

# Postoperative nursing process of a pregnant patient with meningioma: a case report

Proces pielęgnacji pooperacyjnej pacjentki w ciąży z oponiakiem: opis przypadku

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A – Development of the concept and methodology of the study/Opracowanie koncepcji i metodologii badań; B – Query - a review and analysis of the literature/Kwerenda – przegląd i analiza literatury przedmiotu; C – Submission of the application to the appropriate Bioethics Committee/Złożenie wniosku do właściwej Komisji Biotycznej; D – Collection of research material/Gromadzenie materiału badawczego; E – Analysis of the research material/Analiza materiału badawczego; F – Preparation of draft version of manuscript/Przygotowanie roboczej wersji artykułu; G – Critical analysis of manuscript draft version/Analiza krytyczna roboczej wersji artykułu; H – Statistical analysis of the research material/Analiza statystyczna materiału badawczego; I – Interpretation of the performed statistical analysis/Interpretacja dokonanej analizy statystycznej; K – Technical preparation of manuscript in accordance with the journal regulations/Opracowanie techniczne artykułu zgodnie z regulaminem czasopisma; L – Supervision of the research and preparation of the manuscript/Nadzór nad przebiegiem badań i przygotowaniem artykułu

## STRESZCZENIE

### PROCES PIELĘGNACJI POOPERACYJNEJ PACJENTKI W CIĄŻY Z OPONIAKIEM: OPIS PRZYPADKU

**Cel pracy.** Celem pracy jest ocena przypadku, w którym zdiagnozowano oponiaka w czasie ciąży oraz przedstawienie zindywidualizowanego procesu pielęgnowania pooperacyjnego.

**Materiał i metody.** Do oceny przypadku wykorzystano Model Funkcjonalnych Wzorców Zdrowia Gordona. Proces pielęgnowania został opracowany przy wykorzystaniu diagnoz pielęgniarstwa North American Nursing Diagnosis Association-International, Taxonomy II.

**Wyniki.** W procesie pielęgnowania w tym przypadku uwzględniono diagnozy pielęgniarstwa w obszarach postrzegania zdrowia/wzorca zarządzania zdrowiem, wzorca odżywiania/metabolizmu, wzorca eliminacji, wzorca aktywności/ćwiczeń, wzorca snu/odpoczynku, wzorca poznawczego/percepcji, samooceny/wzorca samoświadomości, wzorca ról/relacji, wzorca radzenia sobie/tolerancji na stres, wzorca seksualności/reprodukcyjności oraz wzorca wartości/przekonań. Na podstawie tych diagnoz ustalono proces pielęgnowania.

**Wnioski.** W tym opisie przypadku chcielibyśmy podkreślić znaczenie wykorzystania modelu funkcjonalnych wzorców zdrowia Gordona do oceny ciężarnej pacjentki z oponiakiem i planowania procesu pielęgnowania pooperacyjnego. Uważa się, że opis przypadku będzie przewodnikiem i wsparciem dla pielęgniarek opiekujących się ciężarnymi pacjentkami chorymi na oponiaka.

**Słowa kluczowe:** proces pielęgnowania, neurochirurgia, okres pooperacyjny, model funkcjonalnych wzorców zdrowia Gordona, NANDA-I

## ABSTRACT

### POSTOPERATIVE NURSING PROCESS OF A PREGNANT PATIENT WITH MENINGIOMA: A CASE REPORT

**Aim.** The aim of this study is to evaluate the case diagnosed with meningioma during pregnancy and to present the individualized postoperative nursing process.

**Material and methods.** Gordon's Functional Health Patterns Model was used to assess the case. The nursing process was established by utilizing the North American Nursing Diagnosis Association-International, Taxonomy II, nursing diagnoses.

**Results.** In the nursing process of the case, nursing diagnoses were included in the domains of health perception/health management pattern, nutritional/metabolic pattern, elimination pattern, activity/exercise pattern, sleep/rest pattern, cognitive/perceptual pattern, self-perception/self-concept pattern, roles/relationships pattern, coping/stress tolerance pattern, sexuality/reproductive pattern and values/beliefs pattern. The nursing process was established in accordance with these diagnoses.

**Conclusions.** Through this case report we would like to highlight relevance of using Gordon's Functional Health Patterns Model for assessing the pregnant patient with meningioma and planning the postoperative nursing process. It is thought that the case report will be guide and support the nurses who care for pregnant patients with meningioma.

**Key words:** nursing process, Neurosurgery, post-operative, Gordon's Functional Health Patterns Model, NANDA-I.

## INTRODUCTION

Meningioma is a primary intracranial tumor which arises from the meninges in the adult population [1-3]. A great majority of meningiomas are histologically benign (>90%) [4,5]. They occur about twice as often in women as in men [5,6].

