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Nursing care of postoperative myocardial revascularization patients in the Intensive Care Unit: A case study

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Abstract

Acute myocardial infarction is considered one of the leading causes of mortality at the regional, national, and global levels; risk factors become the causal agent of this pathology. Therefore, when a patient becomes ill, he/she requires surgical treatment, such as myocardial revascularization, where care and management are performed in the Intensive Care Unit (ICU) to ensure his/her survival. A trained multidisciplinary team is required to ensure the patient's successful recovery. In this context, the nurse becomes an indispensable component, who must have a thorough knowledge of the pathology and the established treatment to provide the appropriate care with clinical judgment. The purpose of this study was to determine the nursing care process for critically ill patients undergoing postoperative myocardial revascularization after acute myocardial infarction in the intensive care unit. The methodology used was an observational and descriptive case study with application of the nursing care plan according to

Case report article, result of research conducted for the Nursing Specialization in the Care of Critically Ill Patients. The research was developed in the ICU of a Level IV care clinic in Pasto from April 21 to May 5, 2023.

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the NANDA-NIC-NOC taxonomy (North American Nursing Diagnosis Association, Nursing Interventions Classification, & Nursing Outcomes Classification). The case study was performed on a patient who was admitted to the hospital with 'severe chest pain'; after identifying electrocardiographic changes and positive troponin results, cardiac catheterization was performed, followed by myocardial revascularization. Thanks to the support of the multidisciplinary team, the patient showed a satisfactory evolution. Therefore, nursing care in a patient with this pathology should be personalized, focused on achieving hemodynamic stability and comfort, considering the magnitude of the procedure, its complexity, surveillance, and clinical monitoring.

Keywords: infarction; myocardial; myocardial revascularization; attention; nursing; care; postoperative; intensive care

Cuidado de enfermería en paciente posoperatorio de revascularización miocárdica en la unidad de cuidados intensivos: estudio de caso

Resumen

El infarto agudo de miocardio es considerado una de las primeras causas de mortalidad a nivel regional, nacional y mundial; los factores de riesgo se convierten en el agente causal de esta patología. Por ello, cuando un paciente enferma, requiere de un tratamiento quirúrgico, como la revascularización miocárdica, donde la atención y manejo se hace en la unidad de cuidados intensivos (UCI), con el fin de garantizar su supervivencia. Para lograr la recuperación exitosa del paciente, se debe contar con un equipo multidisciplinario entrenado. En este contexto, el profesional de enfermería se convierte en el componente necesario e indispensable, que debe conocer a fondo la patología y el tratamiento establecido para realizar con juicio clínico el cuidado de estos pacientes. El objetivo del estudio consistió en determinar el proceso de atención de enfermería en paciente críticamente enfermo en posoperatorio de revascularización miocárdica secundaria a infarto agudo de miocardio atendido en UCI. La metodología utilizada fue estudio de caso observacional y descriptivo, con aplicación del plan de cuidados de enfermería según la taxonomía NANDA-NIC-NOC (North American Nursing Diagnosis Association, Nursing Interventions Classification y Nursing Outcomes Classification). El caso de estudio se realizó con un paciente que ingresó y refirió «dolor de pecho intenso»; después de identificar cambios electrocardiográficos y resultados positivos en las pruebas troponinas, se realizó un cateterismo cardiaco, seguido de revascularización miocárdica. Gracias al apoyo del equipo multidisciplinario, el paciente presentó una evolución satisfactoria. Por lo tanto, el cuidado de enfermería en un paciente con esta patología debe ser personalizado, centrado en lograr su estabilidad

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hemodinámica y su confort, teniendo en cuenta la magnitud del procedimiento, su complejidad, vigilancia y monitorización clínica.

