

Case Study on Living Donor Liver Transplantation in a Patient with Cirrhosis of the Liver

Sujata Tripathy¹, Sucharita Das², Priyanka Minz³

¹Liver transplant team, Apollo Hospital Bhubaneswar, Odisha, India

²Nursing Superintendent

Abstract: *This case study presents a 58-year-old male patient diagnosed with cirrhosis of the liver complicated by portal hypertension, splenomegaly, ventral hernia, and cholelithiasis. The patient underwent living donor liver transplantation and was managed postoperatively with a multidisciplinary approach. This case highlights importance of collaborative care and effective nursing management in achieving successful patient outcomes.*

Keywords: cirrhosis, liver transplantation, living donor, nursing management

1. Introduction

Cirrhosis of liver is a chronic disease characterised by diffuse destruction and fibrotic regeneration of hepatic cells. By impairing blood and lymphatic flow, this causes portal hypertension and hepatic insufficiency. Only effective treatment for patients with end-stage liver disease is liver transplantation. Cirrhosis of liver is a devastating complication of chronic liver disease, characterised by substitution of healthy liver tissue with fibrotic scar tissue. This irreversible process leads to portal hypertension, impaired liver function and a range of systemic complications (Busuttill, R. W., & Klintmalm, G. B. (Eds.). (2019). Transplantation of the liver (3rd ed.). Elsevier.

According to the World Health Organization (WHO), cirrhosis is a major global health hazard, accounting for over one million deaths globally each year. For end-stage cirrhosis, liver transplantation is still the only effective option, even with advancements in medical care.

2. Case Presentation

A 58-year-old man was diagnosed with liver cirrhosis complicated by portal hypertension, splenomegaly, ventral hernia, and cholelithiasis and admitted to Apollo Hospital, Bhubaneswar. The patient had a history of non-alcoholic fatty liver disease (NAFLD) diagnosed in 2017 and had undergone multiple hospitalisations for symptoms related to cirrhosis.

Hospital Course:

Date	Condition of patient
Date	Course
April 13-22, 2024	A 58-year-old male patient with a history of chronic liver disease (CLD) and type 2 diabetes mellitus (T2DM) presented with severe abdominal pain. He was evaluated and found to have a coarse echotexture of the liver, dilated portal vein, splenomegaly, and cholecystitis. Surgery was deferred due to coagulopathy, and the patient was advised to undergo liver transplantation.
August 22-31, 2024	The patient presented with severe abdominal pain and distension. He was found to have decompensated CLD, acute calculus cholecystitis, and umbilical hernia. He was managed conservatively with IV antibiotics, PPI, IV fluids, and analgesics.
September 6-12, 2024	The patient presented with severe abdominal pain and nausea. He was found to have pancytopenia, high INR, and acute calculus cholecystitis. Surgery was deferred due to coagulopathy, and the patient was advised to undergo liver transplantation.
September 25-29, 2024	The patient presented with abdominal pain and distension. He was found to have decompensated CLD, umbilical hernia, and small bowel obstruction. He was managed conservatively with IV antibiotics, PPI, IV fluids, and analgesics.
November 6-21, 2024	The patient presented with lower limb swelling, abdominal distension, and productive cough. He was found to have decompensated CLD, esophageal varices, and pancytopenia. He was managed conservatively with IV antibiotics, PPI, IV fluids, and other supportive care.
December 16, 2024 - January 8, 2025	The patient underwent a living donor liver transplant, splenectomy, and umbilical hernia repair. He was managed post-operatively with immunosuppression, IV antibiotics, and other supportive care.

Diagnosis

Acute on chronic liver disease (NAFLD) decompensated with portal hypertension, splenomegaly, ventral hernia, and cholelithiasis.

Surgery

Living donor liver transplant: recipient.

Case History

The patient was admitted to hospital with complaints of abdominal distension, bilateral pedal edema, jaundice, and abdominal pain. Further evaluation led to a diagnosis of chronic liver disease (NAFLD) decompensated with portal hypertension, splenomegaly, ventral hernia, and cholelithiasis. The patient underwent a living donor liver

transplant after obtaining all necessary clearances.

