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Difficulties and risks during the introduction and positioning of the Nasoenteric Probe

ABSTRACT | The high prevalence of critically ill patients has increased the demand for nutritional therapy for health recovery. Enteral probes make it possible to provide nutrients and improve the nutritional status of patients with swallowing problems if the digestive system maintains its absorption capacity. The team that assists the patient in need of receiving nutritional therapy through an enteral tube must have knowledge about the passage of the tube and about the administration of diets, with training to prevent, recognize and treat possible complications. In this work, nurses involved in the passage of enteral tubes at the Irmandade de Misericórdia do Jahu Hospital were interviewed, recording opinions and problems faced during this procedure, in order to produce a technical manual to support the procedure performed by the hospital servers. The results pointed out some lack of standardization and some resistance in the exposition of doubts, even though the questionnaire. After knowledge of the respondents' responses, a standardized guidance manual on the introduction and placement of the enteral tube was developed, with the aim of contributing to the updating of the team and will allow for safer procedures.

Keywords: Nasogastric Tube Feeding; Enteral Nutrition; Technical Training.

RESUMEN | La alta prevalencia de pacientes críticos ha aumentado la demanda de terapia nutricional para la recuperación de la salud. Las sondas enterales permiten proporcionar nutrientes y mejorar el estado nutricional de los pacientes con problemas para tragar, siempre que el sistema digestivo mantenga su capacidad de absorción. El equipo que ayuda al paciente que necesita recibir terapia nutricional a través de un tubo enteral debe tener conocimiento sobre el paso del tubo y sobre la administración de dietas, con capacitación para prevenir, reconocer y tratar posibles complicaciones. En este trabajo, se entrevistó a enfermeras involucradas en el paso de tubos enterales en el Hospital Irmandade de Misericórdia do Jahu, registrando opiniones y problemas enfrentados durante este procedimiento, con el fin de producir un manual técnico para respaldar el procedimiento realizado por los servidores del hospital. Los resultados señalaron cierta falta de estandarización y cierta resistencia en la exposición de dudas, incluso a través del cuestionario. Después de conocer las respuestas de los encuestados, se desarrolló un manual de orientación estandarizado sobre la introducción y colocación del tubo enteral, con el objetivo de contribuir a la actualización del equipo y permitir procedimientos más seguros.

Palabras claves: Sonda Nasoenteral; Nutrición Enteral; Entrenamiento Técnico.

RESUMO | A alta prevalência de pacientes críticos tem aumentado a demanda pela terapia nutricional para recuperação da saúde. As sondas enterais possibilitam a oferta de nutrientes e a melhora do estado nutricional de pacientes com problemas de deglutição, desde que o sistema digestório mantenha sua capacidade de absorção. A equipe que assiste o paciente com necessidade de receber terapia nutricional através de sonda enteral deve ter conhecimento sobre a passagem da sonda e sobre a administração das dietas, com treinamento para prevenir, reconhecer e tratar as possíveis complicações. Neste trabalho foram entrevistados enfermeiros envolvidos na passagem de sonda enteral no Hospital Irmandade de Misericórdia do Jahu, registrando opiniões e problemas enfrentados durante esse procedimento, com o intuito de produzir a seguir um manual técnico para oferecer suporte ao procedimento realizado pelos servidores do hospital. Os resultados apontaram algumas carências de padronizações e certa resistência na exposição de dúvidas, mesmo por meio do questionário. Após o conhecimento sobre as respostas dos entrevistados, elaborou-se um manual de orientação padronizado sobre a introdução e o posicionamento da sonda enteral, com o objetivo de contribuir com a atualização da equipe e permitirá realização de procedimentos mais seguros.

Palavras-chaves: Sonda Nasoenteral; Nutrição Enteral; Treinamento Técnico.

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INTRODUCTION

Feeding is a voluntary and conscious act that depends on the individual's willingness to choose food for consumption. Food is related to eating practices that involve decisions regarding quantity, types of food, the way they are purchased, preserved and prepared and the times, places and companies⁽¹⁾.

Nutrition is an involuntary act, a stage over which the individual has no control. It starts when the food is brought to the mouth. From that moment on,

the digestive system comes into action, that is, the mouth, stomach, intestine and other organs of this system begin to work in processes ranging from the grinding of food to the absorption of nutrients⁽²⁾.

