III Obesity). He was diagnosed with pancreatic head cancer and was proposed the surgical treatment of Whipple Procedure.

2.2 Details of the procedure

The procedure starts with a superior and inferior abdominal incision. The peritoneal cavity is accessed and internal organs are revised for regional and distant metastases. Gastrocolic ligament is dissected to enter the major omental bursa.

Pancreas is located and we start to dissect it along the superior mesenteric vein. The presence of visceral adipose tissue makes the identification of superior mesenteric vein difficult, however following the middle colic vein facilitates the process, due to its drainage to SMV, forming truncus Henle.

The posterior aspect of pancreas is dissected along the portal vein, forming a tunnel, thus verifying the absence of vascular invasion.

Cholecystectomy is performed and hepato-duodenal ligament is dissected, to identify and amputate the common bile duct at the level of portal vein.

The next phase is stomach resection at the level of antrum. Starting from ligament of Treitz, the proximal portion of jejunum is resected. At the level of superior mesenteric and portal veins, the pancreas head is resected and the procedure of cephalic pancreaticoduodenectomy is complete.

On the anastomoses phase, we used a Blumgart type pancreatojejunostomy with trans-Wirsung stent. Common bile duct to jejunum anastomosis was protected with a T-tube drain. The gastro-enteric anastomosis was completed in an antecolic position, with a long limb Braun anastomosis, to prevent delayed gastric emptying.

The procedure ends with the positioning of typical abdominal drains and wound closure.

2.3 Post-operative period

The patient tolerated the procedure well, with uneventful post-operative course. He was discharged in good health on the 8^{th} post-operative day.

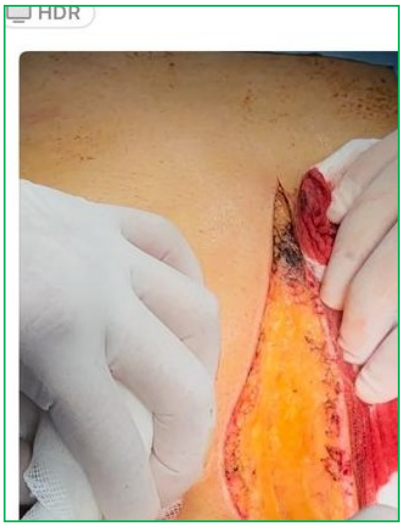

Figure 1. Median incision.

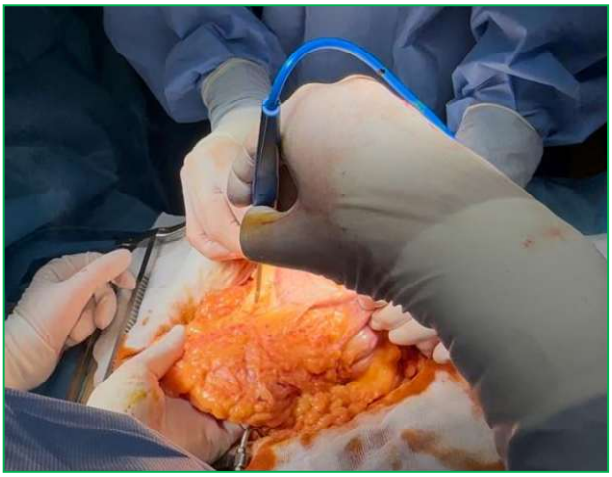
Figure 2. Dissection of the gastrocolic ligament to access the greater omental bursa.


Figure 3. Dissecting the pancreas along the superior mesenteric vein.

Figure 4. Dissection of the posterior aspect of pancreas. A rubber loop is passed through.

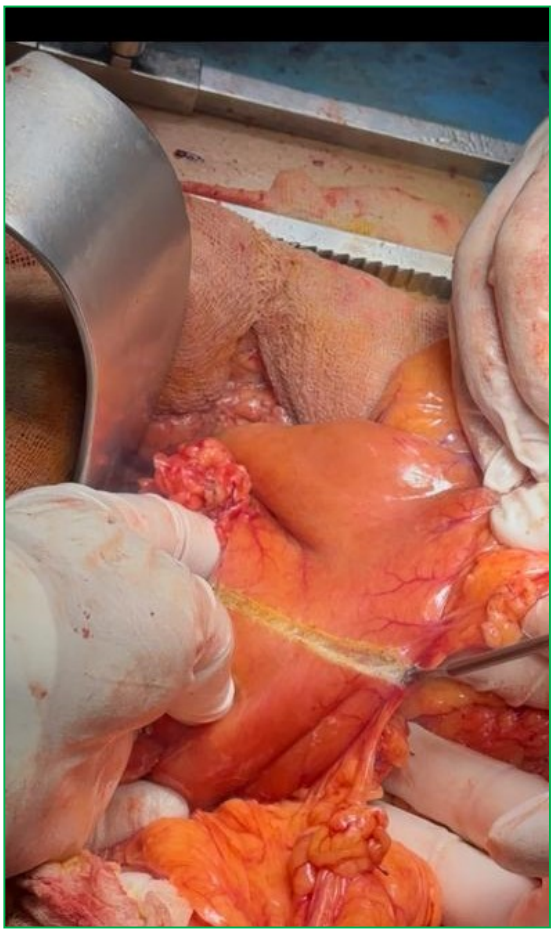

Figure 5. Resection of the stomach at the level of antrum.