Although meningiomas are rare during pregnancy [2], complex physiological changes and hormonal differences women experience during pregnancy lead growth of meningioma accelerate [7,8]. The clinical signs and symptoms such as headache, nausea-vomiting, or seizure can be confused with hyperemesis gravidarum or eclampsia in pregnancy [2,9].

Surgery is recommended for the symptoms caused by meningioma [3,8]. However, when pregnant women suffering from intracranial tumors undergo a surgery, this procedure poses a great risk for both them and their fetuses. It is generally recommended for these women to have cesarean section as first treatment option and then the neurosurgical intervention based on their neurological condition and the pregnancy period [2].

Nursing care of these patients should be conducted according to the manifestations of the patients, through a holistic and individualized approach [10]. Nurses have a role of providing clinical care and patient and family education and ongoing support during this process [3].

The present report discussed a rare case of a pregnant patient with meningioma who was evaluated according to Gordon's Functional Health Patterns Model (FHPM) for postoperative nursing process and nursing care was planned by using NANDA-I nursing diagnoses.

## Case study

A 29-year-old female patient, who was primary school graduate, a housewife and had a nuclear family, was 34 weeks pregnant (gravida 2/ parity 1), and had no comorbid, reported to the state hospital due to the complaint of an epileptic seizure and then she was referred to the university hospital due to an intracranial mass. When the patient arrived in the neurosurgery department of the university hospital, her GSC (Glasgow coma scale) total score was measured as 13 (E3, M6, V4) and she was cooperative and disoriented, pupils were normoisochoic and had a light reflex but she had no motor deficit. She was followed by the department of obstetrics and gynecology.

Eight days after being hospitalized in the neurosurgery clinic, the patient was referred to the obstetrics and gynecology department for delivery. The case was referred to the neurosurgery department one day after delivering a live 2510 g premature female baby through cesarean section. The newborn was premature and had respiratory distress, she was taken to the neonatal intensive care unit and followed up there for about two months.

The case was operated on with a right frontal craniotomy on the eighth day after Section, and the mass removed during the surgery was sent to the pathology laboratory for examination. According to the pathology report, she was diagnosed with atypical meningioma.

The patient was neurologically assessed after the surgery. Based on this examination, she had a GCS total score of 13 (E3, M6, V4), she was cooperative and disoriented, pupils were normoisochoic and had a light reflex, and left side was hemiparetic (3/5). The patient, who was followed in the service after the postoperative second hour, had a generalized tonic-clonic seizure at the end of the first day and her antiepileptic treatment was modified accordingly (Tab. 1).

■ Tab. 1. Medical treatment of the case

Drugs	Daily use	Hours
Levetirasetam 1000 mg	2x1	9 a.m. - 9 p.m.
Fenitoin Sodium 100 mg	3x1	9 a.m. - 5 p.m. - 1 a.m.
Esomeprazol 40 mg	1x1	9 p.m.
Naproxen 550 mg	2x1	9 a.m. - 9 p.m.
Sefazolin Sodium 1000 mg	2x1	9 a.m. - 9 p.m.

The case was recommended to have patient's sutures removed on the 14<sup>th</sup> postoperative day and apply to the neurosurgery outpatient clinic for postoperative examination on the 15<sup>th</sup> postoperative day, and she became mobilized and discharged with a wheelchair as on the second postoperative day. Additionally, the newborn was discharged healthy after two months follow-up in the neonatal intensive care unit.

In patient's background, she had undergone three surgeries for meningioma a year before, had not smoked nor used alcohol, and had not known about any drug or food allergies.

## AIM

The aim of this study is to evaluate the case diagnosed with meningioma during pregnancy and to present the individualized postoperative nursing process.

## Ethical Considerations

The required permissions to conduct the study and access the patient's medical records were granted by the Hospital's Administration. After obtaining them, the patient's spouse was informed about the aim and process of the study and his informed consent expressing that he agreed to participate in the study were obtained. Ethical issues, such as protecting patient privacy and confidentiality, were taken into consideration.

## METHODS

Gordon's Functional Health Patterns Model (FHPM) was developed by Marjory Gordon (1982) to ensure that the person is assessed holistically and is a nursing model in which individuals are comprehensively examined from the biopsychosocial dimension. Examining the needs of the individual in 11 functional domains, this model makes it easier to collect and analyze data accurately, objectively, and completely [11,12]. Thus, it is aimed to provide patients with more comprehensive care [11].

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Since a verbal communication could not be established with the patient, we assessed her holistically according to the FHPM by obtaining information from her relatives, particularly her husband, during the data collection phase of the nursing process and examining her clinical and laboratory findings.

