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ORIGINAL

Nursing process for a patient post-operative transvesical prostate adenomectomy for benign prostatic hyperplasia. Lima -2020

Proceso de Enfermería a paciente post-operado de adenomectomía prostática transvesical por hiperplasia prostática benigna. Lima -2020

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ABSTRACT

Introduction: transvesical prostate adenomectomy is the surgical procedure in patients with a very large prostate and with decreased lumen of the bladder neck. It is an open surgery with a suprapubic abdominal incision to remove the prostatic adenoma.
Objective: to describe the nursing process to respond to the real and potential needs of a patient post-transvesical prostate adenomectomy with a diagnosis of benign prostatic hyperplasia.
Method: qualitative study, single case, carried out on an 81-year-old male patient, developing the five stages of the nursing process. The assessment was carried out through Marjory Gordon's functional health patterns. To prepare the diagnoses, plan and care interventions, the NANDA, NOC and NIC taxonomy was considered respectively, the evaluation was obtained by applying the difference between the baseline and the final Diana scores.
Results: it was proven that postoperative pain is an ailment that requires nursing interventions with updated scientific knowledge to guarantee specialized and quality care. Nursing interventions against the deterioration of gas exchange were aimed at optimizing oxygenation and ventilation. Interventions to reduce infection were aimed at identifying risks and taking actions to reduce exposure to pathogens; like hand washing. Within the five nursing diagnoses found, three were prioritized: impairment of gas exchange, acute pain and risk of infection, based on the SSPFR format (signs and symptoms, problem and related factor, problem at risk and associated condition); The administration of the care plan was applied, achieving the improvement and change score of +1, +1 and +1 successively in each diagnosis.
Conclusions: the nursing care process showed results in favor of the patient's evolution, it also shows this process as the scientific and practical tool that allows the nurse to plan and execute individualized and systematic care plans in the face of a specific situation, in order to resolve or prevent the patient's needs.

Keywords: Nursing Process; Nursing Care; Postoperative; Acute Pain.

RESUMEN

Introducción: la adenomectomía prostática transvesical es el procedimiento quirúrgico en pacientes con próstata de tamaño muy grande y con disminución de la luz del cuello vesical, es una cirugía abierta con incisión abdominal suprapúbico para extraer el adenoma prostático
Objetivo: describir el proceso enfermero para responder a las necesidades reales y potenciales en un paciente post operado de adenomectomía prostática transvesical con diagnóstico de hiperplasia prostática benigna.

Método: estudio de carácter cualitativo, caso único, realizado a un paciente varón de 81 años, desarrollándose las cinco etapas del proceso enfermero. La valoración se realizó a través de los patrones funcionales de salud de Marjory Gordon. Para la elaboración de los diagnósticos, plan e intervenciones en los cuidados se consideró la taxonomía NANDA, NOC y NIC respectivamente, la evaluación se obtuvo aplicando la diferencia entre el basal y el final de las puntuaciones Diana.
Resultados: se comprobó que el dolor en el postoperatorio es una dolencia que requiere intervenciones de enfermería con conocimiento científico actualizado para garantizar el cuidado especializado y de calidad. Las intervenciones de enfermería frente al deterioro del intercambio gaseoso fueron dirigidas a optimizar la oxigenación y la ventilación. Las intervenciones para disminuir la infección estuvieron dirigidas a identificar los riesgos y realizar acciones para disminuir la exposición a agentes patógenos; como el lavado de manos. Dentro de los cinco diagnósticos de enfermería encontrados, se priorizaron tres: deterioro del intercambio gaseoso, dolor agudo y riesgo de infección, en base al formato SSPFR (signos y síntomas, problema y factor relacionado, problema en riesgo y condición asociada); se aplicó la administración del plan de cuidados, lográndose la puntuación de mejora y de cambio de +1, +1 y +1 sucesivamente en cada diagnóstico.
Conclusiones: el proceso de atención enfermero mostró resultados en favor de la evolución del paciente, también muestra a este proceso como la herramienta científica y práctica que permite al enfermero planificar y ejecutar planes de cuidados individualizados y sistemáticos ante una situación concreta, a fin de resolver o prevenir las necesidades del paciente.

Palabras clave: Proceso Enfermero; Cuidados de Enfermería; Post-Operatorio; Dolor Agudo.

INTRODUCTION

Benign Prostatic Hyperplasia (BPH) represents one of the most frequent diseases of the male gender, being 50 % of the men that from the age of 60 years begin with some symptom. BPH is considered to be one of the most prevalent conditions, with a prevalence of 40 % and 90 % of patients in the fifth and ninth decade of life, respectively, according to López H et al.[1] In Peru, as described by Zegarra L et al.[2], the prevalence is 60 % in those over 50 years of age. Therefore, it is clear that it is one of the most frequent urological morbidities in men over 60 years of age; consequently, it will be one of the most common urological surgeries in which care and vigilance are provided to safeguard the patient's health by the professional nursing staff corresponding to the post-anesthesia recovery unit.