With the aging and sickness of the population, a large number of critical patients develop swallowing problems and need nutritional assistance (AN) by means of tubes that transport the food to the digestive system, without needing the natural feeding process, through the therapeutic offer of proteins, energy, minerals, vitamins and water suitable

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for patients, but maintaining the individual's nutrition, as long as appropriate care is adopted, being used more frequently in hospitals^(3,4).

The nasoenteric probe refers to the type of probe made of silicone or polyurethane (ex: Dobb-hoff probe), placed through the nose, which can be in a gastric or transpyloric position. It can be positioned in the stomach, duodenum, or jejunum, intestinal being the most used to reduce the risk of vomiting and aspiration, in physical restraint or mechanical ventilation, coma and depressing swallowing reflex. The definitive pathways - esophagostomy, gastrotomy and jejunostomy - are indicated for long-term feeding, for a period of more than six weeks⁽⁵⁾.

The concern to feed patients unable to eat has been around since antiquity. To make the first nasoenteric tubes, rubber and polyethylene and, more recently, polyurethane and silicone were used, so that over the years, more comfortable food tubes for patients were manufactured.

In the seventies, Liffmann & Randall (1978) and Dobbie & Hoffmeister (1998) built probes of fine caliber, equipped with a distal warhead that allowed their positioning beyond the pylorus and allowed the administration of a more comfortable and safe diet, mainly for elderly patients, bedridden and with reduced reflexes. These probes are known as Dobb-hoff probes, which today are made of polyurethane and silicone, materials that do not undergo physical changes in the presence of acidic pH, retain their flexibility and durability and do not irritate the digestive mucosa. Because they are of a fine caliber, they allow partial closure of the cardia and pylorus, thus reducing the risks of adverse events, such as: pulmonary aspiration, nasopharyngeal irritation, and gastroesophageal reflux. Proper procedures, care in the correct positioning of the probe and administration of the diet are vitally important to avoid complica-



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tions and ensure that the patient receives the benefits of therapy⁽⁶⁾.

Indications for enteral nutrition are classified according to the position of the tubes, with nasogastric tubes being indicated in patients with functioning gastrointestinal tract, impossibility of oral feeding, need for continuous drip due to malabsorption syndrome, anorexia, and hypermetabolic state. Nasoenteral tubes should be used in patients at high risk of aspiration, delayed gastric emptying, severe gastroesophageal reflux, vomiting, or surgical involvement of the esophagus or stomach⁽⁷⁾.

Probes with gastric positioning should be prioritized, as they allow easier introduction and maintenance, with greater tolerance to diet overload, better digestion and greater effectiveness of the natural barrier⁽⁷⁾. As for the contraindications, it is cited as an example the occurrence of complete intestinal obstruction, or indication of absolute rest of the digestive tract⁽⁶⁾. Authors⁽⁸⁾ divide the contraindications of enteral therapy into absolute (complete failure of the intestinal tract, high-output digestive fistula (> 500ml), metabolic collapse, hemodynamic instability, complete inability to absorb, intestinal obstruction, paralytic ileus and gastric obstruction) and relative (acute pancreatitis) recent onset, high reflux rate, uncontrollable vomiting, persistent diarrhea). The authors also present as contraindications: psychomotor agitation, severe coagulopathy, facial trauma with fractures, patient refusal, nasal and / or esophageal obstruction.

Despite the advantages and benefits, enteral nutrition is not without complications, and it is necessary for health professionals to recognize them promptly. The most common are: diarrhea, nausea, vomiting, flatulence, gastric fullness, colic, dumping syndrome, increased gastric waste, aspiration pneumonia, tube malposition, tube obstruction, nasopharyngeal irritation, hyperglycemia, dehydration, uremia,

constipation, nasal injury, sinusopathy and hydroelectrolytic imbalance^(7,9,10).

To avoid adverse events arising from the probe's poor positioning, there are different tests used to confirm the location of the enteral tube in the stomach, which can be performed in a conventional manner or using equipment. The auscultation test in the xiphoid appendix region is widely used by professionals. The positioning of the probe tip in the stomach must be done according to the xiphoid-nose-ear distance, while the duodenal positioning requires an additional 20 cm of probe inserted⁽¹¹⁾.