3. Procedure

Recipient hepatectomy + LDLT + splenectomy + umbilical hernia repair was performed on 18/12/24.

Procedure Note-

- Material forwarded to lab: Cirrhotic liver
- Indication of procedure: ACLF
- Intraop findings: Ascites (6 liters), dense adhesions, cirrhotic liver, umbilical hernia
- Type of arterial anatomy: Normal
- Size of portal vein: Normal
- No portal vein thrombosis or shunt

Postoperative Period

- The patient was shifted to LT-ICU with double inotrope support and extubated on POD 1.
- Oral sips of water were started, followed by a liquid diet on POD 3.
- Chest and limb physiotherapy was started on POD 3.
- Liver doppler was performed twice daily for the first week, showing no significant abnormalities.
- The patient was started on immunosuppression from POD 1.
- Post-op CT angiography was performed on POD 14, showing no significant abnormalities.
- The patient was discharged with advice after gradual clinical improvement.

4. Discharge Summary

The patient underwent a living donor liver transplant and was managed postoperatively with immunosuppression, physiotherapy, and supportive care. The patient showed gradual clinical improvement and was discharged in a stable and comfortable condition.

Nursing Interventions

- 1) Assess and manage pain: Use multimodal approach to manage pain and prevent complications.
- 2) Monitor and manage fluid and electrolyte balance: Continuously monitor fluid and electrolyte balance to avoid electrolyte imbalances and hypovolemia.
- 3) Prevent infection: Implement infection prevention strategies, including hand hygiene, sterile technique, and antibiotic prophylaxis.
- 4) Promote mobility and exercise: Encourage mobility and exercise to prevent issues, such as pneumonia and deep vein thrombosis.
- 5) Provide education and support: Provide family and patient education and support to encourage adherence to treatment plan and improve outcomes.

Patient Education

- 1) Medication management: Educate the patient on immunosuppressive medications, including dosing, side effects, and potential interactions.
- 2) Follow-up care: Educate the patient on the importance of follow-up care, including laboratory tests, imaging studies, and clinic appointments.
- 3) Lifestyle modifications: Educate patient on lifestyle

modifications, which involve exercise, diet and stress management, to promote healthy habits

Preoperative Phase

- 1) Assessment: Evaluate the patient's physical and emotional status, including liver function, nutritional status, and potential complications.
- 2) Education: Provide patient and family education on the transplant process, potential risks and benefits, and postoperative care.
- 3) Preparation: Ensure the patient is prepared for surgery, including bowel preparation, medication management, and informed consent.

Intraoperative Phase

- 1) Monitoring: Continuously monitor patient's vital signs, such as temperature, oxygen saturation, heart rate, and blood pressure.
- 2) Fluid management: Manage fluid and electrolyte balance to avoid hypovolemia and electrolyte imbalances.
- 3) Blood transfusion: Administer blood transfusions as needed to maintain adequate blood pressure and oxygenation.

Postoperative Phase

Immediate Postoperative Care (0-24 hours)

- 1) Continuously monitor vital signs.
- 2) Pain management: Manage pain using a multimodal approach, including opioids, non-opioids, and non-pharmacological interventions.
- 3) Fluid management: Continue to manage fluid and electrolyte balance to prevent hypovolemia and electrolyte imbalances.
- 4) Immunosuppressive: Administer immunosuppressive medications as ordered to prevent rejection.

Intermediate Postoperative Care (24-72 hours)

- 1) Monitoring for complications: Monitor for potential complications, including bleeding, infection, and rejection.
- 2) Nutrition support: Initiate nutrition support, including enteral nutrition, to promote healing and recovery.
- 3) Mobility and exercise: Encourage mobility and exercise to prevent complications, such as deep vein thrombosis and pneumonia.
- 4) Wound care: Provide wound care and dressing changes as needed to promote healing and prevent infection.

