

# Treatment of early duodenal fistula after orthotopic liver transplantation: a case report

Yun Lu, Li-Qun Wu, Bing-Yuan Zhang, Bin Zhang,  
Jing-Yu Cao and Zhong-Yang Shen

Qingdao, China

Gastrointestinal fistula as a serious complication could lead to imbalance of nutrition or death. Duodenal fistula after orthotopic liver transplantation is rare and its treatment is complicated. On April 28, 2000, we performed orthotopic liver transplantation for a patient at our hospital. Eight days after operation duodenal fistula developed, but cured after 13-day treatment.

## Case report

A 46-year-old woman weighing 50 kg was admitted to our hospital because of emaciation and yellowish body skin for over half a year. In 1994, she had undergone cholecystectomy and choledochoduodenostomy for cholangitis elsewhere. One month before liver transplantation at our hospital, she had been subjected to lienectomy because of bile hepatocirrhosis and hypertension in another hospital. On examination she had marked jaundice and ascites. Her hepatic function was as follows: albumin (ALB) 36.1 g/L, globin (GLB) 41.1 g/L, glutamic-pyruvic transaminase (GPT) 51 U/L, glutamic-oxalacetic transaminase (GOT) 80 U/L, to-

tal bilirubin (TB) 81.3  $\mu\text{mol/L}$ , and direct bilirubin (DB) 44.6  $\mu\text{mol/L}$ . The donor's blood group was B compatible to that of the recipient. Classic orthotopic liver transplantation was performed while reconstructing the bile duct by choledochojejunostomy.

Three days after the operation, the patient began to take fluid food. Eight days later the wound was infected. Wound debridement and drainage associated with imaging of cobalt blue showed the appearance of duodenal and gastric fistula via the abdomen, and suction was performed at the same time. TPN and somatostatin or growth hormone (octreotide) was utilized.

Calorie was supplied with glucose and intralipid. The proportion of calorie from glucose and fat accounted for 65% and 35%. 104.5 kJ/kg calorie was given intravenously every day, while protein potassium of 0.14 g/kg provided with 7% branched chain amino acid solution. Meanwhile water-soluble and fat-soluble vitamins were prescribed and some electrolytes were replenished too. TPN lasted for 16 days, after which the body weight, triceps skinfold (TSF), muscularis arm circulation (MAC), and serum levels of total protein, albumin and pre-albumin increased in different degree.

## Results

In this patient, the fistula was closed after 13-day treatment. No drainage was performed after intake of water and fluid food. The level of blood CsA

*From the Department of Hepatobiliary Vascular Surgery, Affiliated Hospital of Medical College, Qingdao University, Qingdao 266003, China (Lu Y, Wu LQ, Zhang BY, Zhang B and Cao JY); Department of Hepatobiliary Surgery, First Center Hospital of Tianjin, Tianjin 300192, China (Shen ZY)*

*Correspondence: Yun Lu, MD (Tel: 86-532-2911369; Fax: 86-532-2911999; Email: cloudytucn@yahoo.com)*

**Table.** Clinical observation about liver transplantation patient

Days after fistula (d)	Fistula volume (ml)	Gastric fistula volume (ml)	CsA concentration (ng/ml)	Neoral (iv gtt)(mg)	Somatostatin (mg)	Growth hormone (U)
1	1600	200	146.19	100	0.4	0
2	1500	200	123.15	43.2	0.4	0
3	700	100	79.32	43.2	0.4	0
4	430	150	157.18	24	0.4	0
5	310	120	564.32	24	0.4	0
6	560	50	249.92	24	0.4	0
7	440	50	253.84	24	0.4	0
8	350	60	376.79	24	0.4	0
9	230	120	364.49	24	0.4	8
10	290	200	256.66	19.6	0.4	0
11	200	210	111.06	19.6	0.4	8
12	280	380	246.37	19.6	0	0
13	140	70	158.41	19.6	0	8
14	30	210	354.42	19.6	0	0
15	20	220	292.22	11	0	0

(cyclosporine A) was not significantly changed (Table).

## Discussion

It is recognized that the liver is the center of body's metabolism. In this patient, liver function was abnormal before and after liver transplantation, so her metabolism and nutrition was particular. Duodenal fistula can lead to such complications as great loss of body fluid, disturbance of electrolytes, and renal failure. These finally could result in functional failure of the transplanted liver. Previously, this patient had undergone choledochoduodenostomy and lienectomy, making dissection of the hepatic hilar area difficult. The fluid volume from the fistula in the first two days after the operation increased to 1600 ml. Somatostatin analogue was prescribed before occurrence of infection till 3 days. The volume from the fistula decreased to half of that in the first two days (700 ml). The volume continued to reduce, and stabilized at 200 ml per day. On day 9 after the operation growth hormone was given alternately at 8 pm. At the same time insulin was used to accelerate the synthesis of protein and closure of the fistula. We found that combined use of somatostatin and growth hormone couldn't

alter the volume of the fistula in the early period, and that liver function and body electrolytes were kept normal.<sup>[1]</sup>

TPN is the only method to provide nutrition when the digestive system fails to work. It also provides more sufficient energy than does the normal digestive system, so moderate or serious malnutrition may be corrected in a short period. In transplanted patient, however, over-supply of calorie (protein in particular) is not beneficial to the recovery of liver function. We observed that the endurance to amino acid, fat emulsion, and glucose in the patient with transplantation liver was reduced, so we prescribed glucose and intralipid as calorie in 1 to 3 days after transplantation or appearance of fistula in addition to amino acid and protein, in which fat contributes to about 1/3 calorie. These measures were taken to lower the burden of the transplanted liver.<sup>[2]</sup>

In recent years, researchers have found that growth hormone and TPN can accelerate the synthesis of protein, antagonize the synthesis and metabolism caused by trauma, and strengthen the immunity of the body.<sup>[3]</sup> But we could not find any reports about the changes of serum CsA concentration when it is combined with Neoral. This patient was given three times of growth hormone while

using Neoral. The level of serum CsA did not change much before and after administration. We consider that since somatostatin can reduce the volume of digestive secretion and the flow of the portal vein, it is likely to depress the level of serum CsA in theory. In this patient, the level of serum CsA did not present any invariable changing trend. This is an important issue awaits further study.

### Competing interest

The author or authors do not choose to response to the statements listed in Instructions for Authors.

### References

- 1 Christensen H, Chemnitz J, Christensen BC, et al. Collagen structural organization of healing colonic anastomoses and the effect of growth hormone treatment. *Dis Colon Rectum* 1995;38:1200-1205.
- 2 Parrille P, Sanchez BF, Figueras J, et al. Analysis of the complications of the piggyback technique in 1112 liver transplant. *Transplantation* 1999;67:1214-1217.
- 3 Pawlak J, Worbleski T, Malkowski P, et al. Vascular complications related to liver transplantation. *Transplant Proc* 2000;32:1426-1428.

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