

# A Novel Approach to Recalcitrant Postoperative Chylous Ascites in Liver Re-Transplantation: A Case Report

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### ABSTRACT

In this report we have discussed our experience with a special home-made platelet-rich plasma (PRP)-fibrin glue (FG) as a last resort for treatment of a challenging case of postoperative CA. A 25 years old, ill woman was admitted with severe ascites and hepatic encephalopathy in our center. She was a known case of autoimmune hepatitis and cirrhosis who had undergone liver transplantation 5 years ago and developed chronic rejection. During the surgery an old organized thrombosis in the portal vein was detected, accordingly an iliac vein graft was used to bypass the superior mesenteric vein. After surgery the patient developed chylous ascites. Having no other choice, based on our experience with PRP-FG in similar situations, we decided to use this method as a last resort to treat postoperative chylous ascites. It can be concluded that when conservative management is not working for the treatment of postoperative chylous ascites in intractable cases, PRP-FG can be considered as a last resort treatment. A special home-made PRP-FG was prepared for the patient and of that, 90 mL was injected to the abdominal cavity via the drainage tube followed by a 25 mL of isotonic saline solution to prevent clot formation within the tube. Few days after treatment, chylous secretion decreased and then completely ceased. It can be concluded that when conservative management is not working for the treatment of postoperative chylous ascites in intractable cases, PRP-FG can be considered as a last resort treatment.

**KEYWORDS:** Chylous ascites; Liver transplantation; Rejection; Fibrin glue; Platelet-rich plasma

### INTRODUCTION

Chylous ascites (CA) characterized by accumulation of chyle in the peritoneal cavity is a condition which develops as a result of congenital lymphatic disorders, infections, malignancies, blunt trauma, cirrhosis or direct trauma to the abdominal lymphatic system during an operation [1-3].

Although the overall incidence of CA is not well-known, its incidence is estimated to be 1.0% to 6.6% after colorectal surgery and 4.7% following hepatic surgery [2, 4]. Postoperative CA may occur early (within 1 week) as a result of direct disruption of lymphatic vessels or late (weeks to months) as a result of adhesions or compression [5].

The foundation of CA treatment is based on addressing the underlying etiology and conservative treatment with nutritional modifications, i.e., a high protein, low fat diet with medium-chain triglycerides. Octreotide (an analogue of somatostatin) therapy, surgical li-

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gation, embolization and some other potential therapeutic options, are considered only after failure of the conservative treatment [5].

In this report we have discussed our experience with a special home-made platelet rich plasma (PRP) -fibrin glue (FG) as a last resort option for treatment of a challenging case of postoperative CA.

## CASE PRESENTATION

A 25 years old, ill woman was admitted with severe ascites and hepatic encephalopathy to our center. She was a known case of autoimmune hepatitis and cirrhosis who had undergone liver transplantation 5 years ago and developed chronic rejection. In our center she underwent liver re-transplantation. During the surgery due to formation of an organized thrombus in the portal vein we used an iliac vein graft to bypass the superior mesenteric vein. It should be mentioned that in the aforementioned procedure, chylous ascites is an expected side effect. In this case, despite all measures including treatment with octreotide, the patient's condition deteriorated and after 60 days of hospitalization in the intensive care unit (ICU), having no other choice, based on our experience with PRP-FG in similar situations [6, 7], we decided to use this method as a last resort option to treat postoperative chylous ascites.

A special home-made PRP-FG was prepared for the patient. The production process began by obtaining 400 mL of peripheral blood from an ABO-matched donor. After performing all viral safety tests according to the blood transfusion regulations, the following steps were followed: 1) Centrifugation of the peripheral blood at  $2000 \times g$  for 8 minutes with the aim of removing the red blood cells and preparing the platelet-rich plasma (PRP); 2) Centrifugation of the PRP at  $4000 \times g$  for 15 minutes to separate the plasma; 3) Preparation of the fibrinogen concentrate by coprecipitation: centrifugation of the plasma at  $6500 \times g$  for 5 min after a  $-70^\circ C$  freeze and a  $4^\circ C$  thaw to obtain fibrin glue (300 mL); 4) Preparation of

the thrombin solution by adding 10% calcium chloride solution (final thrombin volume of 50 mL).

The prepared thrombin (50 mL) was added to 300 mL of PRFG and a 5 mL sample of this combination was collected in a syringe to monitor the clotting time. Then, 90 mL of PRP-FG, was injected to the abdominal cavity via the drainage tube followed by a 25 mL of isotonic saline solution to prevent clot formation in the tube. The tube was clamped for 30 minutes or until the PRFG sample in the syringe was clotted completely (whichever less) and the patient was instructed to lie down for 2 hours.

Few days after treatment, chylous secretion was decreased and then completely ceased. We started enteral feeding for the patient and after a while she was extubated. Finally, she was discharged in good health and advised to return to the clinic for follow-up.

## DISCUSSION

Chylous ascites, which is defined as accumulation of a milky, non-purulent amylase-poor, bilirubin-poor, chylomicron-rich fluid in the abdominal cavity, usually occurs as a complication of some abdominal surgeries few days after beginning of the enteral feeding [2, 8]. Three mechanisms can result in postoperative CA [8] including a lymphoperitoneal fistula which causes direct leakage of chyle, chyle exudation from retroperitoneal lymphatic vessels, and lymphatic vessel obstruction at the base of mesentery, cisterna chyli or thoracic duct which leads to dilation and rupture of lymphatic of the bowl wall and mesentery.

In our case, the interposition bypass and dissection of the mesenteric root led to chylous ascites which could not be treated neither with conservative measures nor with medical treatment (with octreotide).

In general, conservative treatment of CA with total parenteral nutrition (TPN) and medium chain triglyceride (MCT) diet is the first step.

Studies have reported that TPN alone can resolve the postoperative CA in 77% to 100% of cases and addition of octreotide to this diet almost always leads to complete cure [2, 9, 10]. Bipedal lymphangiography and open surgery are suggested in refractory cases [2].

Based on the van der Gaag grading system [1], if chylous ascites resolves in less than 7 days, it is categorized as grade A, if it requires therapeutic measures and resolves within the second week, it is categorized as grade B, and any CA which persists for more than 14 days despite therapy (such as our case), is grade C.

The hospital stay of our patient was prolonged (60 days), she became cachectic, developed respiratory problems and was intubated. Considering her condition, she could not tolerate a second surgery. Thus, based on our previous experience [6, 7] we decided to use our homemade PRP-FG as our last resort.

Fibrin glue, a natural and partially human product, is a biological adhesive which mimics the final stages of coagulation and leads to forming a fibrin clot at the site of application. Since its production, fibrin glue has been used to inhibit postoperative bleeding or air leakage and became an interesting tool in different surgical fields such as cardiovascular, ear, nose and throat and neurosurgery [11-13].

The use of fibrin glue in managing chylous ascites for the first time in adults was reported by Carones et al. [14]. Anato et al. in 2003 reported a successful treatment of congenital chyloperitoneum using fibrin glue [13]. We also used our homemade PRP-FG for management of an intractable congenital chyloperitoneum which was successful [7]. Since then, we have used PRP-FG for different cases with end stage conditions [6, 15, 16].

It is believed that PRP-FG, which contains numerous growth factors, is better than fibrin glue alone in treating the damaged tissue [17]. In this case, the use of PRP-FG resulted in complete treatment of the patient within a few days.

It can be concluded that when conservative management is not working for treatment of postoperative chylous ascites in intractable cases, PRP-FG can be considered as a last resort for treatment.

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