

NURSING PLANNING IN COMPLEX PEDIATRIC NEUROSURGERY PROCEDURES IN A REFERENCE SURGERY CENTER

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Surgical Centers are essential and extremely complex sectors in health institutions, where the teams that compose them must act together so that the main objectives are achieved: that is, the patients' surgeries happen in the best possible way, with the minimization of damages and welcoming patients and their families. The need for a multidisciplinary approach is intensified in surgeries with unique specificities, such as pediatric neurosurgeries, where problems are anticipated and interventions are performed before patients are harmed. The article is an experience report of the activities of the Nurse at the Surgical Center of a Large University Hospital in the interior of the state of São Paulo related to the planning and execution of pediatric neurosurgery procedures. The results include the description of direct and indirect care activities in nursing care planning, the nursing process, the main nursing diagnoses found in pediatric neurosurgery patients.

Keywords: Surgical nursing, Planning nursing, pediatric neurosurgery

INTRODUCTION

In a hospital, the surgical center is one of the most complex and hostile sectors for patients and their families, their access is limited to the local nursing team and the surgical teams that comprise it [1]. Therefore, it is an adverse sector, but very dynamic and that requires highly specialized professionals not only in the necessary care for patients, but in the exercise of administration and in the planning of human and material resources.

For these reasons, managerial activities must always bring teams closer to their ultimate goal: the success of the proposed procedure, ensuring the safety of the patient and the team involved [1, 2].

In Brazil, surgical centers, regardless of the institution they belong to or the system that finances them (public or private), are administered by Registered Nurses (RN), who are responsible not only for the dimensioning of the nursing team, but also for the purchase, storage and distribution of

equipment, surgical instruments, inputs and consumables [1,3]. Medical activities are managed by a clinical director, usually a surgeon or an anesthetist. The RN's participate in continuous training and are totally dedicated to the care and safety of the patient globally, that is, the professional works on several fronts (direct, indirect care and managerial activities), but all these activities have a single objective [1,2].

And in order to achieve this goal, strategies are developed according to professional guidelines, council resolutions, government regulatory agency resolutions and practices based on scientific evidence [2,3].

In view of this practice, surgical procedures with unique specificities, such as pediatric neurosurgical procedures, require specific skills from RN's, as in addition to the care of the neurosurgical patient, we also have the particularity of child care, the welcoming of the family and the high technology involved in the process. Knowing all the surgical possibilities, the most requested materials, instruments and



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supplies is essential. Contact with the neurosurgeon and anesthesiologist before the procedure is important, because if there is any clinical finding in the child that requires differentiated care, the nurse needs to be prepared for the adversities he will encounter during the process, thus being able to anticipate the problems before they cause permanent damage to the patient.

Therefore, this study aims to describe the experience of RN's in the operating room of a large university hospital in the planning of nursing care in pediatric neurosurgeries.

METHODS

This article is an experience report, describing the role of nurses in the surgical center in planning pediatric neurosurgery procedures carried out in 2020. The study was carried out in a large public university hospital in the state of São Paulo, where the professional's direct and indirect care activities are described, demonstrated and applied according to the Nursing Process, the World Health Organization's Safe Surgery Protocol and institutional protocols, which are corroborated with the objective to ensure patient care and safety.

RESULTS AND DISCUSSION

Surgical Incidence

In the atypical year of 2020, the pediatric neurosurgery team at the Hospital das Clínicas in Ribeirão Preto performed few procedures in relation to previous years, this was due to the pandemic by the new coronavirus, procedures that were not classified as emergency, urgency or not postponable surgery were suspended due to the high demand received by the institution. Table 1 shows the procedures were carried out during the year.

Table 1: Total procedures performed by pediatric neurosurgery in HCFMRP-USP in 2020

PROCEDURE	AMOUNT
Breakdown or fenestrations	6
Cranioplasties	2
Craniotomy	3
Craniotomy for abscess drainage	2
Craniotomy for tumor resection	15
Endoscopic septostomy	2
External ventricular derivation	23
Hemispherotomy	2
Peritoneal ventricular derivation	23
Resection of hypophysial tumors	10
Surgical treatment others disraphisms	1
Surgical treatment for craniosinostosis	6
Surgical treatment for epilepsy	11
Surgical treatment meningo-mielocoele	6
Third endoscopic ventriculostomy	6
Trepanation for drainage of hygromas	2
Trepanation for pic installation	1
TOTAL	121

The division of activities of the RN

In hospitals, activities are divided between direct assistance (stage in which the nurse is directly assisting the patient in the inpatient or outpatient sectors) and indirect assistance, which in turn is subdivided into: educational aspects (research and training conducted with the nursing team, multiprofessional teams, communities, family members and patients) [4] and managerial aspects (nurse managers, technicians, managers and service directors) [1, 2, 3].

Usually these steps happen concurrently, but regardless of the main assignment, all the acts and steps that these professionals will always perform aim to guarantee the care that this patient will receive during the entire process [1, 3].