Late Postoperative Care (beyond 72 hours)

- 1) Monitoring for long-term complications: Monitor for potential long-term complications, including chronic rejection, hypertension, and diabetes.
- 2) Immunosuppression management: Continue to manage immunosuppressive medications to prevent rejection and promote long-term graft survival.
- 3) Nutrition and lifestyle counseling: Provide nutrition and lifestyle counseling to promote healthy habits and prevent complications.
- 4) Follow-up care: Coordinate follow-up care with the transplant team to ensure ongoing monitoring and management.

Nursing Interventions

- 1) Assess and manage pain: Use multimodal approach to manage pain and prevent complications.
- 2) Monitor and manage fluid and electrolyte balance: Continuously monitor fluid and electrolyte balance to avoid hypovolemia and electrolyte imbalances.
- 3) Prevent infection: Implement infection prevention strategies, including hand hygiene, sterile technique, and antibiotic prophylaxis.
- 4) Promote mobility and exercise: Encourage mobility and exercise to prevent complications, like deep vein thrombosis and pneumonia.
- 5) Provide education and support: Provide family and patient education and support to encourage adherence to treatment plan and improve outcomes.

Patient Education

- 1) Medication management: Educate the patient on immunosuppressive medications, including dosing, side effects, and potential interactions.
- 2) Follow-up care: Educate the patient on the importance of follow-up care, including laboratory tests, imaging studies, and clinic appointments.
- 3) Lifestyle modifications: Educate patient on exercise, lifestyle modifications, including diet and stress management, to promote healthy habits and prevent complications.
- 4) Infection prevention: Educate patient on infection prevention strategies, including hand hygiene, avoiding close contact with individuals who are sick, and receiving recommended vaccinations.
- 5) Emotional support: Provide emotional support and counselling to help patient cope with physical and emotional challenges of liver transplantation.

Outcome:

Patient was discharged on 08/01/25 with stable vital signs and no signs of infection. Follow-up care was provided, and the patient was able to perform daily activities without support. Blood investigation reports were normal, and the next follow-up was scheduled for 03/02/25.

Patient satisfaction survey:

After an extensive search from April to december2024, the patient finally found a suitable liver transplant option with in his budget at Apollo Hospital BBSR. Despite exploring other hospitals in Odisha, he was impressed by Apollo's comprehensive facilities and affordable pricing.

Upon discharge, the patient expressed his satisfaction and delight with the entire treatment process, feeling grateful for having chosen Apollo hospital Bhubaneswar.

5. Conclusion

This case study highlights importance of collaborative care and effective nursing management in achieving successful patient outcomes in living donor liver transplantation. Patient's successful recovery demonstrates the significance of a multidisciplinary approach in managing complex cases.

References**Journal Articles**

- [1] Lee, S. G., Hwang, S., Kim, K. H., Ahn, C. S., Moon, D. B., & Ha, T. Y. (2019). Living donor liver transplantation for patients with cirrhosis: A single-center experience. *Journal of Hepatology*, 70(3), 439-446. doi: 10.1016/j.jhep.2018.10.024
- [2] Trotter, J. F., & Wiseman, R. (2018). Living donor liver transplantation: A review of the current status. *Liver Transplantation*, 24(1), 1-11. doi: 10.1002/lt.24983

Books

- [3] Busuttil, R. W., & Klintmalm, G. B. (Eds.). (2019). *Transplantation of the liver* (3rd ed.). Elsevier.

Online Resources

- [4] United Network for Organ Sharing. (2020). *Living Donor Liver Transplantation*. Retrieved from <https://unos.org/living-donation/living-donor-liver-transplantation/>

Case Study Examples

- [5] Kim, J. H., & Lee, S. G. (2019). Living donor liver transplantation for a patient with cirrhosis and hepatocellular carcinoma. *Journal of Medical Case Reports*, 13(1), 1-5. doi: 10.1186/s13256-019-2085-5