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Renal transplant with cutaneous ureterostomy: a case report

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ABSTRACT

Introduction: Renal transplant requires immunosuppressive treatment to prevent graft rejection, but this increases the risk of infection. This risk is further exacerbated when the patient has a cutaneous ureterostomy due to catheter manipulation.

Clinical case description: A male patient was admitted for his first renal transplant and cutaneous ureterostomy. Past medical history includes a right nephrectomy in 2014, a left nephrectomy, and a radical cystectomy in 2019, which led to the initiation of hemodialysis.

Nursing care plan description: Initial assessment was conducted, with subsequent evaluations every seven days based on Marjory Gordon's functional patterns. At the 15-day mark, the following diagnoses were prioritized: Readiness for Enhanced Knowledge, Potential Infection Complication, and Readiness for Enhanced Coping.

Evaluation of care plan: The care plan was reviewed weekly, closing out resolved diagnoses. Upon discharge after 33 days of hospitalization, established goals were achieved, with an ongoing revaluation of most of them in the post-transplant Nursing Consultation, particularly the Readiness for Enhanced Knowledge diagnosis.

Conclusions: Proper health education and involvement of an interdisciplinary team enable effective learning of care practices, promoting therapeutic adherence and facilitating early prevention and detection of complications that may arise in transplant patients. Additionally, assisting the patient and family in accepting this new phase, which entails physical, emotional, and social changes, is crucial.

Keywords: ureterostomy; renal transplant; infection; complications; nursing care plans.

RESUMEN

Trasplante renal con ureterostomía cutánea: a propósito de un caso

Introducción: El trasplante renal precisa de un tratamiento inmunosupresor para evitar el rechazo del injerto, pero éste aumenta el riesgo de contraer una infección. Este riesgo se agrava, aún más, cuando el paciente es portador de una ureterostomía cutánea por la manipulación de las sondas.

Descripción Caso Clínico: Varón que ingresa para realización de primer trasplante renal y ureterostomía cutánea. Como antecedentes personales encontramos nefrectomía derecha en 2014 y nefrectomía izquierda y cistectomía radical en 2019, momento en el que comienza en programa de hemodiálisis.

Descripción del plan de cuidados: Se realizó valoración inicial y cada 7 días según patrones funcionales de Marjory Gordon. De los diagnósticos identificados a los 15 días se establecieron como prioritarios: Disposición para mejorar los conocimientos, Complicación potencial la infección y Disposición para mejorar el afrontamiento.

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Evaluación del plan de cuidados: Semanalmente, se revisó el plan de cuidados, cerrando aquellos diagnósticos resueltos.

Al alta, tras 33 días ingresado, se alcanzaron los objetivos establecidos, aunque la gran mayoría de ellos se continuaron reevaluando en la Consulta de Enfermería post-trasplante, como fue el diagnóstico de Disposición para mejorar los conocimientos.

Conclusiones: Una correcta educación para la salud y la intervención de un equipo interdisciplinar permite un adecuado aprendizaje de los cuidados fomentando la adherencia terapéutica y una buena prevención y detección precoz de las complicaciones que pueda conllevar la derivación en un paciente trasplantado. Además, ayudar al paciente y a su familia a aceptar esta nueva etapa que conlleva cambios a nivel físico, emocional y social.

Palabras clave: ureterostomía; trasplante renal; infección; complicaciones; planes de atención de enfermería.

INTRODUCTION

Kidney transplantation is the best treatment for patients with advanced chronic kidney disease (CKD), as it improves quality of life compared with other available treatment options, although it still requires specific care. For this reason, over the past 10 years it has consolidated its position as the most prevalent treatment modality, reaching 54.6%[1-3].

The success of transplantation also depends on adequate immunosuppressive therapy, which has improved in recent years; conversely, this can increase the risk of complications such as infection[3].

A cutaneous ureterostomy is a heterotopic, non-continent urinary diversion performed after cystectomy. In this technique, the ureter is brought directly to the skin and everted without using any part of the intestinal segment, thereby reducing the risk of complications (Figure 1). One of the drawbacks of this technique is the need to carry ureterostomy catheters to prevent stenosis, which increases the risk of infection. Studies have reported a prevalence of urinary tract infection in patients with permanent urinary diversion of 42.8%[4-5].