According to Luis MT et al.[3], the nursing care process (NCP) is the procedure that should guide the nursing practice. It focuses on evaluating the progress of the health status of the person, family, and/or group based on the care provided by the nurse. This method guarantees high-quality care for the patient in question. Nursing care, beyond the humanistic part, as a profession of human relations, requires a scientific basis that justifies each of its interventions and is not a routine activity, being the nursing process the tool that will allow recognizing the patient's needs and managing the interventions of the unique care for each patient.

Martinez et al.[4] describe BPH as an age-related urological disease, occurring after the age of forty and the percentage is higher in proportion to the increase in age; characterized by the progressive growth of the prostate gland due to a non-malignant proliferative process of the epithelial and stromal component of this gland distributed around the urethra; manifesting itself clinically with irritative and/or obstructive voiding disorders. BPH has a multifactorial cause and, physiologically, it is highly related to the increased conversion of testosterone into dihydrotestosterone due to the action of prostatic 5-α-reductase. The risk factors for BPH are age, hormonal status (androgens), they also mention familial risk as a genetic tendency.

That progressive prostate growth is associated with increased outflow resistance, with secondary effects on bladder and renal function. The presenting symptoms are lower urinary tract symptoms. These symptoms are divided into voiding or storage symptoms. We find a weak urinary stream, hesitancy, and terminal dribbling within the voiding symptoms. On the other hand, we have increased urinary frequency within the storage symptoms. The pathophysiology of BPH is not entirely understood; however, some factors related to BPH are known, among which are aging, proinflammatory environments (insulin resistance, secondary hyperinsulinemia, and metabolic syndrome), and hormonal alterations. In addition, there is also local prostatic inflammation, which, in particular, has an essential relationship with the severity of symptoms and disease progression.[5]

Transvesical prostatic adenomectomy is the surgical procedure in patients with a huge prostate and with a decrease in the bladder neck lumen; it is an open surgery with a suprapubic abdominal incision to remove the prostatic adenoma.[5] Currently, there are several surgical techniques, including the open techniques used since 1945 and the laparoscopic techniques that began in 2002. This indicates that surgical procedures seek to provide a solution to the symptoms produced by BPH and to the complications that they may entail; furthermore, open surgery continues to be used despite new surgical methods of approach.[6]

The objective of the present case study was to develop the ECP as a care tool, established in a patient

with a medical diagnosis of benign prostatic hyperplasia, who underwent surgery for transvesical prostatic adenomectomy in a hospital in Lima.

The interventions provided were timely, appropriate, and consistent with the diagnoses identified, which facilitated the patient's recovery and prevented complications leading to deterioration or death of the patient.

METHOD

Single case study, with a qualitative approach, applied to an 81-year-old male adult, who was admitted to the post-anesthesia recovery unit from the operating room after a transvesical prostatic adenomectomy surgery, in a public hospital in the city of Lima.

The nursing care process was used as a methodology for developing interventions in providing care and as a fundamental tool of nursing care practice. The five stages of the care process were developed: assessment, where information was collected from the clinical history and through the application of the assessment form under the approach of Maryory Gordon's functional patterns of health; the interview and observation were used as data collection techniques. Diagnosis involves making a clinical judgment based on the human response using the NANDA taxonomy. Planning involves determining specific interventions and activities using the NOC. Execution is when the care plan is put into practice using the NIC. The last stage is evaluation, where the difference between the baseline and final Diana scores determines the efficacy of the interventions and the achievement of results.

NURSING CARE PROCESS

Assessment

General Data

Name and surname: Patient with initials M.C.G.

Sex: male.

Age: 81 years old.

Days of care: 3 hours of nursing care, performed on September 1, 2020.

Reason for admission and Medical Diagnosis: Older adult patient who was admitted to the post-anesthesia recovery unit after undergoing emergency surgery for transvesical prostatic adenomectomy. He was admitted to the hospital by the emergency department for urinary retention, the medical diagnosis was benign prostatic hyperplasia.

Assessment by functional health patterns

Pattern I: Perception Health Monitoring

In the medical history she only records history of COVID-19, her last serological test for COVID-19 was negative dated 08/26/20. She does not specify previous surgical interventions.

Pattern II: Nutritional metabolic

Patient weighs 50 kg, height 165 cm, pale skin color, dry. Temperature of 36 °C. Oral mucosa semihydrated, abdomen distended and painful on palpation. Decreased hydroaerial sounds. Operative wound of suprapubic midline incision covered with clean, dry dressing. Nothing by mouth according to immediate postoperative indication, passing ClNa 9 % to 30 drops. Received blood transfusion of one unit of globular pack in the operating room. Reported bleeding in SOP of 500 ml. Hemoglobin was 9,5 g/dl. HCO3 result was 27,40 mmol/L.

Pattern III: Elimination

Patient with bladder catheter placement date of 1/9/20 with urinary volume of 300 cc in 2 hours, bladder irrigation hematuric content.

Pattern IV: Exercise activity

In the evaluation of cardiac activity the heart rate was found to be 45 to 58 per minute, blood pressure 97/42 mm/Hg.