During the introduction of the tube, anesthetic in the form of a gel is generally used to facilitate the introduction, in order to facilitate its sliding through the nostril. The anesthetic is passed around the probe at the time of introduction and not previously in the nostril, thus, the contact time is insufficient for local anesthesia, and there may be discomfort. To reduce this patient's discomfort and the risk of trauma when inserting tubes, alternatives have been proposed. Inhalation of lidocaine through nebulization, spray and intermittent breathing with positive pressure through nebulization through the mouth demonstrates a significant reduction in pain associated with the introduction of a nasogastric tube^(12,13).

Ideally, the guidewire should be left only until the X-ray is performed, and immediately afterwards the probe should be lubricated with 2 to 5 ml of water so that the guide can be removed. From the radiological confirmation of the positioning and the subsequent removal of the guide wire, the probe can now be used, provided that for a well-defined period⁽¹¹⁾.

After four weeks of using a nasoenteral tube, gastrostomy would be indicated. The team responsible for the patient must know this time limit, since the prolonged use of the probe can cause problems such as gastroesophageal reflux, nasal lesions, airway infections, etc⁽¹⁴⁾.

The Ministry of Health, through Ordinance No. 337 (Resolution No. 63 of 2000), made the function of each member of the multidisciplinary team responsible for the nutritional therapy of patients official. This ordinance was later complemented by Resolution No. 277 in 2003. The multidisciplinary team must be constituted, at least, by a qualified medical, pharmacist, nurse, and nutritionist, with specific training. It is suggested: to the Doctor, the indication and medical prescription of Enteral and Parenteral Nutritional Therapy, as well as accompanying the patients submitted to it; to the Nutritionist, the assessment of the patients' nutritional status, nutritional needs, both for enteral nutrition (EN) and parenteral nutrition (PN) and for the dietary prescription of Enteral Nutritional Therapy (TNE); to the Pharmacist, the competence to acquire, store and distribute, carefully, the industrialized NE, when these attributions, for technical and or operational reasons, are not the responsibility of the nutritionist, as well as participate in the quality assurance system; to the Nurse, the prescription, administration and attention of nursing care in TNE and NP administration, observing the recommendations of good practices of enteral and parenteral nutrition⁽¹⁵⁾.

The nurse assumes an important role within the health and multiprofessional enteral nutrition team, because, when developing activities related to diet administration and patient monitoring, the aspects related to this therapy, which are requirements of the quality area, must be in their domain. of the Nutrition Therapy Guidelines. Taking into account the attributions of the nursing professional in ENT, the main nursing care consists of: assessing gastric waste, monitoring the speed / time of infusion, positioning the patient for food, maintaining the diet at the clinic, oral and nasal hygiene, return of residue, when indicated, observe the conditions that indicate the suspension

of the diet and registration of the diet, among others^(8,10,16).

In this context, the purpose of this study was to ask nurses about the difficulties encountered in the passage and placement of nasoenteral tubes in the hospital, as well as about the adverse events related to the procedure for introducing these tubes.

The objective was to write through a questionnaire the difficulties encountered for the passage and placement of nasoenteral tubes in the hospital, as well as the adverse events related to the procedure for introducing these tubes. Based on this knowledge about problems faced, the work also aimed to develop a standardized manual on the introduction and positioning of the enteral tube.

METHODOLOGY

This is an observational, analytical and cross-sectional study in which the method used was the application of a questionnaire completed by nurses at the Irmandade de Misericórdia do Jahu hospital, Jaú / SP. Multiple choice tests were used with questions regarding the nurse's role during the process of introducing and positioning the enteral tube, seeking to understand the possible difficulties of this professional. Data were also collected on the adverse events caused by the procedures.

The study, therefore, had a quantitative approach, detailing information and describing the results in the form of percentages of answers to each question. Being developed from November 24, 2016 to November 24, 2017, at the Irmandade de Misericórdia do Jahu Hospital.