Palabras clave: infarto; miocardio; revascularización miocárdica; atención; enfermería; cuidados; posoperatorios; cuidados intensivos

Cuidados de enfermagem de pacientes com revascularização miocárdica pós-operatória na Unidade de Terapia Intensiva: Um estudo de caso

Resumo

O infarto agudo do miocárdio é considerado uma das principais causas de mortalidade em nível regional, nacional e global; os fatores de risco tornam-se o agente causal dessa patologia. Portanto, quando um paciente adoece, ele precisa de tratamento cirúrgico, como a revascularização do miocárdio, onde o cuidado e o manejo são realizados na Unidade de Terapia Intensiva (UTI) para garantir sua sobrevivência. É necessária uma equipe multidisciplinar treinada para garantir a recuperação bem-sucedida do paciente. Nesse contexto, o enfermeiro se torna um componente necessário e indispensável, que deve ter um conhecimento profundo da patologia e do tratamento estabelecido para prestar o atendimento adequado com julgamento clínico. O objetivo deste estudo foi determinar o processo de assistência de enfermagem para pacientes criticamente enfermos submetidos à revascularização do miocárdio pós-operatória após infarto agudo do miocárdio na unidade de terapia intensiva. A metodologia utilizada foi um estudo de caso observacional e descritivo com aplicação do plano de cuidados de enfermagem de acordo com a taxonomia NANDA-NIC-NOC (North American Nursing Diagnosis Association, Nursing Interventions Classification e Nursing Outcomes Classification). O estudo de caso foi realizado em um paciente que entrou no hospital com 'dor torácica intensa'; após identificar alterações eletrocardiográficas e resultados positivos de troponina, foi realizado um cateterismo cardíaco seguido de revascularização do miocárdio. Graças ao apoio da equipe multidisciplinar, o paciente apresentou uma evolução satisfatória. Portanto, os cuidados de enfermagem em um paciente com essa patologia devem ser personalizados, com foco na obtenção de estabilidade hemodinâmica e conforto, levando em conta a magnitude do procedimento, sua complexidade, vigilância e monitoramento clínico.

Palavras-chave: infarto; miocárdio; revascularização do miocárdio; assistência; enfermagem; cuidados; pós-operatório; terapia intensiva

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Introduction

Acute myocardial infarction is currently considered one of the most prevalent and rapidly increasing pathologies. It is one of the most common acute coronary syndromes (Fundación Española del Corazón, 2019). According to the American Heart Association (2022), heart disease was the leading cause of death in the United States by 2019. Every 40 seconds, someone suffers an acute myocardial infarction, and the direct and indirect costs of treating this condition are high due to its recurrence.

In Colombia, cardiovascular diseases are responsible for one-third of deaths in men and women over 64 years of age, as well as approximately one-fifth of deaths in the 45–64 age group. Not only does acute myocardial infarction top the list of circulatory system diseases that were overreported during the entire pandemic period, it also accounts for 60% of cardiovascular deaths, exhibiting behavior similar to that of COVID-19 (Ministerio de Salud y Protección Social, 2022).

In 2021, the Departamento Administrativo Nacional de Estadísticas (DANE, 2022) estimated an increase in deaths due to ischemic pathologies. Acute myocardial infarction was the cause of 91.1% of deaths due to ischemic heart disease.

In 2021, ischemic heart disease was the leading cause of death and hospitalization in Nariño, with a mortality rate of 49.88 per 100,000 people. The highest rates occurred in 2016 and 2018. Circulatory system diseases are more prevalent among men, with a rate of 55.08 per 100,000 people (Instituto Departamental de Salud de Nariño [IDSN], 2022).

This pathology has manifested in young populations due to lifestyle changes that favor the development of atherosclerosis at earlier stages, resulting in premature cardiovascular events. Among the risk factors, the most common are modifiable. In older adults, non-atherosclerotic etiologies such as spontaneous coronary dissection, anatomical alterations, embolisms, and coronary spasms have been identified with greater prevalence. Angiographic findings, treatments, and resolution of pathologies differ according to age group and sex (IDSN, 2022).

Navarro and De Carlos (2020) argue that myocardial revascularization is one of the greatest clinical challenges in treating this pathology. This treatment improves the quality of life for patients with coronary artery disease as long as they receive the necessary care to prevent complications and readmissions to hospitals. They also report that the quality of life for patients who underwent this procedure improved significantly. The authors also showed that, after the procedure, factors such as age, female sex, and having a SCORE >4% influenced mortality. These factors were associated with an increased risk of short-term cardiovascular events.

Similarly, nursing care during a hospital stay is fundamental to survival. It must be carried out through assessment, diagnosis, planning, execution, and evaluation. Professionals should be guided by the Nursing Care Plan (NCP), as Moguel-Palma et al. (2023) point out, for whom the PAE is a scientific method that facilitates the nurse's autonomy to generate care innovations for these patients.