Respiratory activity showed a respiratory frequency of 13 per minute. Saturation without oxygen of 90 %, binasal cannula support at a FiO2 of 32 %, deep breathing, irritability, and pale skin. Physical examination shows a symmetric thorax. Arterial gas values: pH 7,14, PCO2 82,1 mm/Hg, PO2 149 mm/Hg. Regarding exercise, his capacity for self-care is limited because he is recently post-operated and carries invasive devices such as a peripheral catheter, a central venous catheter, an epidural catheter, a bladder catheter, and bladder irrigation, all placed on 01/09/20. Motor strength is preserved, and the patient mobilizes all four limbs.

Pattern V: Rest and sleep

Not assessable.

Pattern VI: Perceptual-cognitive

Awake, Glasgow of 15 points, blurred vision (he wears glasses). Pupils isochoric and photo reactive. Pain gestures are observed, refers pain 5/10 according to VAS scale.

Pattern VII: Self-perception - Self-concept.

He is observed fearful, anxious, continually asking if everything is all right.

Pattern VIII: Role - Relationships

In the clinical history he records as occupying his home, relatives of the patient in the waiting room asking for him and collaborating in the collection and processing of medications.

Pattern IX: Sexuality - Reproduction

Not assessable.

Pattern X: Coping and Stress Tolerance

Anxious and irritable.

Pattern XI: Values and Beliefs

Indicates Catholic religion.

Complementary assessment data

Current medical treatment

- Indicated diet: consisted of nothing by oral route (NPO).
- Hydration: he was given 5 % dextrose with electrolytes, which consisted of 2 ampoules of 20 % hypersodium in each bottle, at a frequency of 30 drops per minute in administration.
- As a gastric protector, he received Omeprazole 40mg to be administered intravenously every 24 hours.
- Within the antibiotics, he was given Ceftriaxone 1 gram intravenously at a frequency of an interval of every 12 hours
- As analgesic given, Metamizole of 1 gram intravenously with an interval of every 8 hours was indicated.
- Other indications: polygelin 500 ml intravenous stat, and atropine 0,25 mg intravenous stat, hemoglobin control, electrolyte control, and arterial gas analysis examination.

AGA: PH: 7,14 PCO2: 82,1 mm/Hg PO2: 149 mm/Hg HCO3: 27,40 mmol/L.

Prioritized nursing diagnoses

Diagnosis N°1

Diagnostic label

NANDA (00030) Impaired gas exchange.
Domain: 3 Elimination and exchange.
Class: 4 Respiratory function.

Defining characteristic

Respiratory rate of 13 x', so2 90 %, PCO2: 82,1 mm/Hg,
PO2: 149mmhg, HCO3: 27,40 mmol/l.

Associated condition

Ventilation-perfusion imbalance

Diagnostic statement

Impaired gas exchange related to ventilation-perfusion imbalance evidenced by Fr of 13 x', so2 90 %, pco2: 82,1 mm/Hg.

Diagnosis N°2

Diagnostic label

NANDA (00132) Acute Pain.
Domain: 12 Comfort.
Class: 1 Physical comfort.

Defining characteristic
Autonomic responses (pulse: 45 respiration: 15).
Expressive behavior (anxious, irritable).
Pain gesticulations.
Refers pain (5/10 according to VAS scale).
Related factor.
Physical injurious agents.

Diagnostic statement
Acute pain related to physical injurious agents evidenced by pulse: 45 pm, respiration 15 pm, anxious and irritable behavior, pain gesticulations, refers pain.

Diagnosis N°3
Diagnostic label
NANDA (00004) Infection Risk.
Domain: 11 Safety/Security.
Class: 1 Infection.

Defining characteristic
Not applicable.

Related factor
Invasive procedures: peripheral line, cvc, bladder carving, bladder catheter.
Compromise of primary skin defenses caused by adenotomy surgery.
Compromise of secondary defenses due to anemia.

Diagnostic statement
Risk of infection related to invasive procedures (peripheral line, cvc, bladder size, bladder catheter), breach of primary skin defenses caused by adenotomy surgery and breach of secondary defenses caused by anemia.

PLANNING
Diagnosis N° 1
(00030) Impaired gas exchange related to ventilation-perfusion imbalance evidenced by Fr of 13 x', SO2 90 %, PCO2: 82,1 mm/Hg, PO2: 149 mm/Hg.

Expected results
NOC (Code)
Respiratory status (0415)

(Code) Indicators
041501 Respiratory Rate.

NOC (code)
Respiratory status: Gas exchange (0402)

(Code) Indicators
040208 Partial pressure of oxygen in arterial blood (PaO2).
040209 Partial pressure of carbon dioxide in arterial blood (PaCO2).
040211 Oxygen saturation.

Diagnosis N° 2
(00132) Acute pain related to physical injurious agents evidenced by pulse: 45pm, respiration 15pm, anxious and irritable behavior, pain gesticulations, refers to pain.

Expected results
NOC (Code)
Pain Level (2102)

(Code) Indicators
210201 Referred pain.

210206 Facial expressions of pain.
210223 Irritability.
210210 Respiratory rate.
210220 Radial pulse rate.

Diagnosis N° 3

(00004) Risk of infection related to invasive procedures (peripheral line, CVC, bladder catheter), breach of primary skin defenses caused by adenomectomy surgery and breach of secondary defenses caused by anemia.