The study included 100 nurses who, during the study period, were part of a total of 125 hospital nurses, interviewed after documenting their agreement by the Informed Consent Form in accordance with prior approval by the Research Ethics Committee, following

Quadro 1 – Distribuição referente ao perfil demográfico dos enfermeiros entrevistados na Instituição Hospitalar Irmandade de Misericórdia de Jahu. Jahu, SP, Brasil, 2016-2017

Sexo	Percentual
Masculino	13,0
Feminino	87,0
Idade	
23 a 29	27,0
30 a 39	51,0
40 a 48	20,0
50 a 58	2,0
Tempo de Exercício da Profissão	
< 1 ano	3,0
1 a 9 anos	53,0
10 a 19 anos	26,0
20 a 25 anos	13,0
Não respondeu	5,0

Quadro 2 – Distribuição de acordo com o local de trabalho dos enfermeiros entrevistados na Instituição Hospitalar Irmandade de Misericórdia de Jahu. Jahu, SP, Brasil, 2016-2017

Sector de Trabalho	Percentual
Auditoria (administração)	2,0
1º Andar Clínico	1,0
2º Andar Cirúrgico	4,0
3º Andar Clínico	5,0
4º Andar Clínico	2,0
4º Andar Convênio	5,0
Central de materiais esterilizados	2,0
Comissão de infecção hospitalar	1,0
Centro Cirúrgico	6,0
Centro Obstétrico	1,0
Contas Médicas	1,0
Departamento de Enfermagem	3,0
Educação permanente	1,0
Enfermeiro folguista	2,0
Ambulatório de gestação de alto risco	1,0
Gerência de riscos	3,0
Hemodiálise	4,0
Internação	1,0
Maternidade	10,0
Pediatria infantil	5,0
Pronto socorro	18,0

Resolution 466/2012 of the National Health Council (CNS).

Specific questions were prepared for data collection with a questionnaire structured especially for this study.

Quantitative data were analyzed descriptively and presented in absolute numbers or frequency / percentage in tables identified based on the content of the responses.

RESULTS

For the analysis of the techniques and difficulties currently found within the hospital, considering skill, nurse training and adverse events caused by the placement of the enteral tube and infusion of diet through it, it was first necessary to know the professional profile of the interviewees, whose demographic characteristics and of work are described in Chart 1 and 2.

There was a predominance of females and the age group between 30 and 39 years, with time from one to nine years of professional practice, suggesting that the sample was composed of young professionals, but with sufficient experience for the study.

Most of the interviewees worked in the Emergency Room and in the adult Intensive Care Unit, critical sectors where emergencies, urgencies, intensive care and risky procedures are relatively common.

The questions related to the placement of the enteral tube and the infusion of diet through it are presented below.

The data show that most participants perform the nasoenteral tube passage with the assistance of the nursing technician, suggesting good integration among the team to perform the procedure. Most responses were that the nurse organizes the material. Few nurses use lidocaine as a lubricant introduced into the nostril, with the product only passing through the probe. The results show that the refusal of the procedure is not rare in the hospital. The results show

Pronto socorro infantil	4,0
Regulação interna	1,0
Unidade de terapia intensiva adulto	13,0
Unidade de terapia intensiva infantil	4,0

Quadro 3 – Principais doenças dos pacientes em uso de sonda enteral. Jaú, SP, Brasil, 2016-2017

Variáveis	Percentual
Acidente Vascular Cerebral	34
Doenças neurológicas degenerativas (Esclerose Lateral Amiotrófica (ELA), Esclerose múltipla, Alzheimer, Parkinson e outras)	18
Doenças do esôfago e cavidade oral (principalmente neoplasias)	10
Desnutrição	8
Demência	7
Dificuldade para deglutição	4
Pneumonia	5
Politrauma	2
Afasia	2
Astenia	1
Disfagia	1
Não responderam	8

Quadro 4 - Uso da marcação do fabricante ou de medidas feitas no momento da passagem da sonda para saber o quanto ela deve ser introduzida. Jaú, SP, Brasil, 2016-2017

Variáveis	Percentual
Sempre as duas marcações se encontram	18
Nem sempre as duas marcações se encontram	65
Nunca as duas marcações se encontram	3
Utiliza apenas a marcação do fabricante	9
Não responderam	5

Quadro 5: Respostas referentes a relatos de dor pelo paciente durante a passagem da sonda nasoenteral. Jaú, SP, Brasil, 2016-2017

Variáveis	Percentual
Sempre há relato de dor	1
Às vezes há relato de dor	68
Nunca há relato de dor	30
Não respondeu	1
Não responderam	5

that some professionals do not wait for the abdominal X-ray to release the diet.