For a surgical act, all aspects of care are communicated. While the neurosurgeon starts planning the procedure, evaluating the most appropriate technique, requesting imaging and laboratory tests [5] and meeting with his team to simulate all the steps, even with the addition of three-dimensional printed models [6, 7, 8].

The RN also starts planning, the first steps are focused on educational and managerial aspects, this process is individualized and aims to make the surgery happen safely and without complications not only for the patient, this includes the teams that will be involved in the process: surgeons, anesthesiologists, nursing staff, support sector teams and even the teams that will receive the patient in the postoperative period [1, 3, 6].

Indirect Assistance to the surgical act

Indirect assistance in a surgical center begins with making the map and choosing the operating room, especially in institutions that do not have rooms dedicated to the disciplines. The purchase, testing and distribution of materials, inputs, instruments and special materials also encompass the RN's duties [4], that is, for the management of the care that the patient will receive in the surgical act, the professional makes use of strategies and methods of administration, both bureaucratic and assistance, and in order for this act to guarantee the desired final effect, the professional is guided by the scientific basis, leadership and empathy [1,3,9].

There is also the dimensioning of the nursing team, which is of paramount importance so that all the needs of the procedure are met, that is, a room circulator, surgical scrubber, an anesthesia circulator, the nursing professionals

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who work in the reception rooms and post-anesthetic recovery room. In addition to these professionals, an exclusive RN remains for the post-anesthetic recovery room and another for the operating rooms [10,11].

Recalling that, in addition, there is all the functioning of the sectors attached to the operating room that directly influence all stages of the surgical procedure, (therefore, they must work in agreement, they are: Materials and Sterilization Center, Inpatient Unit (wards) Pediatric Intensive Care Center (ICU), Internal Logistics Service, Clinical Analysis Laboratories, Blood Bank, Pharmacy, Hotel Sector and Clinical Engineering [11,12].

In view of the above, it is concluded that the indirect care provided to patients in the room is the result of several small cares by the teams that complement each other with a single objective [11,13].

Direct Assistance to the surgical act

In the aspects of direct assistance, the ideal is that a preoperative consultation is carried out, so that the nurse can, in addition to welcoming the patient and his family [7, 14], define the main care needs and the necessary interventions for each patient [14].

For this, it will define the nursing diagnoses, which, unlike medical diagnoses, are defined by the individual's clinical responses to real or potential health problems, and then will outline the strategies so that the patient's experience is as favorable as possible. In addition, it will be an excellent opportunity to build a bond of trust with the patient's family, thus improving the whole process [1, 15].

If the patient is not hospitalized and this visit is not possible, it is essential that the RN receives the patient in the reception room and makes the consultation, even if briefly, provide family members with all possible information about the peri and post-operative, thus transmitting tranquility, confidence and knowledge, which will improve the bond [1,15,16].

An important point to remember is that, even with all this information, for the patient and his family, the operating room is still a strange territory that can lead to insecurity in all perspectives, so this approach to the procedure contributes to decrease the stress and has shown better results in terms of acceptance in the postoperative period and the inclusion of family and patient in the therapeutic process [1,15,17].

With the information collected in the preoperative consultation, the next steps in the process are the planning

of all the steps that will take place in the operating room [13,17]:

- Reception of the patient in the operation room;
- Positioning for anesthetic induction;
 - The anesthesia process (the steps happen depending on the type of anesthesia defined by the anesthesiologist, but in general the steps are: multiparametric monitoring of the patient, induction of inhalation, positioning for definition of venous accesses, definition of airway, installation of a Bispectral Index (BIS) [18], bladder catheterization, installation of an arterial catheter for monitoring blood pressure and collection of tests, installation and maintenance of medications) [19];
- Surgical positioning (defined by the main surgeon) [20];
- Continuity of care in the perioperative period;
- The shift changes to the sector that will receive you;
- Anesthetic reversal;
- Safe positioning for transportation to the post-anesthetic recovery room or Pediatric ICU [1,12].

For this whole process (Figure 1), nurses are based on the safe surgery protocol defined by the World Health Organization in 2009 and also on the nursing process itself defined according to the nursing diagnoses found and, thus, create their own institutional protocols, which will define all the steps performed in each health service to direct care according to the objectives and missions of each institution [7,17].

The Nursing Process in Pediatric Neurosurgery

The Nursing Process is defined as a technical instrument or a model to direct nursing care [21], being composed of five distinct, but interconnected phases [7].