Given the high prevalence of cardiac diseases in Nariño, Colombia, and around the world, as well as the successful use of myocardial revascularization as a treatment, this study aims to determine the nursing care required for critically ill patients undergoing postoperative myocardial revascularization due to acute myocardial infarction. This care requires frequent, complex interventions to restore heart function, ensure survival, and improve quality of life.

Methodology

This is an observational, descriptive, longitudinal case study. It was conducted with a patient in the intensive care unit of a fourth-level hospital in Pasto, Nariño, Colombia. The study was based on the Virginia Henderson model,

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which provides comprehensive nursing care during the postoperative period of myocardial revascularization. A nursing care plan (NCP) was developed, and the results were recorded using the NANDA, NOC, and NIC taxonomies (Butcher & Moorhead, 2021).

Results

Description of the case

Male patient, 53 years old, diagnosed with diabetes mellitus six years ago. He is currently being treated with Galvus Met 50 mg/1000 mg every twelve hours. He reported smoking cigarettes approximately nine months ago and having other bad habits and lifestyles. On April 21, 2023, he went to a primary care center for a consultation because he experienced severe chest pain (on an 8/10 scale according to the Eva scale); the pain did not subside with analgesics, spread to his left arm and jaw, and was accompanied by diaphoresis and breathing difficulties. Due to these symptoms, an electrocardiogram was performed at the health institution, which revealed ST-segment elevation. Therefore, the diagnosis was acute myocardial infarction. Based on this result, the healthcare personnel initiated anti-ischemic treatment, administered morphine, and referred the patient as a vital emergency.

On April 22, 2023, the patient was admitted to the ICU, remained stable, modulating chest pain, with positive troponins and electrocardiogram (ECG) report with ST-segment elevation. Due to his diagnosis, he underwent hemodynamic clinical monitoring without cardiovascular support. He required oxygen through a nasal cannula at a rate of three liters per minute and maintenance fluids with a 0.9% normal saline solution. His blood sugar levels were checked every shift, and he had elevated troponin levels. A cardiac catheterization and a transthoracic echocardiogram were also requested. On the same day, a cardiac catheterization was performed, revealing severe macrovascular alterations in multiple coronary arteries, evidence of moderate microvascular coronary artery disease, dilated mixed cardiomyopathy, and severe systolic dysfunction with a left ventricular ejection fraction (LVEF) of 25%. Consequently, an evaluation by a cardiovascular surgery was requested.

On April 23, 2023, the patient remained in the ICU with hemodynamic monitoring in postoperative left heart catheterization, plus coronary angiography and thoracic aortogram. He was subsequently transferred to the cardiovascular surgery unit. Due to the patient's comorbidities and significant myocardial weakness, hemodynamic management was recommended, as well as treatment at a center with balloon counter pulsation and the ability to connect to extracorporeal membrane oxygenation (ECMO).

On April 24, 2023, the cardiologist performed an echocardiogram and requested the opinion of the hemodynamicist, due to the need and feasibility of performing angioplasty plus stent placement. The patient did not present episodes of chest pain, without ventilatory support, but hemodynamically the blood pressure figures were inclined towards hypotension; therefore, the dose of carvedilol was reduced to 6.25 mg orally daily; vasopressor support was started with norepinephrine 0.03 mcg/kg/min to maintain the mean blood pressure above 65 mmHg.

On April 25, 2023, the intensivist on duty requested a medical meeting with the hemodynamics and cardiovascular surgery services. At a medical meeting on April 26, 2023, myocardial revascularization surgery was confirmed. Since initiating the surgical plan, clopidogrel was suspended. Due to an LVEF of 27%, it was indicated to continue with vasopressor support. It was also considered to administer a levosimendan loading dose of 0.1 mcg/kg/minute for 24 hours. Antigen testing for SARS-CoV-2 and control laboratories was also indicated.

On May 1, 2023, the patient underwent a myocardial revascularization procedure. The physician explored the posterior descending artery, performing a distal lateral anastomosis from the saphenous vein to the posterior

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descending artery. Also explored the intermediate ramus artery, performing a distal lateral anastomosis from the saphenous vein to the intermediate ramus artery. Additionally, explored the anterior descending artery, performing a distal lateral anastomosis from the left internal mammary artery to the anterior descending artery. Lastly, the physician inserted a right ventricular epicardial electrode due to supraventricular tachycardia. Finally, the physician performed a synchronous shock of 10 joules with return to sinus rhythm and transfusion of one unit of red blood cells and six units of platelets; pump time was 65 min; clamp time, 35 min; and active clotting time, 109 seconds.

