

Case Report

A Second Chance at Life, the Profound Echo of a Heartbeat: Hope with LVAD, Rebirth Through Heart Transplantation – Case Report

Hayatın İkinci Şansı, Kalbin Tekrar Atış Seslerinin Derinliği: LVAD ile Umut, Kalp Nakli ile Yeniden Doğuş: Olgu Sunumu

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ABSTRACT

This case addresses the nursing care process of a 19-year-old male patient who was bridged to heart transplantation with a Left Ventricular Assist Device (LVAD) due to end-stage heart failure and subsequently underwent a successful heart transplant. The patient, followed long-term with a diagnosis of dilated cardiomyopathy (DCMP), was evaluated using Gordon's Functional Health Patterns (FHP) Model. The early postoperative intensive care process (first 24 hours) after LVAD explantation/heart transplantation is described, including vital signs, fluid balance, mechanical ventilation support, inotropic/vasopressor therapy, and immunosuppressive regimens. Using Gordon's 11 functional health patterns, the patient's bio-psycho-social and spiritual needs were assessed, potential and actual nursing diagnoses were identified, and care interventions were planned.

Keywords: heart transplantation, left ventricular assist device

ÖZET

Olgu, son dönem kalp yetmezliği nedeniyle sol ventrikül destek cihazı (LVAD) ile kalp nakline köprülenen ve ardından başarılı bir kalp nakli geçiren 19 yaşındaki erkek hastanın hemşirelik bakım sürecini Gordon'un Fonksiyonel Sağlık Örüntüleri Modeli çerçevesinde ele almaktadır. Olguda Dilate kardiyomiyopati (DKMP) tanısıyla uzun süredir takip edilen hastanın, LVAD implantasyonu sonrası ve kalp nakli sonrası erken dönemdeki (ilk 24 saat) yoğun bakım süreci, vital bulguları, sıvı dengesi, mekanik ventilasyon desteği, inotrop ve immünsüpresif tedavileri açıklanmıştır. Gordon'un 11 fonksiyonel sağlık örüntüsü kullanılarak hastanın biyo-psiko-sosyal ve spiritüel gereksinimleri değerlendirilmiş, potansiyel ve mevcut hemşirelik tanıları belirlenmiş ve bakım girişimleri planlanmıştır.

Keywords: kalp nakli, sol ventrikül destek cihazı

INTRODUCTION

Nursing is a practical health discipline focused on the health and well-being of individuals, families, and

communities, and continuously renews itself through cultural, social, and technological changes. The International Council of Nurses (ICN) defined nursing as "a profession that helps protect and improve the health

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of individuals, families, and communities, and provides healing and rehabilitation in case of illness."(1) Ethical considerations and patient rights are integral to transplant care and must be addressed throughout the process.(2) Nursing models and processes, such as Gordon's Functional Health Patterns (FHP) model, provide a structured, scientific approach that supports critical thinking and clinical decision making in nursing care.(3) Dilated cardiomyopathy (DCMP) is a chronic condition characterized by ventricular dilation and reduced systolic function; patients with end-stage heart failure may require Left Ventricular Assist Device (LVAD) support as bridge-to-transplant. Heart transplantation is an effective treatment for patients who fail medical therapy and have limited life expectancy.(4) This case study aims to share clinical experience and critically evaluate holistic nursing care for a complex patient using Gordon's FHP model.

CASE REPORT

T.B., a 19-year-old male, was diagnosed with idiopathic DCMP approximately three years earlier after presenting with exertional dyspnea and fatigue. Echocardiography showed left ventricular dilation and an ejection fraction (EF) of 25-30%. Despite optimized medical therapy, heart failure progressed to NYHA Class IV with frequent hospitalizations. He was placed on the transplant list and received an LVAD as a bridge when his hemodynamics worsened. Six months later a suitable donor became available and he underwent successful heart transplantation. He was admitted to the Cardiovascular Surgery Intensive Care Unit (CVS ICU) on postoperative day 0.

Typical postoperative changes were observed: postoperative hemodilution (decreased hemoglobin/hematocrit), leukocytosis consistent with inflammatory response, stress hyperglycemia, mild increases in BUN and creatinine suggesting transient renal effect, and elevated troponin consistent with myocardial injury in the transplanted heart.