Other noteworthy complications include infection, stoma retraction, stenosis, oedema, dehiscence, and dermatitis[4,6].

CASE PRESENTATION

A 71-year-old man was admitted to the Nephrology Department of the *Hospital General Gregorio Marañón* (Madrid, Spain) for his first deceased-donor kidney transplant. His past medical history included right nephrectomy in 2014 for low-grade chorion infiltration; transient ischaemic attack in 2018; left nephrectomy and radical cystectomy in 2019 for renal pelvic cancer; persistent atrial fibrillation; thrombocytopenia; advanced chronic kidney disease; and obesity.

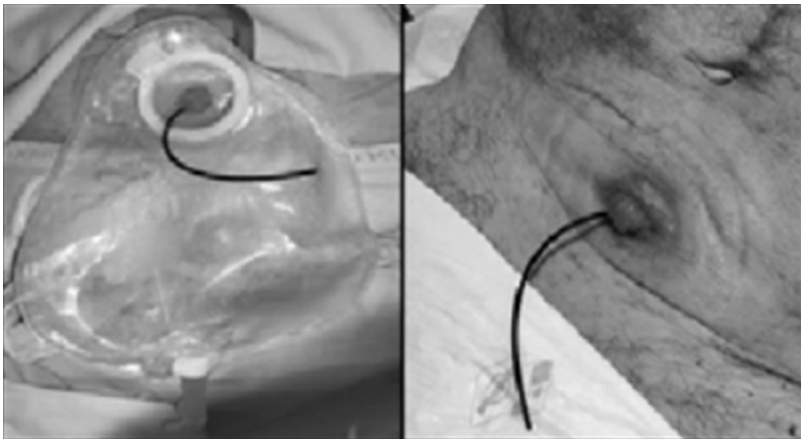

Figure 1. Images of the percutaneous ureterostomy with and without a collection bag.

He had been on haemodialysis since 2019 via a left radiocephalic autologous arteriovenous fistula. During pre-transplant testing, the urology team informed him that renal transplantation would require a permanent cutaneous ureterostomy. The patient agreed and was placed on the transplant waiting list in January 2023. In February, he underwent renal transplantation and left paramedian cutaneous ureterostomy with single-J catheter placement **(figure 1)**.

NURSING ASSESSMENT

Patient assessment was performed at admission using Marjory Gordon's functional health patterns, with periodic weekly evaluations **(table 1).**

Table 1. Assessment according to M. Gordon's functional patterns.

PATTERN I: Health perception and management	• Medical history: Obesity, former drinker, former smoker, atrial fibrillation (2018), Barrett's oesophagus, chronic gastritis, transient ischaemic attack (2018), thrombocytopenia, right nephrectomy (2014), left nephrectomy + cystectomy (2019) for renal neoplasm. • Started haemodialysis in 2019. • Fully vaccinated. • Good adherence to treatment. • Health practices: medical check-ups. • Interest in the therapeutic regimen. • Falls risk assessment: 2 points.

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PATTERN II: Nutritional, metabolic	• Height: 170 cm; Weight: 91 kg; BMI: 31.49 kg/m². • Norton Scale: 20. • Malnutrition Universal Screening Tool (MUST): 0 points. • Mini Nutritional Assessment (MNA): 12 points. • Does not take supplements. No chewing problems. • No nausea or vomiting. • Well hydrated. • Afebrile. • Carries left upper limb internal arteriovenous fistula. • Carries right upper limb peripheral venous line (20G).
PATTERN III: Elimination	• Anuric. • Faecally continent. Daily bowel movement.
PATTERN IV: Activity and exercise	• Basal oxygen saturation: 96%. • No dyspnoea. • Blood pressure: 120/74 mmHg. Heart rate: 90 bpm. • Independent in basic activities of daily living and instrumental activities of daily living.
PATTERN V: Sleep and rest	• No disturbances. • No insomnia.
PATTERN VI: Cognitive, perceptual	• Conscious and oriented in all three spheres. • No communication disorders. • No sensory impairment. • Visual Analogue Scale (VAS): 0 points. • Needs specific information about the process (health education).
PATTERN VII: Self-concept / self-esteem	• No disturbances. • Mood: calm.
PATTERN VIII: Role and relationships	• Support: family.
PATTERN IX: Sexuality and reproduction	• No disturbances.
PATTERN X: Adaptation and stress tolerance	• No disturbances.
PATTERN XI: Values and beliefs	• No disturbances.