- 1. Health perception/health management pattern:** The patient's first-degree relatives were found to have no history of meningioma. The facial scale was used to assess headaches associated with meningioma due to the patient's disorientation during the postoperative period. It was observed that the patient could not do activities of daily living without any help due to weakness and pain. Her nausea was continuing and epileptic seizures were persisting. In this area, the diagnoses of "pain", "maintaining ineffective health", "risk of injury" and "activity intolerance" were examined.
- 2. Nutritional-metabolic pattern:** The patient had a height of 157 cm and weighed 64 kg. Her body mass index (BMI) was 25.96 kg/cm<sup>2</sup>. She had no metabolic system diseases. She had no problems with the oral and mucous membranes as well as biochemical values (Table 2). She drank about four glasses of water per day. She had no dysphagia and ate meals with the help of another person. Her nausea prevented her to eat more than a few spoonfuls of the meals. Nutritional deficiency was observed in her as a result of nausea and loss of appetite. This area included the diagnoses of "nausea" and "nutrition less than body requirements".
- 3. Elimination pattern:** A urinary catheter was inserted into the patient, but no problem was observed in the urinary system. The urinary catheter was removed on the first day after the surgery. No signs and symptoms of urinary tract infection were observed.
- 4. Activity-exercise pattern:** She was observed to move slowly and feel tired and exhausted. Before mobilization, her blood pressure was 110/60-130/80 mmHg,

her pulse rate was 68-76/min, her respiratory rate was 14-16/min, and her body temperature was 36.7-37.2°C. Her partial pressure of carbon dioxide (PaCO<sub>2</sub>) was 37 mmHg, her oxygen saturation (SaO<sub>2</sub>) was 98-99%, and her hemoglobin level was 13.5gr/dL. She was assessed as E4 M6 V3 and disorientated according to the Glasgow coma scale. During the postoperative period, there was no adequate mobilization. This area included the diagnoses of "impaired physical mobility" and "risk of ineffective cerebral tissue perfusion".

- 5. Sleep-rest pattern:** No problem was observed in her sleep and resting habits.
- 6. Cognitive-perceptual pattern:** Due to insufficient person, place, and time orientation (E4 M6 V3), no effective communication could be established with her although she was conscious during the postoperative period. Her relatives were interviewed to collect data. In this area, the diagnoses of "impaired verbal communication" and "acute confusion" were examined.
- 7. Self-perception-self-concept pattern:** Since the patient was disorientated, no sufficient data could be collected.
- 8. Roles-relationships pattern:** It was found that since the newborn was hospitalized in neonatal intensive care unit and the patient was disoriented, she was unable to take care of her and failed to perform her parental role. This area included the diagnoses of "interrupted breastfeeding", "risk of inadequacy in parenting".
- 9. Coping-stress tolerance pattern:** It was determined that the patient's disorientation resulted in stress for family members. This area examined the diagnosis of "ineffective coping of the family".
- 10. Sexuality-reproductive pattern:** The patient's spouse reported that they previously had no problems with the condition and provided no further information. She stated that her menstrual cycle was regular and that they did not take contraceptives.
- 11. Values-beliefs pattern:** It was determined that the patient attached great importance to her family and

had good relationships with her relatives. Being disoriented and hospitalized affected negatively family relationships and communication. This area included the diagnosis of "interruption in the family process".

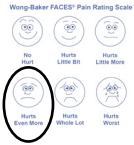

After the data were collected and assessed according to FHPM, the nursing process was established for the case in accordance with the model by utilizing nursing diagnoses of North American Nursing Diagnosis Association-International (NANDA-I) Taxonomy II [12-14].