In Brazil, this process started to be demanded in all health institutions with public or private management after the publication of resolution 272 of the Federal Nursing Council (COFEN), in 2002 and revoked in 2009 by resolution 358 and thus to plan the systematization of perioperative nursing. The process steps are:

- 1) The identification of real or potential problems to the patient's health through a complete assessment (anamnesis and physical examination);
- 2) The definition of nursing diagnoses;

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World Health Organization		
SURGICAL SAFETY CHECKLIST (FIRST EDITION)		
Before induction of anaesthesia	Before skin incision	Before patient leaves operating room
SIGN IN <input type="checkbox"/> PATIENT HAS CONFIRMED • IDENTITY • SITE • PROCEDURE • CONSENT <input type="checkbox"/> SITE MARKED/NOT APPLICABLE <input type="checkbox"/> ANAESTHESIA SAFETY CHECK COMPLETED <input type="checkbox"/> PULSE OXIMETER ON PATIENT AND FUNCTIONING DOES PATIENT HAVE A: KNOWN ALLERGY? <input type="checkbox"/> NO <input type="checkbox"/> YES DIFFICULT AIRWAY/ASPIRATION RISK? <input type="checkbox"/> NO <input type="checkbox"/> YES, AND EQUIPMENT/ASSISTANCE AVAILABLE RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)? <input type="checkbox"/> NO <input type="checkbox"/> YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED	TIME OUT <input type="checkbox"/> CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE <input type="checkbox"/> SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM • PATIENT • SITE • PROCEDURE ANTICIPATED CRITICAL EVENTS <input type="checkbox"/> SURGEON REVIEWS: WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS? <input type="checkbox"/> ANAESTHESIA TEAM REVIEWS: ARE THERE ANY PATIENT-SPECIFIC CONCERNS? <input type="checkbox"/> NURSING TEAM REVIEWS: HAS STERILITY (INCLUDING INDICATOR RESULTS) BEEN CONFIRMED? ARE THERE EQUIPMENT ISSUES OR ANY CONCERNS? HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN WITHIN THE LAST 60 MINUTES? <input type="checkbox"/> YES <input type="checkbox"/> NOT APPLICABLE IS ESSENTIAL IMAGING DISPLAYED? <input type="checkbox"/> YES <input type="checkbox"/> NOT APPLICABLE	SIGN OUT NURSE VERBALLY CONFIRMS WITH THE TEAM: <input type="checkbox"/> THE NAME OF THE PROCEDURE RECORDED <input type="checkbox"/> THAT INSTRUMENT, SPONGE AND NEEDLE COUNTS ARE CORRECT (OR NOT APPLICABLE) <input type="checkbox"/> HOW THE SPECIMEN IS LABELLED (INCLUDING PATIENT NAME) <input type="checkbox"/> WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED <input type="checkbox"/> SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT

Figure 1: Checklist: Safe surgery campaign. WHO: Information before anesthetic induction, pause before skin incision and before the patient leaves the Operating Room. Available in: <https://www.who.int/patientsafety/topics/safe-surgery/checklist/en/>.

Table 2- Main Nursing Diagnoses found in Pediatric Neurosurgery. NANDA. 2020.

REAL DIAGNOSTICS
Impaired physical mobility
Impaired bed mobility
Impaired social interaction
Cold
Acute pain
Impaired spontaneous ventilation
Ineffective airway clearance
Impaired gastrointestinal mobility
Decreased peri-cranial adaptive capacity
POTENTIAL DIAGNOSES
Risk of infection
Aspiration risk
Risk of airway obstruction
Inefficient liquid volume risk
Risk of impaired skin integrity
Risk of electrolyte imbalance
Risk of vascular trauma
Risk of impaired tissue integrity
Risk of perioperative positioning injury
Risk of falling
Risk of chronic pain

3) Care planning;

4) The implementation of the planned strategy and

5) The assessment of evolution [7, 9].

Table 2 shows the main nursing diagnoses found in pediatric neurosurgery [15].

The diagnoses divided between:

Real diagnoses: they are related to the etiology of a problem found in the child, these can be of a physiological, psychological, environmental, sociocultural and spiritual nature.

Potential diagnoses: they are related to risk factors, that is, those that increase the patient's vulnerability in relation to the diagnosis found [15, 17, 22, 23].

After this stage, a care plan is carried out individually for all patients attended, the actions of the safe surgery protocol

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already guide this plan, as they are similar to the perioperative stages, since the interventions take place throughout the pre and perioperative period [17, 23].

In consideration of the evaluation of the patient's evolution, this will take place in the post-anesthetic recovery room or in the pediatric ICU, since the RN in the operating room passes on all the information necessary for the continuity of the therapeutic plan in the immediate postoperative period. Therefore, in surgical cases, the fifth stage of the nursing process is performed by the RN who receives this patient's duty [17, 23].

CONCLUSION

Given the above, it is concluded that for the success of a surgical procedure, whether of any size or medical specialty, but mainly in relation to highly complex surgeries such as pediatric neurosurgery procedures, we need not only the duties of surgeons and anesthetists. The surgical RN planning will determine whether all processes will occur safely for those involved, but especially for patients.

Multidisciplinary work is essential for the objectives of each specialty to be achieved, in addition, it allows everyone involved to share each step already carried out and plan the next steps together.

Nursing planning includes not only administrative and technical aspects, but also research and teaching, necessary not only in preparing teams for technological advances in equipment, supplies and techniques, but also in relation to new teaching methodologies, such as use of mannequins, three-dimensional models and realistic simulations in loco before a complex procedure.

The application of these techniques with the teams involved in the surgical process guarantees the anticipation of possible problems and early intervention, thus achieving safety levels and possibilities for changes in conduct that would not be possible without the correct planning.

Disclosure Statement

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