CARE PLAN

The care plan was developed using NANDA nursing diagnoses, NOC outcome criteria, and NIC nursing interventions[7-10].

The diagnoses identified at admission, associated with renal transplantation, were: Impaired urinary elimination [00016], Impaired tissue integrity [00044], Impaired physical mobility [00085], Readiness for enhanced knowledge [00161], Acute pain [001362], Risk for electrolyte imbalance [00195], and the potential complication of infection [10024].

Two weeks after transplantation, priority was given to readiness for enhanced knowledge [00161], readiness for enhanced coping [00158], and risk for fluid and electrolyte imbalance [00195], with infection [10024] identified as a potential complication **(table 2)**.

Table 2. NANDA–NIC–NOC diagnoses two weeks post-transplant.

NANDA	NOC (Outcomes)	NIC (Interventions)
[000161] Readiness for enhanced knowledge. Manifested by: expressed desire to improve learning.	**[1829] Knowledge: ostomy care.** Indicators: – 182902: Ostomy dressing – 189201: Ostomy functioning – 182907: Stoma complications – 182915: Procedure for changing the ostomy bag Initial score: 4 pts. Target score: 16 pts. **[1803] Knowledge: disease process.** Indicators: – 180302: Characteristics of the disease – 180304: Risk factors – 180305: Physiological effects – 180309: Potential complications Initial score: 4 pts. Target score: 16 pts. **[1813] Knowledge: therapeutic regimen.** Indicators: – 151306: Prescribed medication regimen – 181302: Responsibility for self-care during treatment – 181303: Self-care in emergency situations – 181216: Benefits of disease control Initial score: 4 pts. Target score: 16 pts.	**[5606] Individual teaching.** – Assess the patient's current level of knowledge and understanding. – Instruct the patient. – Allow time for questions and concerns. **[0480] Ostomy care.** – Monitor for possible postoperative complications. – Monitor stoma healing. – Help the patient practise self-care. – Instruct the patient and family in care. **[8020]: Multidisciplinary care conference.** – Review referrals as appropriate. – Review discharge plans. – Review the care plan as necessary.

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[10024] Potential complication: infection. Due to manipulation and intake of immunosuppressants, manifested by fever.	**[1924] Risk control: Infectious process.** Indicators: – 192426: Identifies infection risk factors. – 192404: Identifies risk of infection in daily activities. – 192406: Identifies signs and symptoms. – 192415: Practices hand hygiene. Initial score: 8 pts. Target score: 10 pts.	**[6550] Protection against infection** – Maintain asepsis for the at-risk patient. – Inspect for erythema, extreme warmth, or exudate on skin and mucosa. – Teach patient and family to avoid infections. **[1876] Urinary catheter care.** – Maintain a sterile, closed, unobstructed urinary drainage system. – Observe characteristics of drained fluid. **[3583] Skin care: graft site.** – Avoid friction and shear at the graft site. – Monitor for signs of infection and other postoperative complications.
[00158] Readiness for enhanced coping. Manifested by expressed desire to improve management of stressors.	**[1924] Risk control; [1305] Psychosocial adaptation: life change.** Indicators: – 130502: Maintains self-esteem. – 130520: Maintains a positive self-image. – 130513: Uses available social support . – 130522: Expresses acceptance of the new role. Initial score: 15 pts. Target score: 20 pts.	**[5220] Improvement of body image** – Use anticipatory guidance to prepare the patient for predictable body image changes. – Determine if body image changes have contributed to social isolation. – Identify available support groups for the patient.
[00195] Risk of electrolyte imbalance, related to renal dysfunction.	**[0504] Renal function.** Indicators: – 050418: Weight gain – 050438: Oedema Initial score: 6 pts. Target score: 10 pts.	**[2080] Fluid and electrolyte management.** – Weigh daily and monitor progression. – Consult physician if signs and symptoms of hydroelectrolytic imbalance persist or worsen.
[00118] Disturbed body image. Manifested by: actual change in structure or function related to surgical procedures.	**[1205] Self-esteem.** Indicators: – 120501: Verbalises self-acceptance – 120511: Level of confidence – 120519: Feelings about self Initial score: 10 pts. Target score: 14 pts.	**[5270] Emotional support.** – Listen to expressions of feelings and beliefs – Discuss the emotional experience with the patient.