■ Tab. 2. Laboratory test results of the case

Biochemistry	Case's value	Normal value	Hematology	Case's value	Normal value
AST	35 U/L	0-31 U/L	PT	10.3 sn	10,1-14,9 sn
ALT	117 U/L	0-45 U/L	PT Activity	%117	%75-125
ALP	118 U/L	30-120 U/L	INR	0.9	0.8-1.1
GGT	40 U/L	0-30 U/L	APTT	20.6 sn	21-35 sn
Total Protein	5.2 g/dL	6.6-8.3 g/dL	Leukocytes	15.07 10 <sup>3</sup> /μL	12-15 10 <sup>3</sup> /μL
Albumin	2.8 g/dL	3.4-5.4 g/dL	Neutrophil	12.78 10 <sup>3</sup> /μL	1.5-8 10 <sup>3</sup> /μ
Globulin	2.4 g/dL	2.6-4.6 g/dL	Lymphocytes	0.83 10 <sup>3</sup> /μL	1-4.8 10 <sup>3</sup> /μL
Total Bilirubin	0.18 mg/dL	0.3-1.2 mg/dL	Eosinophil	0.02 10 <sup>3</sup> /μL	<0.5 10 <sup>3</sup> /μL
Glucose	80 mg/dL	75-106 mg/dL	Basophil	0.01 10 <sup>3</sup> /μL	0-3 10 <sup>3</sup> /μL
Urea	32 mg/dL	10-40 mg/dL	Monocytes	1.43 10 <sup>3</sup> /μL	1-10 10 <sup>3</sup> /μL
Creatinine	0.51 mg/dL	0.66-1.09 mg/dL	Erythrocytes	2.92 10 <sup>6</sup> /μL	4.1-5.1 10 <sup>6</sup> /μL
Sodium	140 mEq/L	136-146 mmol/L	Hemoglobin	8.1 g/dL	12.0-15.5 10 <sup>6</sup> /μL
Potassium	4.9 mEq/L	25-125 mmol/L	Hematocrit	24.7 %	35.5-44.9%
Chloride	99 mEq/L	98-106 mmol/L	MCHC	32.8 g/dL	32-36 g/dL
CRP	5.63 mg/dL	1-2 mg/dL	Thrombocytes	183 10 <sup>3</sup> /μL	150-450 10 <sup>3</sup> /μL

AST: Aspartate Aminotransferase; ALT: Alanine Aminotransferase; ALP: Alkaline Phosphatase; GGT: Gamma Glutamyl Transpeptidase; CRP: C-reactive Protein; PT: Prothrombin Time; APTT: Activated Partial Thromboplastin Time; MCHC: Mean Corpuscular Hemoglobin Concentration

Tab. 3. The nursing process of the case prepared according to the FHPM

Functional Health Patterns	Nursing Diagnosis	Expected outcome	Implementation	Evaluation
Health perception/health management pattern	<p><i>Acute pain</i> (NANDA Domain 12: Comfort, Class 1: Physical comfort)</p> 	Relieving pain or expressing pain relief.	<ul style="list-style-type: none"> <li>• Comprehensive pain assessment was carried out and recorded.</li> <li>• Pain was assessed by employing Wong-Baker faces pain rating scale.</li> <li>• Non-verbal cues of discomfort were observed.</li> <li>• The patient's knowledge and beliefs related to pain were asked to the family.</li> <li>• The family was asked to give information about patient's prior experiences with pain.</li> <li>• The effect of pain experience on quality of life was identified.</li> <li>• A multidisciplinary approach was utilized for pain management.</li> <li>• Pain management approach was explained to the patient and family as far as we can say.</li> <li>• A multimodal approach (two or more drugs were used as ordered) was employed for pain management.</li> <li>• The environmental factors that are likely to affect the patient's response to discomfort were checked.</li> <li>• Adequate rest and sleep were promoted.</li> <li>• Accurate information to promote family's knowledge of pain experience was provided.</li> </ul>	<p>It was observed that the pain relieved.</p> 
	<p><i>Maintaining ineffective health</i> (NANDA Domain 1: Health promotion, Class 2. Health management)</p>	Family's lack of knowledge on epileptic seizures.	<ul style="list-style-type: none"> <li>• The level of knowledge of the patient's family on epileptic seizure was assessed.</li> <li>• Risk factors for epileptic seizure were evaluated.</li> <li>• The significance of taking epileptic medicines at the same time of day was emphasized.</li> <li>• The patient was aided with activities of daily living.</li> <li>• The patient's mobility and behavior were observed.</li> <li>• Information was provided on the risk of injury and what to do during an epileptic seizure.</li> </ul>	The knowledge gap on epileptic seizures was filled.
	<p><i>Risk of injury</i> (NANDA Domain 11: Safety/protection, Class 2. Physical injury)</p>	Prevention of injury risk and ensuring patient safety.	<ul style="list-style-type: none"> <li>• Factors that may affect patient safety were assessed, such as changes in mental status, suffering epileptic seizures, drugs used, fatigue, walking and balance problems.</li> <li>• Environmental factors that pose a risk of falling were controlled.</li> <li>• When required, physical restraints were employed.</li> <li>• Her family was informed about the necessary precautions.</li> </ul>	The patient safety was maintained, but there has still been a risk of injury.
	<p><i>Activity intolerance</i> (NANDA Domain 4: Activity/rest Class 4. Cardiovascular/pulmonary responses)</p>	Independently doing activities of daily living.	<ul style="list-style-type: none"> <li>• Her mobility level and mobilization were assessed.</li> <li>• Vital signs were assessed before, during, and after daily activities.</li> <li>• She was assisted to manage her activities of daily living.</li> <li>• The pain was managed before the activity.</li> <li>• Food intake was monitored to supply enough energy, and the collaboration with the dietician was established.</li> <li>• Her sleep patterns were followed and sleep time was recorded.</li> <li>• Frequently used objects for energy conservation were kept within easily accessible location.</li> <li>• Environmental stimuli were limited, and she was given time to rest.</li> <li>• Planned care tasks were avoided during the rest times.</li> <li>• The patient was aided in mobilization using a wheelchair and as much walking as she could tolerate.</li> </ul>	It was observed that the pain relieved. Sleep pattern was restored. Adequate mobilization could not be achieved. Participation was increased to carry out daily living activities.

