

# Minimally invasive surgical interventions in the treatment of primary persistent hyperinsulinemic hypoglycemia of infancy.

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## OBJECTIVES

Hyperinsulinemia, diagnosed by laboratory tests, should be diagnosed and treated as soon as possible to prevent fatal complications such as neurological damage. Patients who are resistant to medical therapy should be treated surgically. Minimally invasive surgery, a newly developed approach, is a good choice among surgical procedures to avoid unnecessary extensive pancreatectomy. Minimally invasive procedures are used increasingly each year to minimize the invasion and side effects in various surgical procedures. Other advantages of minimally invasive procedures include avoidance of large wounds, less postoperative pain, lower rate of morbidity, earlier hospital discharge, and cosmetic benefits (8).

Here it is aimed to emphasize the importance of early diagnosis and the role of minimally invasive surgeries in the diagnosis and treatment of hyperinsulinemic status.

## CASE REPORT

The patient is a 12-year-old obese boy who was admitted with recurrent hypoglycemic attacks followed by seizures and speech problems. His body mass index was calculated at 27.27 kg/m<sup>2</sup>. The examination revealed bilateral lipomastia and pubertal tanner stage 1 both at gonadal and pubic stages. He had recurrent attacks of hypoglycemia from neonatal period that were diagnosed as PHHI and treated with 10 mg/kg diazoxide daily and frequent feeding. Hyperinsulinemia was confirmed in this patient by a fasting serum insulin of 9 pU/mL. He had low free fatty acids (both < 1.0 mmol/L), an inappropriate glycaemic response to intravenous glucagon (> 30 mg/dL rise in serum glucose level), and negative ketones in urine dipstick. Abdominal computerized tomographic scan with intravenous and oral contrast did not reveal pancreatic adenoma. Due to his resistance to medical therapy and his family's decision, he was scheduled for surgical intervention. A laparoscopic biopsy was obtained, which revealed diffuse hyperplasia of the pancreas; sections showed pancreatic tissue with normal acinar structure, intermixed with islets of Langerhans which are different in size and shape. The cells of the latter showed mild atypia characterized by vesicular nuclei with mild nuclear pleomorphism and enlargement, small nuclei and pale eosinophilic cytoplasm. Then a laparoscopic pancreatectomy of about 85% of the pancreas was performed.

## CONCLUSIONS

Minimally invasive surgical techniques have previously been used in other hyperinsulinemic statuses, like insulinomas. The medical group chose this technique as a result of the patient's poor drug compliance, which helped him avoid receiving a more invasive intervention than needed. Although medical therapy in combination with frequent enteral feeding is the first choice for treatment of hyperinsulinemia, the response varies widely on clinical subtypes of PHHI, categorized by hyperinsulinemia severity and types of genetic mutations causing hypersecretion of insulin. and as long as older children eat three separate meals, they will be more predisposed to hypoglycemia between the meals; Additionally, the response rate of diazoxide, as the cornerstone of drug therapy, is partial and depends on many factors. Prevalent complications, such as hypertrichosis, have also been proposed for diazoxide. Serious complications including pulmonary hypertension, heart failure and neutropenia, hepatomegaly, severe fluid retention, diffuse edema, congestive heart failure, and respiratory failure requiring mechanical ventilation have also been reported. Another problem that exists in our country is the fact that diazoxide is not always available, due to sanctions. Performed laparoscopic pancreatectomy for infancy with a median of 90% extent of resection and revealed many advantages for this procedure including accurate visualization, shorter hospitalization, less postoperative pain, early feeding, and good cosmetic results. One year later, he compared ten laparoscopic pancreatectomies with open procedure and concluded that the open group needs a higher extent of resection and the laparoscopic group is able to have earlier feeding. Berends and cols. introduced conventional intraoperative ultrasonography combined with contact ultrasonography for better localization of insulinoma. In conclusion, minimally invasive pancreatectomy is a good choice for the diagnosis and treatment of hyperinsulinemic hypoglycemia, with better visualization and a less invasive procedure to avoid unnecessary extensive morbidities.

## References

- Mazor-Aronovitch K, Landau H, Gillis D. Surgical versus non-surgical treatment of congenital hyperinsulinism. *Pediatr Endocrinol Rev.* 2009;6(3):424-30.
- Al-Shanafey S, Habib Z, AlNassar S. Laparoscopic pancreatectomy for persistent hyperinsulinemic hypoglycemia of infancy. *J Pediatr Surg.* 2009;44(1):134-8.
- Al-Shanafey S. Laparoscopic vs open pancreatectomy for persistent hyperinsulinemic hypoglycemia of infancy. *J Pediatr Surg.* 2009;44(5):957-61.