Expected outcomes

NOC (Code)

Tissue integrity: skin and mucous membranes (1101)

(Code) Indicators

110101 Skin temperature.
110113 Skin integrity.
110115 Abnormal pigmentation.
110121 Erythema.
110122 Pallor.

NURSING INTERVENTIONS

Interventions of the first diagnosis

Deterioration of gas exchange

NIC (Code)

Oxygen therapy (3320)

Activities

- Enable and check the status of the oxygen equipment.
- Proceed with the administration of supplemental oxygen through a heated and humidified system, according to medical indication.
- Monitor and evaluate the response of oxygen therapy by pulse oximeter and arterial blood gases.

NIC (Code)

Ventilation aid (3390)

Activities

- Position the patient by raising the head of the bed (30-45 degrees) to ensure a position where their breathing efforts are minimal.
- Check for signs of respiratory muscle fatigue.
- Auscultate the lung fields to identify areas of decreased or absent ventilation and the presence of adventitious sounds.

NIC (Code)

Respiratory monitoring (3350)

Activities

- Monitor breathing rate, frequency, depth, and effort
- Observe chest movement, examining symmetry, use of accessory muscles, and retractions of intercostal and supraclavicular muscles
- Analyze variations in SaO2 levels and arterial blood gas values

Interventions from the second diagnosis

Sharp pain.

NIC (Code)

Administration of analgesics (2210)

Activities

- Check the medical instructions regarding the medication, frequency, and dosage of the prescribed pain reliever.
- Pain relievers should be administered according to the prescribed frequency to avoid peaks and valleys in pain relief, in order to prevent high levels of pain.
- Check the effectiveness of the analgesic at regular intervals after each application, especially after the first few doses. In addition, be alert for possible side effects such as respiratory depression, nausea, vomiting, dry mouth, and constipation.

Interventions from the third assessment

Risk of infection.

NIC (Code)

Infection control (6540).

Activities

- Practice hand hygiene before and after each patient care task.
- Ensure that all intravenous lines are handled in an aseptic manner.
- Use intermittent catheterization to reduce the frequency of bladder infections.

NIC (Code)

Wound care (3660)

Activities

- Monitor the characteristics of the wound, such as drainage, color, dimensions, and odor.
- Change the wound dressing depending on the amount of exudate and drainage.
- Record the location, dimensions, and appearance of the wound in the nursing notes.

NIC (Code)

Urinary catheter care (1876).

Activities

- Ensure the integrity of a closed, sterile, and unobstructed urinary drainage system.
- Ensure that the urine collection bag is positioned below the level of the bladder.
- Ensure that a sterile technique is used during the urinary irrigation procedure.
- Clean the external part of the urinary catheter at the level of the meatus.

Assessment

Adjustments were made throughout the nursing care process to achieve the best possible outcome for the patient's needs. During the assessment stage, a nursing assessment guide was used, which facilitated the interview and physical examination of the patient's functional patterns, enabling data collection. In the second stage, with the information organized by functional patterns, it was easier to analyze the nursing diagnoses based on the NANDA taxonomy objectively. In the planning stage, there were difficulties due to a lack of expertise in handling nursing results, their indicators, and their relationship to the respective interventions; however, it was a learning experience. The implementation stage was simpler, during which the care plan was implemented. The final stage, evaluating the effectiveness of the interventions, also encountered difficulties due to subjectivity in the scoring of outcome indicators, which is left to the discretion of the nursing professional to decide (baseline, final, and change scores).

RESULTS

Initial diagnosis

Gas exchange related to ventilation-perfusion imbalance evidenced by Fr of 13 x', SO2 90 %, pCO2: 82,1 mm/Hg.

Nursing outcome

Respiratory status: respiratory exchange.

Table 1. Baseline and final nursing outcome scores Respiratory status: respiratory exchange

Indicators	Baseline score	Final score
Respiratory rate	3	4
PaO2	3	4
PaCO2	2	4
Oxygen saturation	3	5

The trend in outcome indicators Respiratory status: respiratory exchange before nursing interventions was (3), after interventions the trend was (4), with a change score of +1.

Second diagnosis

Acute pain related to physical agents evidenced by pulse: 45 bpm, respiration 15 bpm, anxious and irritable behavior, gestures of pain, reports pain.

Nursing outcome

Pain level.

Table 2. Baseline and final nursing outcome scores Pain level

Indicators	Baseline score	Final score
Referred pain	3	4
Facial expressions of pain	3	4
Irritability	3	5
Respiratory rate	3	4
Radial pulse rate	2	4

The trend in outcome indicators: Pain level before nursing interventions was (3), after interventions the trend was (4), with a change score of +1.

Third diagnosis

Risk of infection related to invasive procedures (peripheral line, CVC, bladder size, urinary catheter), breach of primary skin defenses caused by adenomectomy surgery, and breach of secondary defenses caused by anemia (hemoglobin 9,5 g/dl).

Nursing outcome

Tissue integrity: skin and mucous membranes.