## RESULTS

In this case, it was seen that the use of FHPM for assessing the postoperative process of a pregnant patient with meningioma and the identifying her care needs helped collecting detailed data with a holistic approach, systematically assessing the patient's needs, and developing a qualified nursing process in accordance with the needs, and the expected outcomes were obtained (Tab. 3).

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■ cont. Tab. 3. The nursing process of the case prepared according to the FHPM

Functional Health Patterns	Nursing Diagnosis	Expected outcome	Implementation	Evaluation
Nutritional-metabolic pattern	<i>Nausea</i> (NANDA Domain 12: Comfort, Class 1: Physical comfort)	Alleviating nausea.	<ul style="list-style-type: none"> <li>• Risk for nausea was identified.</li> <li>• Episode of nausea was recorded.</li> <li>• Contributing causative factors were determined and eliminated.</li> <li>• Spicy, fatty and highly salty foods were avoided.</li> <li>• Frequent, small meals and low-fat diet were provided.</li> <li>• Fluid intake was provided.</li> <li>• Electrolytes were monitored.</li> <li>• The patient prophylactically was medicated with antiemetics as ordered.</li> <li>• Pain was reduced using ordered analgesic agents.</li> <li>• The patient and family were trained on the management of nausea.</li> </ul>	Nausea was observed to reduce.
	<i>Imbalanced nutrition: Less than body requirements</i> (NANDA Domain 2: Nutrition, Class 1: food intake)	Providing adequate and balanced nutrition.	<ul style="list-style-type: none"> <li>• A nutrition screen was conducted within 24 hours of admission.</li> <li>• The importance of rescreening and monitoring oral intake in patient to help prevention of nutritional decline was recognized.</li> <li>• Difficulties in chewing and swallowing were evaluated.</li> <li>• The patient's ability to meet nutritional needs was identified.</li> <li>• The patient's weight was assessed daily.</li> <li>• Laboratory values were noted cautiously (Albumin, globulin, c-reactive protein, white blood cell count, blood glucose values etc.).</li> <li>• Oral cavity (gums, tongue, mucosa, teeth) was monitored daily.</li> <li>• Before the meals, antiemetics and analgesics were applied as prescribed.</li> <li>• The potential barriers to eating, such as ability and appetite, were assessed.</li> <li>• Oral nutritional supplements were recommended by the dietician.</li> <li>• To maintain adequate calorie intake, appetizers and supplementary nutrition were assessed in collaboration with the physician and dietician.</li> <li>• A nice and tranquil setting was created to have the meals.</li> <li>• During meals, the patient was positioned in a semi-sitting or upright posture to ease swallowing.</li> <li>• Prior to meals, invasive interventions were avoided.</li> </ul>	There was no change in weight or in the findings of the laboratory tests. She was ensured to eat a little amount of food each day without missing any meals and take complementary foods in between meals.
Elimination pattern	-	-	-	-
Activity-exercise pattern	<i>Physical impaired mobility</i> (NANDA Domain 4: Activity/rest, Class 2: Activity/exercise)	Ensuring activity and mobilization.	<ul style="list-style-type: none"> <li>• Her vital signs were assessed before and after activity and mobilization.</li> <li>• She was supported for mobilization.</li> <li>• Support from a physiotherapist was obtained.</li> <li>• Passive exercises were done while in bed.</li> <li>• She was sat down on the edge of the bed and on the chair.</li> <li>• She was mobilized with a wheelchair.</li> <li>• She was aided and encouraged to walk.</li> </ul>	After mobilization, her blood pressure was 120/60-135/80 mmHg, her pulse rate was 72-80/min, her respiratory rate was 16-20/min, and her body temperature was 36.7-37.2 °C. It was seen that she was able to take a few steps with help. Adequate mobilization of the patient could not be achieved.
	<i>Risk of ineffective cerebral tissue perfusion</i> (NANDA Domain 4: Activity/rest, Class 4: Cardiovascular/pulmonary responses)	Ensuring adequate blood flow to the cerebral arteries to preserve brain functions.	<ul style="list-style-type: none"> <li>• Her vital signs were monitored regularly (utmost attention was paid to hypotension)</li> <li>• The levels of PaCO<sub>2</sub>, SaO<sub>2</sub>, and hemoglobin were measured to determine tissue perfusion.</li> <li>• The patient's level of consciousness was measured with the Glasgow coma scale.</li> <li>• Pupils were assessed based on their size, shape, and symmetry.</li> <li>• The height of the bed head was adjusted between 30° and 45°.</li> <li>• Her headache was followed up.</li> <li>• Her muscular tonus and motor movement were monitored.</li> <li>• There were signs of dehydration (for the prevention of vasospasm).</li> <li>• The patient's fluid intake and output were followed up.</li> <li>• Environmental stimuli were minimized.</li> <li>• At the very least, a dim atmosphere was created at night.</li> <li>• The constipation was avoided.</li> <li>• Vasodilators, plasma expanders and anticonvulsants were administered based on the physician's request.</li> </ul>	<p>Her hemoglobin was maintained at low level for the possible risks causing cerebral tissue perfusion. The erythrocyte suspension was prepared for administration.</p> <p>PaCO: 37mmHg SaO<sub>2</sub>: 98% Hb: 8.1 g/dL Glasgow coma scale total score: 13 (E3, M6, V4) Her pupils were normoisochoric and had a light reflex.</p> <p>FIOF: +800ml.</p>