After surgery, the patient was transferred to the ICU; he was left on mechanical ventilation with Fi02 of 70%, saturation of 100%, with vasopressor support, prophylactic antibiotics; he was placed on a bladder catheter, right pulmonary artery catheter, peripheral access arterial line. Similarly, pulmonary artery catheter monitoring was performed with wedges of less than 10 cm. The orotracheal tube remained at 8 cm, the commissure at 22 cm. The transesophageal echocardiogram output was 31% LVEF in stable surgery requiring minimal vasopressor support. The pump output was supported with milrinone and noradrenaline on the first attempt. Also, an echocardiographic scan was performed with adequate qualitative contractility without pericardial effusion , normal acid-base status, and stable glycemia.

On May 2, 2023, the patient was extubated without complication. There was adequate diuresis, negative fluid balance, no fever, controlled pain, minimal mediastinal bleeding, normal acid-base status and lactic acid levels, and adequate renal function and urine output. Inotropia was suspended, and paraclinical monitoring continued every six hours for 24 hours.

On May 3, 2023, the patient presented an adequate respiratory pattern and normal oxygenation, dependent on norepinephrine titrated to 0.2 mcg/kg/min, improved cardiac output, no pathological bleeding, no local chest complications related to the surgery performed, afebrile and without clinical signs of infection; he tolerated the diet without difficulty and was metabolically stable.

On May 4, 2023, the patient had elevated blood glucose levels outside the target range despite taking insulin. Therefore, dapagliflozin was prescribed, and carvedilol was discontinued due to the risk of hypotension. A selective beta-blocker, metoprolol succinate, was added, and the pulmonary artery catheter was removed.

On May 5, 2023, the patient was transferred to the floor due to his satisfactory progress. He presented an adequate respiratory pattern and normal oxygenation, eliminating the need for an active vessel.

On May 8, 2023, the cardiovascular surgeon decided to discharge the patient with medication and instructions for monitoring, an electrocardiogram, a chest X-ray, an elastic bandage, and postoperative care.

Theoretical foundation of nursing care

Nursing professionals need to align the nursing care process with a theoretical model that validates care and practice. In this case study, Dr. Virginia Henderson's model was adopted as the central framework for nursing action. This model emphasizes human needs for life and health.

Hernández (2016) argues that:

> Henderson believes that the fundamental role of nursing is to help individuals, whether healthy or sick, preserve or recover their health, or assist them in their final moments. This involves fulfilling needs that they would otherwise perform themselves.
>
> For Henderson, a nurse is someone who helps patients with basic activities of daily living, promotes health, aids in recovery from illness, and ensures a peaceful passing.
>
> For an individual to develop independence with the help of nursing, it is necessary to consider all external influences affecting a person's life and development. (p. 6)

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Virginia Henderson's model is based on a variety of care settings and is easily applicable to patients undergoing myocardial revascularization surgery. Since patients lose complete autonomy during this procedure, nurses are responsible for providing all postoperative care and assisting with all patient needs. In this sense, nursing plays a fundamental role before, during, and after interventions, especially in the recovery of post-surgical patients, who are cared for in the ICU. Based on this rationale, the clinical case study addressed the following post-coronary revascularization needs outlined in Henderson's theory:

- **Breathing normally:** During the postoperative period of coronary revascularization, the patient required mechanical ventilation and was connected to VCV mode with a FiO2 of 30% and a PEEP of 5, with saturations above 90%. Additionally, he was connected to a pleurovac in the mediastinum, through which he drained 15 cc of bloody fluid.

- **Feeding and hydration:** In the post-surgical period, considering the short intubation period, the patient was hydrated via the peripheral route with Ringer's lactate at 80 cc/h for maintenance. Additionally, he was introduced to a liquid diet orally, progressing according to his tolerance until adequate feeding with the current hypoglycemic diet was achieved.

- **Eliminate by all body routes:** Patient with Foley catheter number 16 connected to cystoflo, with urine of normal characteristics.

- **Moving and maintaining appropriate postures:** Patient under sedation, with Glasgow scale 3/15, Rass scale of -4, and Braden 9; completely dependent on nursing staff to meet this need.