Test	Result	Normal Range	Comment
Complete Blood Count (CBC)			
Hemoglobin (g/dL)	11.5	13.5-17.5 (Male)	Postoperative hemodilution
Hematocrit (%)	34.2	41-53 (Male)	Postoperative hemodilution
White Blood Cells (x103/ μ L)	12.5	4.5-11.0	Postoperative inflammatory response
Platelets (x103/ μ L)	180	150-400	-
Comprehensive Metabolic Panel (CMP)			
Sodium (mEq/L)	138	135-145	-
Potassium (mEq/L)	4.8	3.5-5.0	-
Chloride (mEq/L)	100	95-105	-
Bicarbonate (mEq/L)	23	22-28	-
Glucose (mg/dL)	150	70-110	Postoperative stress hyperglycemia
BUN (mg/dL)	25	10-20	Mild renal function elevation
Creatinine (mg/dL)	1.3	0.6-1.2	Mild renal function elevation
ALT (U/L)	60	7-55	Mild liver enzyme elevation
AST (U/L)	75	8-48	Mild liver enzyme elevation
Alkaline Phosphatase (U/L)	90	45-115	-
Bilirubin (mg/dL)	1.1	0.3-1.2	-
Calcium (mg/dL)	9.0	8.5-10.5	-
Total Protein (g/dL)	6.2	6.0-8.0	-
Albumin (g/dL)	3.5	3.5-5.0	-
Coagulation Studies			
PT (sec)	13.5	11-13.5	-
PTT (sec)	30	25-35	-
INR	1.2	0.8-1.2	-
Cardiac Enzymes			
Troponin (ng/mL)	0.8	<0.04	Postoperative myocardial injury indicator

Abbreviations: CBC, Complete Blood Count; CMP, Comprehensive Metabolic Panel; BUN, Blood Urea Nitrogen; ALT, Alanine Aminotransferase; AST, Aspartate Aminotransferase; PT, Prothrombin Time; PTT, Partial Thromboplastin Time; INR, International Normalized Ratio.

Table 1. Postoperative Initial Laboratory Values

24-Hour Monitoring (Post-op Day 0)

- **Vital Signs:** Arterial blood pressure 105-120 / 65-75 mmHg; heart rate 85-100 bpm; body temperature 36.8-37.4 °C; central venous pressure (CVP) 8-12 mmHg.
- **Fluid Balance:** Total intake (IV fluids + infusions) 2250 mL; total output (urine + drains) 2250 mL; net 0 mL (within target). Urine output totaled 1950 mL (~81 mL/hour), adequate.

- **Treatment:** See Table 2 and Table 3 — inotropic/vasopressor support (Dopamine, Dobutamine, Norepinephrine) and triple immunosuppressive therapy (Tacrolimus, Mycophenolate Mofetil, Prednisone).
- **Mechanical Ventilation:** Extubated at postoperative hour 18 after meeting weaning criteria; nasal oxygen started.
- **Pain:** Assessed with FLACC score (2-5) and managed with IV morphine.

Table 2. 24-Hour Intravenous Medication Administration

Drug	Indication	Route	Dosage
Dopamine	Low cardiac output	Continuous infusion	5 µg/kg/min
Dobutamine	Low cardiac output	Continuous infusion	5 µg/kg/min
Noradrenaline	Hypotension	Continuous infusion	0.01-0.20 µg/kg/min
Furosemide	Fluid retention	Bolus	Per doctor's order (30 mg/kg/min)
Tacrolimus	Immunosuppression	Continuous infusion	0.025-0.05 mg/kg/day
Mycophenolate Mofetil	Immunosuppression	Infusion (≥2 hours)	1 g BID (1.5 g BID for heart transplant)
Prednisone	Immunosuppression	Infusion	1000 mg intraoperative, then 200 mg/day

Table 3. Early Post-op Immunosuppressive and Prophylactic Treatments

Drug	Indication	Example Dose (Post-op Day 0-1)	Common Side Effects	Key Contraindications
Immunosuppressants				
Tacrolimus (Prograf®)	Acute rejection prophylaxis (Calcineurin Inhibitor)	4 mg PO/NG BID (based on level)	Nephrotoxicity, neurotoxicity (tremor, headache), hypertension, hyperglycemia, hyperkalemia	Hypersensitivity
Mycophenolate Mofetil (Cellcept®)	Acute rejection prophylaxis (Antiproliferative)	1000 mg PO/NG BID	GI intolerance (diarrhea, nausea), leukopenia, anemia, infection risk	Hypersensitivity, pregnancy
Methylprednisolone / Prednisone	Induction and rejection prophylaxis (Steroid)	High-dose IV (e.g., 500 mg), then oral/NG taper (e.g., 0.5 mg/kg/day)	Hyperglycemia, hypertension, fluid retention, infection risk, psychosis, Cushingoid appearance (long-term)	Systemic fungal infection, hypersensitivity

Abbreviations: PO, Per Os (Oral); NG, Nasogastric; BID, Bis In Die (Twice a day); GI, Gastrointestinal.