■ cont. Tab. 3. The nursing process of the case prepared according to the FHPM

Functional Health Patterns	Nursing Diagnosis	Expected outcome	Implementation	Evaluation
Sleep-rest pattern	-	-	-	-
Cognitive-perceptual pattern	Impaired verbal communication (NANDA Domain 5: Perception/Cognition, Class 5: Communication)	Ensuring verbal communication.	<ul style="list-style-type: none"> <li>• Patient was listened to carefully.</li> <li>• Comprehensive nursing assessment to determine the language spoken and cultural considerations was used.</li> <li>• Therapeutic communication techniques were used (speaking in a well-modulated voice, using simple communication, maintaining eye contact at the patient level, etc.)</li> <li>• Touch as appropriate was used.</li> <li>• All health care procedures were explained.</li> <li>• Presence was used (spending time with patient, allowing time for responses).</li> </ul>	It failed to establish an adequate verbal communication.
	Acute confusion (NANDA Domain 5: Perception/Cognition, Class 4: Cognition)	Raising awareness of the person, time and environment.	<ul style="list-style-type: none"> <li>• The patient's behavior and cognition was assessed systematically and continually throughout the day and night.</li> <li>• Possible physiological alterations were assessed (sepsis, hypoglycemia, hypoxia, hypotension, infection, fluid and electrolyte balance, etc.)</li> <li>• Prolonged insertion of urinary catheter was avoided.</li> <li>• Adequate nutritional and fluid intake were ensured.</li> <li>• Early mobilization was promoted.</li> <li>• Continuity of care was promoted.</li> <li>• Sensory exposures were modulated.</li> <li>• Reality orientation was provided by patient name.</li> <li>• Clock and calendar were provided.</li> <li>• Family to visit regularly and to bring familiar object from home was encouraged.</li> <li>• Gentle care communication was used.</li> <li>• Supportive nursing care was provided (meeting basic needs, ensuring adequate hydration, etc.)</li> </ul>	Her awareness of the person, time and environment was not raised.
Self-perception-self-concept pattern	-	-	-	-
Roles-relationships pattern	Interrupted breast feeding (NANDA Domain 2: Nutrition, Class 1: Food intake)	Ensuring that the baby was sufficiently fed.	<ul style="list-style-type: none"> <li>• The patient and her family were encouraged for expressing milk at regular intervals and the necessary materials were provided.</li> <li>• As the drugs transferred into breast milk, the expressed milk was disposed, and they were informed about its necessity.</li> <li>• They were informed about breast disorders.</li> <li>• Concerning the management of breast problems, they were informed about the importance of avoiding breast stimulation, applying an ice pack to the armpit, and wearing a breast supporter and an uplift bra.</li> <li>• The mother's motivation to breastfeed her baby was reinforced with the family's support.</li> <li>• They were instructed on how to prepare the baby formula in a bottle and deliver it to the newborn.</li> <li>• The significance of tracking the newborn's weight for nutritional assessment was underlined.</li> </ul>	<p>Breast milk was expressed to ensure the patient's comfort.</p> <p>There was no breast discomfort.</p> <p>The newborn was fed with baby formula in the neonatal intensive care unit.</p>
	Risk of inadequacy in parenting (NANDA Domain 7: Role relationship, Class 1: Caregiving roles)	Adequate and proper care for the newborn, as well as provision for his needs.	<ul style="list-style-type: none"> <li>• The family relationships were observed.</li> <li>• The concerns, feelings and problems of the parents were heard.</li> <li>• The parents were examined on their behaviors that demonstrated insufficient attachment toward the baby.</li> <li>• The parents were assisted in preparing for role changes.</li> <li>• The parents' knowledge of the baby's fundamental needs was assessed.</li> <li>• The family members were informed about the normal development of the baby.</li> <li>• The parents were referred to a public health nurse for assistance in assessing their home environment and counseling them with newborn care.</li> </ul>	The family was informed about the newborn care.
Coping-stress tolerance pattern	Ineffective coping of family (NANDA Domain 9: Coping/stress tolerance, Class 2: Coping)	Providing family support during treatment.	<ul style="list-style-type: none"> <li>• A trustworthy relationship was established with the family members.</li> <li>• The concerns, feelings and problems of the family were heard.</li> <li>• The questions brought by the family were answered.</li> <li>• The issue and the way of coping were discussed with the family.</li> <li>• The family was encouraged to focus on the positive aspects of the patient's condition and treatment process.</li> </ul>	The family support was provided during treatment. On occasion, however, the family appeared to have coping problems.