- **Sleep and rest:** Patient permanently subjected to noise caused by equipment used in the ICU and frequent procedures at any time of the day.

- **Choosing appropriate clothing, dressing, and undressing:** The patient is completely dependent on the staff to assist him during the hospital stay.

- **Maintain hygiene and skin integrity:** Patient totally dependent on the care staff. This need was at risk because he was sedated, with invasive monitoring, a mediastinal tube, the presence of surgical wound and probes, and limited mobility.

- **Communicating with others to express emotions and fears:** sedated patient, in a non-home environment, under restriction to family members.

- **To be occupied with something that gives a sense of personal fulfillment:** monitored patient. This need was affected by his clinical condition.

- **Participate in recreational activities:** this need was affected by his clinical condition.

- **Avoid environmental hazards and injury to others:** the patient presented an increased risk of infection and complications due to his pathology and clinical condition.

Nursing care plan in the postoperative period after myocardial revascularization

The NCP was developed based on the nursing diagnosis, focusing on problems and risks. Next, NOC outcomes were planned to classify NIC interventions and describe activities performed on the patient. Finally, the patient's response was evaluated (see Table 1).

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Table 1

Nursing care process (NCP) of the myocardial revascularization postoperative patient

Domain class diagnosis	NOC (results)	NIC	
		Intervention	**Activity**
Need 01: To breathe normally Pattern 04: Activity-exercise Domain 04: Activity/rest Class 04: Cardiovascular pulmonary responses Code: 00200 Diagnosis: Risk of decreased cardiac tissue perfusion related to cardiac surgery	0405 Tissue perfusion: cardiac Domain 02: Physiological health Class e : Cardiopulmonary Pattern 01: Perception of health management	4062 Circulatory care, arterial insufficiency	406201 Perform a thorough assessment of the peripheral circulation 406203 Evaluate edema and peripheral pulses 406204 Examine the skin for the presence of ulcers 406207 Administer antiplatelet agents or anticoagulants 406208 Perform postural changes of the patient every two hours 406215 Maintain adequate hydration to decrease blood viscosity 406217 Heal wounds, as required
		4044 Cardiac Care: Acute	404401 Assess chest pain 404403 Monitor heart rate and rhythm 404404 Auscultate heart sounds 404407 Monitor neurological status 404409 Select the best ECG lead for continuous monitoring 404414 Control electrolytes that may increase the risk of arrhythmias 404419 Monitor the efficacy of oxygen therapy 404426 Administer medications to relieve or prevent pain and ischemia 4044227 Monitor the effectiveness of the medication 404430 Perform a thorough evaluation of cardiac status, including peripheral circulation.

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Domain class diagnosis	NOC (results)	NIC	
		Intervention	Activity
Need 01: To breathe normally Pattern 04: Activity-exercise Domain 04: Activity-rest Class 04: Cardiovascular and pulmonary responses Diagnosis: Impairment of spontaneous ventilation	0403 Respiratory status: Ventilation	3310 Weaning from mechanical ventilation	33102 Observe the patient to ensure that he does not have serious infections before weaning 331003 Observe if the hydric status is optimal 33105 Position the patient in the best possible way to use the respiratory muscles and optimize diaphragmatic descent 331006 Vacuum, if necessary 331009 Alternate periods of weaning trials with periods of sufficient rest and sleep 331013 Observe for signs of muscular fatigue 331014 Administer prescribed medications that promote airway patency and gas exchange 331028 Determine patient readiness for weaning (hemodynamic stability, resolution of the disorder that required ventilation, current optimal status) 331030 Initiate weaning with trial periods (e.g., 30-120 minutes of ventilator-assisted spontaneous breathing)
		1872 Thoracic drainage care	187201 Monitor for signs and symptoms of pneumothorax 187202 Ensure that all tubing connections are properly attached 187203 Keep the drain pan below chest level 187207 Document chest tube water seal oscillation, collected drainage, and air leaks 187211 Observe for signs of intrapleural fluid accumulation 186213 Observe for signs of infection 187237 Document the patient's response to coughing, deep breathing, postural changes, including fluctuation, water seal column sway, and bubbling in the chest tube and drainage system 187239 Instruct the patient and family on proper chest tube care