Table 3. Baseline and final nursing outcome score: tissue integrity: skin and mucous membranes

Indicators	Baseline score	Final score
Skin temperature	4	5
Skin integrity	4	4
Abnormal pigmentation	4	5
Erythema	5	5
Pallor	3	4

The trend for outcome indicators: tissue integrity: skin and mucous membranes before nursing interventions was (4), after interventions the trend was (5), with a change score of +1.

DISCUSSION

Diagnosis No. 1

(00030) Impaired gas exchange related to ventilation-perfusion imbalance evidenced by respiratory rate of 13x', SO2 90 %, PCO2: 82,1 mm/Hg, PO2: 149 mm/Hg.

The function of the respiratory system is to ensure pulmonary gas exchange, in other words, to achieve perfect tissue oxygenation and adequate elimination of carbon dioxide generated by tissue metabolism. When respiratory failure occurs, there is incorrect arterial oxygenation and/or inadequate elimination of CO2. Treatment differs according to the underlying disease causing the respiratory failure.[7]

NANDA (2018-2020) defines impaired gas exchange with code 00030 as "an alteration due to excess or deficiency in oxygenation or carbon dioxide elimination through the alveolar-capillary membrane." NANDA

also notes the following defining characteristics in this nursing diagnosis: visual disturbances, decreased carbon dioxide, tachycardia, hypercapnia, agitation, drowsiness, irritability, hypoxia, confusion, dyspnea, abnormal arterial blood gas, cyanosis, abnormal skin color (pale, ashen), hypoxemia, hypocapnia, headache upon awakening, abnormal respiratory rate, rhythm, and depth, diaphoresis, abnormal pH, and nasal flaring. The associated factors reported in NANDA (2018-2020) for impaired gas exchange are ventilation-perfusion imbalance and alveolar-capillary membrane alterations.

In the present case study, irritability, pale skin, a respiratory rate of 10 pm, oxygen saturation between 90 and 92 %, PCO2 of 82,1 mm/Hg, PO2 of 149 mm/Hg, and HCO3 of 27 40 mmol/Lt were identified as evidence of the defining characteristics; in relation to the related factor, ventilation-perfusion imbalance was considered, according to the defining characteristics identified.

Pulmonary gas exchange is altered about the progression of the disease, causing a reduction in the ventilation-perfusion ratio and a decrease in the total surface area of the respiratory membrane; in both cases, this causes states of hypoxemia and hypercapnia, which are defining characteristics in the nursing diagnostic label "Impaired gas exchange."[7]

COVID-19 viral particles enter the lower airways, causing lesions in the lower lung lobes and, in most cases, compromising both lungs. In addition, the condition is described as "diffuse alveolar injury, epithelial desquamation or necrosis, fibrin deposition, and hyaline membrane formation." This discovery establishes that SARS-CoV-2 mainly infects the lung parenchyma, where gas exchange occurs. About the case study, the patient had a history of COVID-19 infection, the sequelae of which can facilitate the onset of other health disorders and/or complications.[7]

The care plan for this initial diagnosis was considered Respiratory Status: Gas Exchange as the primary expected outcome, with NOC code 0402, defined as the exchange of O2 and CO2 at the alveolar level, to maintain stable arterial gas levels. Specified on assessment scales ranging from "Severe deviation from normal range" as value 1 to "No deviation from normal range" as value 5. Three indicators were established: partial pressure of oxygen in arterial blood (040208), partial pressure of carbon dioxide in arterial blood (040209), and oxygen saturation (040211); (NOC, 2019).

Three interventions were implemented in the care plan for the diagnosis "Impaired gas exchange (00030)":

The first intervention

Was oxygen therapy with code NIC 3320; this intervention is defined as the administration of oxygen and monitoring of its effectiveness (NIC 2019).

Activities this first intervention

Enable and verify the status of the oxygen equipment; having the material for oxygen administration ready prevents setbacks. This also involves checking the operation of the oxygen flow meters, humidifier, sterile distilled water, and oxygen flow outlet, and ensuring that the oxygen devices (nasal cannula, reservoir mask) are available.

According to medical instructions, supplemental oxygen should be administered through a heated and humidified system. Oxygen is administered through a heated and humidified system because regulating heat and humidity in the air entering the lungs is physiologically related. Humidification depends on temperature, and the nasal turbinates are responsible for regulating the temperature of the air to that of the blood. Therefore, administering dry, cold supplemental oxygen to a person can cause injury or aggravate their physical condition. According to Cristancho W[6] in his book "Oxygen: Physiology, Therapy, Toxicity."

The administration of supplemental oxygen as ordered increases the concentration of alveolar oxygen to correct hypoxia. Oxygen is necessary for normal metabolism, ensuring respiratory capacity, and preventing conditions in different body organs, as Martín-Romo J[7] explains in the book "Nursing Care for Patients with Respiratory Disorders." It also involves checking the flow of the amount of oxygen entering the patient and monitoring the position of the oxygen device so that the desired response can be assessed, the dose adjusted, and/or the oxygen device changed.