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■ cont. Tab. 3. The nursing process of the case prepared according to the FHPM

Functional Health Patterns	Nursing Diagnosis	Expected outcome	Implementation	Evaluation
Sexuality-reproductive pattern	-	-	-	-
Values-beliefs pattern	Interruption in the family process (NANDA Domain 7: Role relationships, Class 2: Family relationships)	Maintaining family support and routines.	<ul style="list-style-type: none"> <li>The family was promoted to express their feelings and concerns.</li> <li>The family was supported in participating in the patient's and baby's care, as well as planning care after discharge.</li> <li>The family members were told that they could visit the patient during the visit hours.</li> <li>The family was reminded of the significance of maintaining the practices that they had previously done in order to sustain the routine.</li> </ul>	The insufficient level of intra-family communication was found to be a substantial barrier to support and maintain routines.

### DISCUSSION

In this study, a pregnant patient that was diagnosed with atypical meningioma was assessed in the postoperative period according to FHPM, and her nursing process was established.

Brain tumors, that develop and stay constant in size during the pre-pregnancy period, may grow fast during pregnancy, posing a variety of risks to both the baby and mother [15]. The meningioma in the case grew rapidly during pregnancy.

Intracranial meningiomas are mostly benign and treated with monitoring or surgical resection [3]. As published in literature, the patient who had meningioma excision was discharged on the second postoperative day without requiring any further treatment.

The management and care of brain tumors require a multidisciplinary, holistic and individualized approach when the patient is pregnant [3,10,15,16]. Being an important member of the multidisciplinary team, the neuroscience nurse must guide and evaluate the quality of the care provided to patients with meningioma in order to enable them to take a holistic care and thus to meet all the basic human needs of these patients and their families [10]. Physician, dietician, and nurse collaborated to plan the patient's care in accordance with the nursing process.

The nursing process makes it possible to accomplish the primary purpose of nursing care, which is to promote individuals' health and enhance their quality of life [17]. The use of model to plan the nursing process guides the holistic consideration of the patients and their family, as well as the provision of continuous and qualified care in accordance with individual differences [18]. FHPM, a nursing model that assesses the cognitive, emotional and behavioral processes of the patient, comprehensively and holistically directs nursing care and contributes to the planning of the nursing process [19].

In this case, the diagnoses of pain, maintaining ineffective health, risk of injury and activity intolerance were examined in the area of health perception/ health management pattern. Meningiomas may cause symptoms related to the location of the tumor or adverse effects of its treatment. While headache and weakness in an arm or leg are the most common symptoms, seizures, personality changes, or visual problems may appear in the postoperative period [3,6,16]. Nurses should provide counseling to patients with brain tumors and their family about seizure prevention and precautions, highlight antiepileptic drug regimen adherence, monitor adverse effects of antiepi-

leptic drugs and support safety [16,20]. While the patient was suffering an epileptic seizure, safety precautions were put in place. She was observed for the side effects of antiepileptic drugs. The family was informed on the epileptic seizures and what to do during a seizure and how to regularly take antiepileptic drugs. Patients request to be informed about meningioma tumor, symptoms and management, diet and nutrition, exercise, complementary and alternative health care services, mental health, sexual or infertility, family, religious and spiritual counseling, adoption services, transportation assistance, and child care during the follow-up care [6]. The patient and her family were trained on areas in which they were lacking, particularly in the area of newborn care.