EVALUATION OF THE CARE PLAN

From the time of surgery, health education was initiated for the patient and his family, explaining how the procedure was performed. The main elements of health education were stoma assessment, device change, stoma and peristomal skin hygiene (with soft sponge, neutral pH soap, and water, drying with disposable towels without friction), application of a new device, and attachment of a collection bag at night[4]. The correct measurement of the stoma diameter was emphasised, as the bag must be cut 2 mm larger to avoid leaving exposed skin at risk of irritation[6].

At 3 weeks, all proposed objectives were achieved:

- Readiness for enhanced knowledge: The patient was able to explain his new situation and independently perform ostomy care. Final score: 16 points.
- Potential complication-Infection: At review, there were no signs of infection. Ostomy care was adequate, but continued monitoring was recommended at both transplant and ostomy nursing follow-up clinics. Final score: 10 points.
- Readiness for enhanced coping: Improved self-esteem and acceptance of changes, recognising the value of these changes in improving his quality of life. Final score: 20 points.
- Risk for electrolyte imbalance: No oedema; improved creatinine and other laboratory parameters. Final score: 10 points.
- Disturbed body image: Acceptance of new body image. A referral to psychology was offered, but the patient declined. Final score: 14 points.

At 1 month, the patient continued with the diagnoses of risk for electrolyte imbalance and potential complication: infection, both requiring ongoing monitoring even after discharge. At discharge (after 4 weeks of hospitalisation), the patient had met the proposed objectives for each diagnosis, which will continue to be evaluated in the Post-Transplant Nursing Clinic. An appointment was also arranged with the stoma therapist to review progress.

To achieve these objectives, an interdisciplinary team was required:

- Nephrology nurses: Provided transplant and ureterostomy care, continuous assessment, and patient/family health education.
- Stoma therapists: Assessed and monitored ostomy progress and provided health education.
- Urologists and nephrologists: Monitored renal graft and ureterostomy, assessed laboratory parameters, signs, and symptoms.
- Psychology team: In this case, not required, as declined by the patient.

DISCUSSSION

The risk of infection in a transplanted patient with ureterostomy is increased, given not only their immunosuppressed state but also manipulation of the ureterostomy catheters, which directly connect to the renal graft. Barrera-Lozano et al. reported an infection incidence of 42.8% in transplant patients with cutaneous ureterostomy[5].

Adequate health education provided by nursing staff, combined with interdisciplinary team intervention, enables appropriate learning of specific care and early prevention and detection of potential complications such as infection, stoma oedema, or retraction in kidney transplant patients with cutaneous ureterostomy[4]. As described by other authors, these complications significantly impact graft survival[5].

Furthermore, patients and their families must be supported in accepting this new stage, which entails physical, emotional, and social changes, through an individualised care plan that incorporates psychological assessment and encourages active listening[4].

Since kidney transplantation has become the most prevalent renal replacement therapy, according to the 2020 ONT/SEN registry (54.6%),[2] and considering the role of nursing and the characteristics of our patient, this underscores the need for a holistic nursing care process to meet patient needs.
Interdisciplinary teamwork is therefore essential to ensure effective learning of care for both the renal graft and the new urinary diversion, promoting therapeutic adherence, which in this case encompasses not only medication intake but also ureterostomy care.

Conflicts of interest

None declared.

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