Monitor and evaluate the response to oxygen therapy using a pulse oximeter and arterial blood gas analysis. Martín Romo describes that it is necessary to check the effectiveness of the treatment by observing the respiratory rate, amplitude, and frequency; monitoring the pulse and blood pressure; and observing whether there is respiratory distress and changes in the state of consciousness.[7]

The second intervention

Is ventilation support, NIC code 3390, which is defined as the stimulation of an optimal spontaneous breathing pattern that maximizes the exchange of oxygen and carbon dioxide in the lungs (NIC 2019). Cristancho W[6] indicates that the effectiveness of ventilation is objectively established by analyzing arterial gases, specifically by measuring CO2 blood pressure values, which allows us to determine states of hypoventilation or hyperventilation.

Activities for this second intervention

Position the patient by raising the head of the bed (30-45 degrees) to ensure a position where their respiratory efforts are minimal. This position allows the patient to lower their diaphragm during inspiration and improves the action of the accessory muscles, thus promoting the expansion of the rib cage.

Check for any signs of respiratory muscle fatigue. Loss of strength in the muscles involved in breathing indicates not only insufficient ventilation but also pulmonary dysfunction. The signs that usually appear are tachypnea, intercostal retractions, and nasal flaring.

Auscultate the lung fields to identify areas of decreased or absent ventilation and adventitious sounds. Auscultation of the lung fields is a technique used to assess the condition of the bronchial tree. In airway disorders, breath sounds are absent or diminished, and additional breath sounds (adventitious sounds) such as rhonchi, wheezing, and crackles may also be heard.

The third intervention

developed for the diagnosis of impaired gas exchange, according to the nursing procedure classification system, was respiratory monitoring (code 3350). This intervention seeks to collect and analyze patient data in order to ensure airway patency and facilitate appropriate gas exchange (NIC, 2019).

The activities for this third intervention

Monitor the rhythm, frequency, depth, and effort of breathing.

When assessing breathing, evaluate the frequency, rhythm, and depth of breathing through inspection or auscultation.[8]

Observe chest movement, examining symmetry, use of accessory muscles, and retractions of intercostal and supraclavicular muscles.

Martin-Romo J[7] points out that the muscles surrounding the rib cage and the abdominals are involved in breathing.

Analyze variations in SaO2 levels and arterial blood gas values.

Diagnosis No. 2

(00132) Acute pain related to physical injury evidenced by changes in pulse rate of 45 bpm, decreased respiratory rate of 15 bpm, pain gestures, anxious, and irritable behavior.

NANDA (2018-2020): acute pain is characterized as an unpleasant sensory and emotional experience caused by actual or potential tissue damage. It may be sudden or gradual, with varying intensities ranging from mild to severe. This type of pain usually has a predictable outcome and lasts less than six months.

Similarly, according to the conceptualization of Luis MT et al.[3], pain is described as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. When the body is confronted with a noxious stimulus or tissue injury, the release of a series of neurotransmitters known as the "inflammatory soup" is triggered. These substances generate pain by allowing nociceptive stimuli to travel to the spinal cord through the spinothalamic tracts, reaching the thalamus and other nuclei of the limbic system. Emotional responses are involved in this process, and various emotional mechanisms can be modulated. Finally, these stimuli reach the somatosensory cortex, where the sensation of pain is experienced.

In addition, López et al.[1] characterize postoperative pain as an acute manifestation, understood as a response to surgical aggression. Factors such as age, gender, sociocultural aspects, and the type and location of the surgical intervention must be considered due to their influence on possible postoperative complications. These complications include ischemia and cardiac arrhythmias, atelectasis, thromboembolic events, alterations in wound healing, and metabolic acidosis. Effective pain management is crucial to reducing morbidity, mortality, and length of hospital stay.

However, Zegarra et al.[2] provide a more comprehensive description, stating that tissue injury results from stimulation of nociceptors, which are receptors that give rise to pain. The pathways and mechanisms of nerve and sensory transmission produced by painful stimuli recognize the pathophysiological mechanisms of pain known as neuropathic pain. In addition, the cognitive and behavioral perception and experience of pain show the individual's psychological experience of pain, calling it psychogenic pain. It concludes that pain involves the interrelationship of the elements above.

The nursing diagnosis labeled as acute pain (00132) is characterized by various manifestations, according to NANDA (2018-2020), which include verbal and gestural expression of pain, observation of evidence, protective and defensive behavior (such as touching the painful area or changes in posture to relieve pain), pain facies (such as a dejected appearance, dull eyes, grimaces), positive response to palpation, distracting behavior (moaning, crying, pacing, seeking other people, performing activities), autonomic vegetative responses to pain (changes in blood pressure and pulse rate, increased or decreased respiratory rate, diaphoresis, pupil dilation), anxiety and restlessness, social isolation, expressive behavior (crying, sighing, irritability, agitation, alertness,

moaning), altered thought processes, altered perception of the passage of time, self-focus, altered muscle tone (from laxity to rigidity), and changes in appetite and intake. The defining characteristics of the case study for this diagnosis were changes in pulse rate (45 bpm), decreased respiratory rate (15 bpm), pain gestures, anxiety, and irritable behavior. These specific manifestations provide valuable information for identifying and addressing acute pain in the patient.