The area of nutritional-metabolic pattern included the diagnoses of nausea and nutrition less than body requirements. The most prevalent symptoms in patients with primary brain tumors are nausea and vomiting caused by increased intracranial pressure syndrome (ICP), as well as associated nutrition less than body requirements [18]. Even though intracranial pressure has decreased in the postoperative period, symptoms may persist as a result of the surgical trauma [20]. The complaints of our patient progressively subsided during the postoperative period.

The area of activity-exercise pattern included the diagnoses of impaired physical mobility and risk of ineffective cerebral tissue perfusion. Physical, emotional, cognitive, and social domains are significantly associated with daily living and health related quality of life in postoperative period of meningioma patients. The studies have reported that higher age, neurological deficit, pain, sleep disturbance, and fatigue were connected with health related quality-of-life impairments in patients in postoperative period of meningioma surgery, moreover, there was no significant correlation between time from surgery and health related quality-of-life impairments [5,21,22]. In parallel with the literature, we believe that the young age of our patient made it easier for her to return to activities of daily living.

After brain surgery, secondary brain damage manifesting with increased intracranial pressure, hypotension, reduced cerebral tissue perfusion, cerebral ischemia, and vasospasm may develop. Nursing interventions, such as endotracheal aspiration, oral care, bed bathing, and changes in head and body posture, all have a detrimental effect on cerebral tissue perfusion. With adequate treatment and nursing interventions, secondary brain damage can be

prevented [22,23]. The development of the patient's secondary brain damage was avoided through the employment of proper nursing interventions.

No problem was noticed in the patient's sleep and resting habits related to the area of sleep-rest pattern. It is believed that the decrease in intracranial pressure caused by tumor excision prevented the patient from developing sleep problems during the postoperative period.

In the area of cognitive-perceptual pattern, the diagnoses of impaired verbal communication and acute confusion were examined. Postoperatively, verbal deficits were pronounced related to tumor location of meningioma. Cultural, social, and scholarly backgrounds affect the baseline cognitive performance of the patients [5,24,25].

The area of roles-relationship pattern included the diagnoses of interrupted breastfeeding and the risk of inadequacy in parenting. Breastfeeding is an effective way to ensure that the mother-newborn interaction continues. The mother's inability to breastfeed her baby, her isolation from her baby, and her lack of communicating with her baby may all contribute to her feelings of inadequacy [26]. The patient, who was in the postpartum period, had problems and inadequacies in matters about her baby during the post-operative period. Her family was an important support source for her. The patient's physiological and psychological needs were met through nursing practices.

The area of coping-stress tolerance pattern included the diagnosis of the ineffective coping of family. Family members, who maintain care for the patient with a brain tumor, may suffer from many problems, such as fatigue, loss of appetite, urinary problems, and physiological problems, such as lack of sleep, cognitive problems, such as lack of attention, psychological problems, such as the desire to cry, nervous laughter, no desire to talk, the overdesire to talk, sense of distress, weakness, hopelessness, fear, anxiety and depression, as well as changes in personal care [27]. The patient's family had many of the changes and problems described in the literature. It was observed that these changes, along with a lack of sufficient communication within the family, had a detrimental effect on the family's coping mechanisms.

The area of values-beliefs pattern included the diagnoses of interruption in the family process. The family members of patient with brain tumor are identified the closet caregivers. They take the necessary responsibilities for the patient care and support the patient with a range of needs [28]. The changes are imposed by the meningioma on patients' and families' daily routine. They report high levels of stress and poor physical and emotional health [29]. It is clear that all of those involved in this context need the nurse's support and guidance. The nurse must be an educator for them [10]. The patient and her family members were informed postoperatively about the nature of disease, treatment, using drugs, home care and family process. By this way, the nurse alleviated their anxiety, offering reassurance and making their family life at home to be as comfortable as possible after discharge [29].



Holistic, evidence-based, and individualized nursing approaches are critical in caring for patients with brain

tumors, as they help to avoid possible complications and enhance the patient's quality of life.

## CONCLUSIONS

This was a case report of a pregnant patient with meningioma that used FHPM for assessing the postoperative process, which is rare in the clinical setting. Through this case report we would like to highlight relevance of using FHPM for assessing the pregnant patient with meningioma and planning the postoperative nursing process. It is thought that the model would be simple and effective to use in the hospital setting, hence enhancing patient care quality. It will guide and support the nurses who care for pregnant patients with meningioma.

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Manuscript received: 30.05.2023

Manuscript accepted: 03.10.2023