The main diseases mentioned were neurological, but with a significant per-

centage of diseases of the esophagus and oral cavity and malnutrition.

Most respondents said that the manufacturer's marking and the one made

at the time of introducing the probe do not always overlap.

Most nurses reported that patients sometimes experience pain. Fourteen percent of the sample did not remove the guide after passing the probe. The reports of 84% of nurses were that sometimes the probe is wrapped around the patient's mouth during its passage. It is noteworthy that 11% of nurses answered that they do not always perform the test. More than 90% of respondents said that if the patient removes the probe, it is passed on as soon as possible. The team's concern for their patients was demonstrated by the fact that most nurses suggest the use of enteral tubes in some situations, avoiding the delay in the procedure. It was found that most respondents have already seen the need to perform the procedure by endoscopy. Almost half of the nurses reported that the indication for gastrostomy after using SNE depends on the patient's condition and medical conduct.

DISCUSSION

The standardization of procedures and evidence-based knowledge promote the advancement of the work performed by nursing in the recognition of unmet or inadequately met needs, in the programming and execution of interventions, in the evaluation of therapeutic results, in the reduction of errors and injuries, and, finally, in the record of the care provided⁽¹⁷⁾.

The results obtained in this work show that more than 30% of the professionals had complications during the passage of the tube, showing that these complications are part of the professional's routine during the procedure. It is essential to have knowledge of the techniques for introducing the probes and the methods for administering the diets, knowing the possible risks and complications⁽¹⁸⁾.

Nursing has a fundamental role in the passage of the nasoenteral tube, and the team is responsible for maintaining this

route, for administering the diet and for responding to complications and complications. The passage of the nasoenteral tube can be delegated to the nursing technician after the placement of the tube has been verified by the nurse⁽¹⁹⁾.

The results show that the majority of patients who needed the procedure did not refuse the passage of the nasoenteral tube, however 35% reported that they had undergone situations of refusal of the procedure. These data are relevant to confirm that the passage of the tube is well accepted by most patients, reflecting their confidence in the nurse who assists them. At the same time, it is noted that the passage of the probe is not fully accepted and that there are people who refuse to receive diet and medications through this route. Future work can better explore this finding, seeking to know if the refusals occur due to discomfort, fear of feeling pain or difficulty breathing, or even fear of losing autonomy and control of food intake. In a study, interviewing patients using probes, the authors showed that patients, before receiving these devices, were afraid of losing the oral route as a route of food and ideas of risk of death related to their use⁽²⁰⁾.

Study⁽²¹⁾ reports that the Association of Critical - Care Nurse (ACCN) recommends the radiography and the reading of the film by a radiologist to confirm the location of the enteral tube. Most cases of bronchoaspiration are due to the placement of the enteral tube in the right main bronchus, especially in sedated and elderly patients with cognitive impairment and decreased reflexes⁽²²⁾. A case of right hydropneumothorax secondary to the introduction of intrapulmonary enteral feeding was reported by a study⁽²³⁾, making it clear that this could have been prevented by a simple radiograph⁽²⁴⁾.

Also worrying is the fact that 1% of the sample reports that they never wait for this exam. The explanation was that the doctor sends the patient to another sector after the passage of the probe, with sectors where the radiological check is not adopted by medical decision. Even so, this conduct is worrying, after all, the procedure must be

checked in the sector where it is performed, without referring the patient to another sector with pending issues or the risk of the probe being in the airway, which can have serious consequences for patients⁽²¹⁾.

Cases of esophageal and oral lesions, such as neoplasms, may have contributed to the greater number of epistaxis reported by the interviewees in questions about complications during the procedure. In a study carried out in intensive care, the authors found increased gastric waste and diarrhea as the most common complications⁽²⁵⁾.