The associated factors indicated in the NANDA for this diagnosis are determined as biological, chemical, physical, and psychological (NANDA, 2018). The patient presented a physical agent as a factor in the case study. López et al.[1] define the physical injury factor as something that triggers an injury, which may be a pathological or traumatic alteration of tissue associated with a physical event involving accidental or surgical sectioning of organic tissue.

In this second diagnosis, the expected outcome was considered as the nursing care plan: pain level, with code number 2102, which is conceptualized as the level of pain expressed or experienced. This was defined on a scale ranging from "Severe" with a value of 1 to "None" with a value of 5 for the three indicators chosen: referred pain (210201), facial expressions of pain (210206), and irritability (210223). Respiratory rate (210210) and radial pulse rate (210220) were also considered. For these last two indicators, the assessment ranges are from "Severe deviation from normal range" with a score of 1 to "No deviation from normal range" with a value of 5 (NOC, 2019).

The administering of analgesics, with NIC code 2210, is defined as using pharmacological agents to reduce or eliminate pain. (NIC, 2019)

The following activities were carried out for this intervention

Verify the medical instructions regarding the medication, frequency, and dosage of the prescribed pain reliever.

The medical instructions must be crystal clear so that they cannot be misinterpreted due to poor handwriting, unapproved abbreviations, or omitted decimals; therefore, consult with the physician if there is any doubt.[8]

Analgesics should be administered according to the prescribed frequency to avoid peaks and troughs in analgesia and to prevent high pain levels.[9]

The surgical wound is the site of tissue and anatomical alteration, which causes pain and disability.[10]

Pain management with analgesics should be individualized according to the intensity and type of pain experienced by the person; they should be administered at fixed intervals and gradually, taking into account the WHO analgesic scale: non-opioids, minor opioids, major opioids, and special techniques.[10]

In addition, analgesics should be administered at the indicated time, and the effectiveness of the medication should be checked periodically after each application. Mena D et al.[8] specify that if acute pain is not managed or treated adequately, the patient may be at risk of developing neuropathic pain syndromes that are more difficult to treat, such as complex regional pain syndrome; this occurs due to the persistence of the painful stimulus in the peripheral nerves, causing neuronal plasticity and transmitting the painful stimulus to the central nervous system.

The actions carried out in this intervention included assessing the location, characteristics, quality, and severity of the pain before administering any medication to the patient. In other words, this corresponds to an assessment that includes both subjective and objective factors, which are complementary. Patients commonly verbally communicate the existence, intensity, and nature of the pain they are experiencing. In addition, nursing staff assess other indicators of pain, such as facial expressions, defensive posture, and changes in heart and respiratory rates, as physiological responses to pain.[8]

Check the effectiveness of the analgesic at regular intervals after each application, especially after the first doses. In addition, be alert for possible side effects such as respiratory depression, nausea, vomiting, dry mouth, and constipation.

Acute pain can cause changes in blood pressure, pulse, and respiratory rate, manifesting as an increase in the functions above and muscle tension. Inadequate pain management can also cause nausea, vomiting, and diaphoresis, as well as observable behavioral responses.[8]

Vital signs must also be monitored before and after administering analgesics, observing whether there are signs and symptoms of adverse effects. In this case, metamizole, an analgesic that tends to cause hypotension, was indicated.[9]

Another measure taken was to check the patient's history of drug allergies, as adverse drug reactions (ADRs) are a cause of morbidity and mortality and increase hospital costs. Although nursing staff do not prescribe analgesics, they must be familiar with the WHO analgesic ladder for pain management.[8]

Diagnosis No. 3 (00004)

Risk of infection related to invasive procedures (peripheral line, CVC, bladder incision, urinary catheter), breach of the skin's primary defenses caused by adenomectomy surgery, and breach of secondary defenses caused by anemia.

The risk of infection is described as susceptibility to invasion and reproduction of organisms that can affect health, according to NANDA (2018). Healthcare-associated infections (HAIs) are infections acquired while a patient is being treated for a medical or surgical problem without being incubated at the time of admission; they are related to the use of medical devices, post-surgical complications, and spread between patients and/or healthcare personnel. (Garay, 2015) mentions in her study that the highest HAIs were found in males due to invasive devices.

Vascular devices are located in the bloodstream; central venous catheters are used for diagnostic, therapeutic, and monitoring purposes. Complications occur during insertion, rupture or displacement of the device, obstruction, thrombosis, and infection. One study found that 19 % presented infection, with Staphylococcus sp. being the most common infectious agent (44 %). The insertion of a urinary catheter is considered a significant risk factor for developing hospital-acquired urinary tract infections in patients.[7]

The surgical wound is the tissue and anatomical alteration site, where complex inflammation and rapid cell metabolism occur with systemic consequences. The risk of infection at the surgical site is determined by: the quantity and types of microorganisms present in the incision area; the conditions of the surgical site at the end of the procedure, taking into account the surgical technique and the reason for the surgery; and finally, the host's susceptibility to microbial contamination.[7]

It is crucial that healthcare personnel strictly follow aseptic measures to minimize the incidence of infections and the possibility of cross-contamination. According to the NANDA, factors associated with the risk of infection include invasive procedures, lack of knowledge to prevent exposure to pathogens, trauma, tissue destruction, increased environmental exposure, malnutrition, rupture of the amniotic membranes, alteration of secondary defenses (such as decreased hemoglobin, leukopenia, suppression of the inflammatory response), use of immunosuppressive drugs, inadequate acquired immunity, presence of chronic diseases, and altered primary defenses (including skin breakdown, tissue trauma, decreased ciliary action, fluid stasis, changes in secretion pH, and altered peristalsis) (NANDA, 2018). In the case study, the patient presents several elements that could lead to a risk of infection, such as a peripheral line, CVC, bladder size, urinary catheter, surgical wound from adenomectomy, and a hemoglobin level of 9,5 g/dl.