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Domain class diagnosis	NOC (results)	NIC	
		Intervention	Activity
Need 08: Hygiene/ skin Pattern 02: Nutritional-metabolic Domain 11: Safety/ protection Class 02: Physical injury Code: 00047 Diagnosis: Risk of deterioration of skin integrity related to impaired circulation	1101 Tissue integrity: skin and mucous membranes Domain 02: Physiological health Class l: Tissue integrity Pattern 02: Nutritional-metabolic	3660 Wound care	366003 Monitor wound characteristics, including drainage, color, size, and odor 366006 Clean with physiological saline solution or a non-toxic cleaner, as the case may be 366008 Administer incision site care, when necessary 366016 Inspect the wound each time the bandage is changed
Need 04: To move Pattern 04: Activity-exercise Domain 04: Activity-rest Class 05: Self-care Code: 00182 Diagnosis: Willingness to improve self-care	1617: Self-management of heart disease	5510: Health education	5510004 Determine the patient's knowledge, behaviors, and lifestyles. Typical day and living conditions are investigated to identify risk factors and protective factors 551010 Identify personal resources, such as space, equipment, and money, to generate a care and education plan, accessible to the patient and his family, that allows meeting the objectives established for home care 551008 Prioritize learning needs. So far, the emphasis is on postoperative care, surgical wound care, and feeding to achieve early recovery and avoid complications related to the disease 551005 Determine the current knowledge of the patient and his family First, family members are identified, as well as their level of knowledge regarding care. Then, the pharmacological management, medical indications, and administrative procedures for scheduling appointments are explained, along with other necessary care to ensure the patient's successful recovery and adequate quality of life.

Note. PAE Model from Butcher and Moorhead (2021).

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Evaluation

Following the surgical procedure and his stay in the ICU, the patient made a successful recovery. Post-surgical tests confirmed adequate cardiac function. His hospitalization period was relatively short, and he was discharged satisfactorily, with instructions to undergo periodic outpatient checkups, and a follow-up was initiated to ensure his continued improvement. He maintains a good quality of life and has adopted healthy habits.

Discussion

Case report of a 53-year-old male patient who was admitted with a diagnosis of acute myocardial infarction. Given this situation, the treating physicians performed myocardial revascularization to prevent death. According to DANE (2022), in 2021, this disease affected 20.1% of the age group between 45 and 60 years, and was the cause of death. For its part, the Ministerio de Salud y Protección Social (2022) states that this condition is «responsible for one-third of deaths in people over 64 years of age and approximately one-fifth of deaths in people between 45 and 64 years of age» (p. 28).

The study patient's disease was caused by an inadequate lifestyle: poor diet, medically managed type II diabetes, a sedentary lifestyle, and cigarette smoking, all of which depended solely on him for the most part. This case is related to the research conducted by Dattoli-García et al. (2021), who point out that the most predisposing risk factors for suffering a coronary syndrome are those of a modifiable type, such as smoking, since it causes complications in patients suffering from an underlying disease such as diabetes. Consequently, when coronary syndrome occurs, the damage is much more complex and requires surgical intervention to save the patient's life (Figueroa-Casanova et al., 2022).

On the other hand, the main symptom presented by the patient was 'intense chest pain', which did not stop with analgesics and radiated to the left upper limb, and jaw and was accompanied by diaphoresis and shortness of breath. These symptoms are related to an article by the Fundación Clínica Shaio (2021), which mentions that the main symptoms of a heart attack include pressure, pain, or discomfort in the chest and arms that can radiate to the neck, jaw, and back; difficulty breathing; diaphoresis; and fainting. According to the American Heart Association (2022), the symptoms commonly presented in coronary syndrome, evidenced in 80%, correspond to characteristic chest pain accompanied by sweating, arm or shoulder pain, shortness of breath, nausea, vomiting , neck and jaw pain (Urgencias y Emergencias, 2023). In the event of these symptoms, the patient should go immediately to the medical center for prompt treatment.

It is well-known that diagnosing and managing acute myocardial infarction requires a multidisciplinary approach. The most important criteria for diagnosing this disease include clinical symptoms, a physical examination indicating cardiac ischemia, characteristic electrocardiographic findings, elevated markers of myocardial necrosis, and imaging tests. Over the past two decades, the management of myocardial infarction has improved significantly. Consequently, after treatment, patients have less extensive necrotic lesions, a better prognosis, and a better quality of life (Villalobos-Espinosa, & Vázquez-Nava, 2022).