Almost 70% of nurses reported that patients sometimes feel pain. This question may vary according to the team interviewed, since in intensive care units most patients are under sedation and could not report pain. Even so, most of the interviewees noticed that the patients had pain, showing that this data caught the attention of the team and that this is a concern of the nurses of the institution. Perhaps some change in technique or improvement in explanations to the patient could reduce this complication, such as the nasal introduction of lidocaine, mentioned earlier.

As in the sample evaluated, a previous study based on interviews with patients using a nasoenteral tube also showed a large number of refusals, but which were reported by people who used a tube in the hospital and did not want to use it at home⁽²⁰⁾.

Most nurses replied that they remove the guidewire after passing the probe. This data is relevant, because if the guide wire is left for a long time it can adhere to the probe and this can make it difficult to remove it when the probe needs to be used.

The reports of 82% of nurses that sometimes the tube is wrapped around the patient's mouth during their passage should alert the institution to improve the nurses' conditions for carrying out the procedure, both through training programs and through reevaluations of techniques and materials used. Additionally, the standard manual produced by this study can also be used.

Another question with worrying answers was about the test of auscultation

of the air injected by the syringe after the passage of the probe. It is worrying that 9% of nurses answer that they sometimes do the test and that 2% never do it. The lack of an immediate test could leave the patient with the probe in the airway for longer, until the control X-ray was performed. If at the time of the introduction of the diet the X-ray is also not performed, as answered by some interviewees, this combination of the lack of checked tests can cause infusion of diet into the airway, with catastrophic consequences. This should be seen as an alert to the institution to avoid future problems, as the check must be done in the same sector where the probe was passed^(21,26).

More than 90% of respondents said that if the patient removes the probe, it is passed on as soon as possible, and only 4% of them wait a few hours to pass it on, suggesting that the team seeks to prevent the patient from being without the probe for too long time, which would leave you without food and some medicines. On the other hand, the repetition of procedures increases complications such as epistaxis and vomiting, reported by a large part of the sample. The team's concern for patients is again indicated by the fact that 84% of nurses suggest the use of enteral tubes in some situations.

Another relevant point is that 60% of the investigated nurses reported that they had already witnessed the need to perform the procedure by endoscopy, showing that the institution has cases in which the passage of the tube is difficult and needs its own protocol to maintain the integration of the team with the patient. endoscopy sector, preventing patients from going too long without receiving diet and medication due to problems with the passage of the tube.

Most nurses reported that the indication for gastrostomy depends on medical conduct. This issue should be discussed among all health care professionals, but it could be better addressed at the institution, as the professionals involved can help other team members to remember to indicate the procedure. Every team should

receive this information and avoid prolonged use of the probe, which brings several problems to the patient.

Nursing faces constant challenges and their care must be part of the routine of assisting the user of a nasoenteral tube, but each day new technologies and instruments emerge, making the team's actions more complex and requiring nurses to respond satisfactorily to various competencies. The strategies to promote care to the user of enteral nutrition therapy in the hospital context seek to teach and disseminate the necessary care for this therapy, preparing the team to minimize the risks of complications and iatrogenies(18).

In this work, it was possible to notice some resistance in the exposition of doubts, even through the questionnaire, which can put the nurse in a situation of isolation, possibly hindering the development

of his work in an effective and integrated way to the entire team involved in enteral nutrition. It is hoped that the work has favored the search for the clarification of all doubts regarding the topic addressed.

In general, the answers were especially useful to show the strengths of the interviewed team, such as the concern about not leaving the patient without care. The results also suggested that the degree of complexity of the assisted population has been high, increasing the number of complications, difficulties, and the need for additional procedures, such as the passage of a probe through endoscopy. The doubts about certain details served to guide future interventions that can improve the performance of the entire team at the institution, through the preparation of the Operational Manual on the passage of the Enteral Probe to the Irmandade de Misericórdia do Jahu Hospital.

CONCLUSION

In view of the aspects observed in the applied questionnaire, it is concluded that the nursing team is involved in enteral nutrition therapy, actively participating in the procedure for the passage, fixation and maintenance of the enteral tube and also the infusion of diet through it. Some risk points were identified, such as the report of some professionals about the failure to properly check the positioning of the probe after its introduction.

According to the results, a standardization manual was prepared on the positioning technique of the enteral tube, with the objective of contributing to the continuing education and technical alignment of the hospital team. 🐦

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