The care plan for this third diagnosis was considered to be "Tissue integrity: skin and mucous membranes," identified with nursing outcome classification code 1101. This category is defined as preserving the skin's and mucous membranes' typical structure and physiological function. The ranges for the skin temperature indicator (110101) and skin integrity (110113) were established as follows: Severely compromised with a value of 1, to a value of 5 as Not compromised; for the indicators of abnormal pigmentation (110115), erythema (110121), and pallor (110122), the assessment ranges were Severe with a value of 1 to a value of 5 for the range of None (NOC, 2019).

Three interventions were made in the care plan for the diagnosis "Risk of infection (00004)":

First intervention

Infection control, with NIC code 6540, which is defined as minimizing the spread and transmission of infectious agents.

To ensure nursing care to prevent cross-contamination and colonization of pathogenic microorganisms, the following activities were carried out for this intervention:[8]

Perform hand hygiene before and after each task related to patient care.

The main source of transmission of microorganisms is the hands; therefore, hand hygiene is the most significant and supported practice in terms of effectiveness in preventing the spread of infectious diseases.

Ensure that all intravenous lines are handled aseptically.

An aseptic technique must be maintained when inserting and caring for intravenous catheters, and all shut-off valves must be covered when not in use. Intermittent catheterization can reduce the frequency of bladder infections.

Second intervention

wound care, with NIC code 3660, which is defined as minimizing the possibility of contagion and transmission of infectious agents.

This intervention also allows us to identify signs of risk of infection and act early. To this end, the following activities were carried out:

Monitor the characteristics of the wound, such as drainage, color, size, and odor. The infectious process begins with an inflammatory process, clinically manifested by heat, redness, pain, and swelling of the subcutaneous tissue (cellulitis); complications include abscesses and phlegmon, in both cases involving the presence of pus in the tissue.[10]

It is important to note that skin assessment is a fundamental part of wound care. Therefore, during the immediate postoperative period, the focus is on preventing injuries and constantly observing skin integrity and turgor.[11]

No signs of inflammation or infection were observed in the patient's surgical wound. The wound dressing is changed depending on the amount of exudate and drainage. Dressings are used to cover and protect the surgical wound. Some dressings are now available with medicinal substances to improve healing and prevent wound infection. Simple gauze is commonly used for sutured surgical wounds with little or no exudate. Among the disadvantages of its use is that the gauze material allows the wound to dehydrate and, by absorbing small amounts of exudate, tends to stain everything around it (patient's clothing and bedding).[11]

The dressing was reinforced during the shift because it was stained with serosanguineous discharge. Record the wound's location, dimensions, and appearance in the nursing notes to ensure continuity of care. Nursing notes are a mandatory activity that expresses the evolution and monitoring of the patient's health, hence the importance of detailing the evolution and care provided during treatment. It also entails legal responsibility.[12]

Third intervention

Urinary catheter care, with NIC code 1876, defined as minimizing the risk of infection and transmission of infectious agents.

To this end, the following activities were carried out for this intervention, to reduce the risk of infection and trauma from catheter manipulation:[12]

Ensure the integrity of a closed, sterile, and unobstructed urinary drainage system. Obstruction of the bladder catheter is usually caused by the accumulation of clots in the catheter tube, reducing its lumen. The kinking of the bladder catheter can also occur due to improper catheter fixation. In both cases, there will be an interruption in urine flow, a feeling of needing to urinate, and a bladder distension upon palpation.

Ensure that the urine collection bag is positioned below the bladder level. This prevents reflux of urinary contents. If necessary, clamp the bag beforehand before transferring from the bed to a stretcher or vice versa.

Ensure that a sterile technique is used during the urinary irrigation procedure. This prevents obstruction of the bladder catheter, usually by clots, and ensures its patency. The infusion should be at an appropriate rate to avoid obstruction of the catheter by slow injection or irritation of the bladder mucosa, which manifests as bladder spasms when the irrigation is infused too quickly.

Clean the external part of the urinary catheter at the level of the meatus. Maintain aseptic measures with adequate hygiene of the genitals and the catheter; also ensure that the foreskin is returned to the glans when cleaning to prevent paraphimosis.

CONCLUSIONS

The application of the Nursing Care Process allowed for the planning and execution of individualized and systematic care for a patient who underwent transvesical prostate adenomectomy due to benign prostatic hyperplasia, safely and humanely improving and preventing the patient's needs.

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