Considering the patient's condition and according to medical assessments, it was necessary to perform myocardial revascularization to correct the damage generated at the arterial level. This surgical procedure is frequently performed in other countries, as indicated by the Navarro and De Carlos (2021) study, which reports more than 70,000 successful short- and long-term revascularizations. In terms of mortality, survival at one year of life of the patients was 90%, who, in addition, did not present a second cardiovascular event during this period. Ten years after surgery, 73.1% of them survived; therefore, the invasive procedure is frequently performed; its effectiveness and reliability have improved the health status of patients and prevented a new coronary episode.

This procedure is frequently performed in Colombia and has shown optimal results, as stated by Castellano et al. (2022). They point out the risk factors, symptoms, and determinants

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that determine the appropriate treatment, which is usually myocardial revascularization because it is a safe procedure that provides excellent results. According to Sainz-Cabrera (2020), this procedure is often used to detect coronary pathologies in younger patients. A five-year postoperative follow-up showed that these patients had an optimal quality of life. These data are related to the research of Espinoza et al. (2022), who followed up patients who underwent myocardial revascularization; approximately 96.2% had different risk factors, and now have ten years of survival after the procedure.

Considering the magnitude of the procedure, the multidisciplinary team that acts must be fully trained. Therefore, Nursing, in the surgical act, plays a fundamental role, especially given their specialty: Perfusionist, since they are in charge of performing extracorporeal circulation and intraoperative care, vital during surgery. These trained nurses allow the attending physician to properly perform the procedure and keep the patient alive while cardiac function is restored during revascularization. In the words of Vázquez et al. (2022):

> The perfusionist nurse is in charge of leading the extracorporeal circulation (ECC), an act generally used to perform cardiac surgery, whose main function is the substitution of cardiac and pulmonary activity that allows the different surgical techniques to be performed on the heart. (p. 3)

The nursing professional, through care, should be able to reduce the incidence of complications and provide greater safety to the person (Vázquez et al., 2022). From this point of view, it is evident the importance of a qualified nursing staff, which performs such interventions and provides intraoperative and postoperative care in the ICU, considering that these procedures ensure, at least, 50% of the patients' recovery.

The study by Cortez et al. (2020) mentions that through specific and patient-focused care, optimal results are achieved that lead to a reduction in hospital stay. This is also related to the study by Rueda and Torres (2020), which states that the primary objective of postoperative intensive care in cardiac surgery is to recover homeostasis, which is affected by the pathophysiological changes caused by the use of extracorporeal circulation, ischemia-reperfusion phenomena in the heart, hypothermia, coagulation disorders, and the adverse effects of transfusions and bleeding.

In this case study, the nurse played a key role in the patient's recovery, providing direct postoperative care and comprehensive ICU management, ensuring hygiene and safety, comfort, and well-being. In this sense, the process of caring as a professional action is linked to the nursing staff, requiring a commitment that goes beyond the mere performance of a series of caring actions. The above is related to what is described by Rueda and Torres (2020), who state that the commitment reaches the disciplinary development, since there must be solid knowledge on the management of these pathologies to offer nursing care that provides safety to patients and families during hospitalization, ensuring quality care in the procedures derived from the pathology.

It is important to highlight that the care provided by the nursing staff was essential to the patient's recovery. The patient experienced a brief postoperative period with favorable progression and was discharged at an optimal time.

Conclusions

The patient developed coronary artery disease due to inadequate modifiable risk factors. In this case, the main symptom was chest pain. As a result, the surgical treatment consisted of myocardial revascularization. Nursing care was essential for a short hospital stay and a satisfactory recovery.

The nursing care plan for patients with coronary artery disease undergoing myocardial revascularization focuses primarily on achieving hemodynamic stability and comfort, based on the patient's care needs, considering the magnitude of the procedure and its complexity. These treatments require clinical surveillance and monitoring to detect changes, alert the medical team, and provide immediate solutions to ensure the success of the procedure and an optimal recovery.

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Conflict of interest

The authors declare that they have no conflicts of interest regarding the presented work.

Ethical Responsibilities

The study was based on Resolution 8430 of 1993 and had the patient's consent before sharing any information related to the case study.

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Contribution

All the authors participated in preparing the manuscript and approved it.