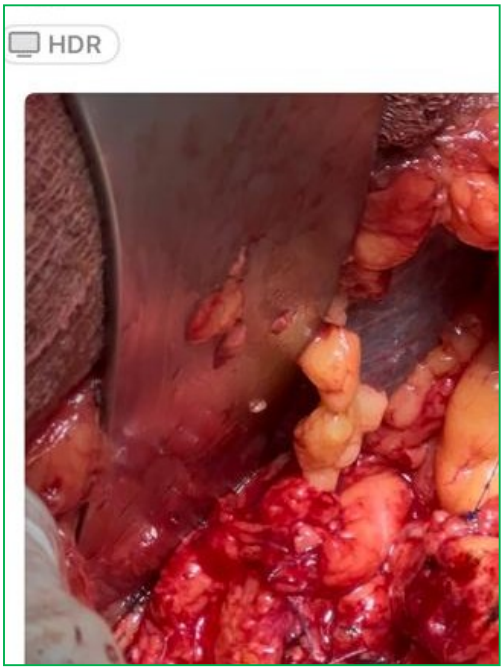

Figure 6. Pancreas head resection. Portal vein and superior mesenteric vein exposed.

Figure 7. Pancreaticoojejunal anastomosis according to Blumgart, with trans-Wirsung stent.

Figure 8. Gastro-entero anastomosis.

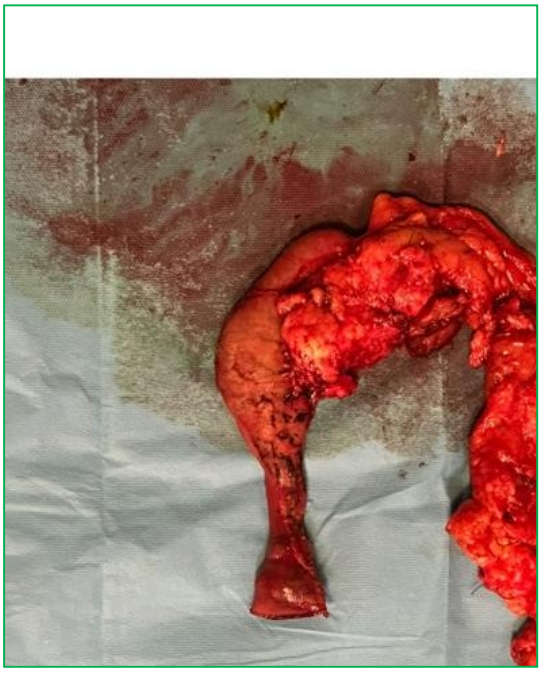

Figure 9. The resected specimen.

3. Discussion

The prognosis for pancreatic head adenocarcinoma is poor, despite successful surgical interventions, or advances in chemotherapy protocols. The mean 5-year survival rate is about 20%.

If the adenocarcinoma is located in the head of pancreas, the surgical option of choice is Whipple procedure.

The cancer is considered un-resectable if it invades the hepatic artery. However, if the superior mesenteric vein or portal vein is involved, the procedure can still be applied but vascular reconstruction is needed.

Patients undergoing Whipple procedure should continue the recommended cycles of chemotherapy. Patients who at the moment of diagnosis are considered unresectable should receive neoadjuvant chemotherapy, for a possible

downstaging. The main regimens are FOLFIRINOX and gemcitabine combined with paclitaxel. The former is more toxic and suitable for healthier patients. These regimens are appropriate for use before or after surgery alike.

Obesity is a well-known risk factor for complications following major surgeries, including Whipple procedure. The number of obese patients is increasing and specialists should take in consideration the technical aspects and complications following surgical procedures in this group.

Most common complications include: longer hospital stay, delayed wound closure and infection, higher tendency for haemorrhage and increased rate for anastomotic fistula.

4. Conclusion

To conclude, Whipple procedure can be successfully completed in overweight patients. However, care must be taken to mitigate the well evidenced risks of higher intraoperative blood loss, delayed hospital stay, wound complications and pancreatic fistula.

Several studies establish a relationship between higher BMI and complications following Whipple procedure, but this parameter alone (high BMI) should not be an exclusion criterion.

Conflict of interest

The author(s) declare(s) that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper.

Financial disclosure

There is no financial support to this study.

Ethical aspect

Informed consent was obtained from all participants in the study and all procedures were conducted in accordance with the Declaration of Helsinki.

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