DISCUSSION

This case demonstrates a holistic nursing approach for a young adult bridged to transplantation with an LVAD who underwent successful heart transplantation, using Gordon's FHP model. The early postoperative course was stable. He had successful extubation. He had neutral fluid balance. A meticulous nursing assessment and interventions were essential to manage complex physical, psychological, social, and developmental needs.

Functional Health Patterns Summary

Using Gordon's 11 patterns provided a comprehensive framework:

- **Health Perception-Health Management:** Patient and family were anxious about rejection and infection; nursing management included Risk for Infection and Risk for Ineffective Management of Therapeutic Regimen.
- **Nutrition-Metabolic:** Risk for steroid-induced hyperglycemia required strict glucose monitoring; Risk for Impaired Skin Integrity related to surgical wounds and immobility.
- **Activity-Exercise:** Hemodynamic status and mechanical ventilation needs led to diagnoses such as Activity Intolerance and Impaired Physical Mobility; early mobilization strategies were planned to reduce DVT and pulmonary complications.
- **Cognitive-Perceptual:** Acute Pain and Risk for Acute Confusion (delirium) due to intensive care environment and medications were primary concerns.
- **Self-Perception-Self-Concept & Role-Relationship:** At 19 years old (Erikson's stage of Identity vs. Role Confusion), body image concerns (sternotomy scar, prior LVAD driveline), role disruption (student/athlete), and family stress required targeted psychosocial interventions.
- **Coping-Stress Tolerance & Value-Belief:** High anxiety and fear of rejection were tempered by the family's spiritual beliefs, which were integrated into coping strategies.

- Nursing management of early postoperative immunosuppression, fluid control, and infection prevention has been linked to improved early outcomes in heart transplant recipients; Yilmaz (2021) highlights the importance of nursing surveillance and immunosuppressive side-effect management in early post-transplant care.(4)
- Ethical challenges and the importance of patient-family education in transplantation are emphasized in the transplant ethics literature and are crucial for consent, adherence, and long-term outcomes.(2)
- Gordon's FHP model has been applied in clinical case reports to structure holistic assessments and has been shown to help identify psychosocial needs that might otherwise be overlooked, improving multidisciplinary care coordination.(3)

Key Nursing Interventions

- **Fluid volume management:** Aim for normovolemia during the first 72 hours; hourly intake/output, CVP monitoring (target 8-12 mmHg), and daily weight to avoid graft compromise and renal injury related to immunosuppressants and steroids.
- **Immunosuppression and infection prevention:** Strict timing of medications (especially tacrolimus), monitoring for signs of rejection (fatigue, dyspnea, fever), renal function monitoring for nephrotoxicity, and strict aseptic central/line care and hand hygiene practices.
- **Pain, delirium screening, and mobilization:** Effective pain control, delirium risk assessment, and early safe mobilization to promote recovery and reduce complications.
- **Psychosocial and developmental support:** Focused interventions for body image, role reinstatement (education/schooling), family stress reduction with referral to social work and psychology.
- **Discharge education:** Lifelong adherence to immunosuppressive therapy, avoidance of drug-food interactions (e.g., grapefruit), prompt reporting of fever > 38 °C, and infection prevention measures.

Comparison With Similar Cases and Literature

CONCLUSION

Gordon's FHP model provided an effective, holistic framework for assessment and care planning in this complex young adult heart transplant recipient. Long-term success in young transplant recipients depends not only on surgical and pharmacologic management but also on sustained, multidisciplinary psychosocial support and patient/family education focused on adherence and infection prevention. Prospective studies to evaluate the long-term impact of structured nursing models like FHP in transplant populations are recommended.

Patient Consent Form / Hasta Onam Formu

The patient's consent was obtained for this study.

Conflict of Interest / Çıkar Çatışması

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Author Contributions / Yazar Katkıları

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REFERENCES

1. International Council of Nurses. *International Council of Nurses Definition of Nursing*. 1972. Accessed October 30, 2025. <https://hemsirelik.ksbu.edu.tr/defaultx/sayfa/9402/hemsire-olmak>
2. Demir A, Koç M. Organ nakli ve transplantasyonun etik boyutu. *Sağlık Bilim Derg*. 2020;12(3):45-52.
3. Gordon M. *Nursing Diagnosis: Process and Application*. New York: McGraw-Hill; 1987.
4. Yılmaz E. Nursing care after heart failure and heart transplantation. *J Cardiovasc Nurs*. 2021;9(1):12-20.
5. Pınar Bölüktaş R, Özer Z, Yıldırım D. Examination of the International Nursing Pledge in terms of professional values. *DergiPark*. 2020. Accessed October 30, 2025. <https://dergipark.org.tr/tr/download/article-file/1645611>