PHARYNGOCUTANEOUS FISTULAE AFTER TOTAL LARYNGECTOMY: A SYSTEMATIC REVIEW

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Nursing care to patients after total laryngectomy should be based on scientific knowledge. Evidence-based practice is a type of approach that stimulates the use of research results in clinical practice. This study presents a systematic review that aimed to identify the main treatments for pharyngocutaneous fistulae after total laryngectomy. Articles were selected from five databases: Pubmed, Cinahl, Biomednet Research Tools, Cochrane Library and Lilacs. The review sample consisted of 37 articles. After analyzing the articles included in the review, results showed that conservative treatment is commonly used for pharyngocutaneous fistulae, recommending intensive hygiene and wound treatment. The use of research results in clinical practice will grant greater consistency to nurses' actions in care for patients with pharyngocutaneous fistulae.

DESCRIPTORS: laryngeal neoplasms; laryngectomy; postoperative complications

FÍSTULA FARINGOCUTÁNEA POSTERIOR A LA LARINGECTOMÍA TOTAL: REVISIÓN SISTEMÁTICA

La atención de enfermería brindada al paciente con laringotomía total debe estar basada en el conocimiento científico. La práctica basada en evidencias es un enfoque que incentiva la utilización de resultados de investigaciones en la práctica clínica. Esta investigación es una revisión sistémica, con el objetivo de identificar los principales tratamientos de la fístula faríngeo-cutánea posterior a la laringotomía total. Para la selección de los artículos, se utilizaron cinco bases de datos: Pubmed, Cinahl, Biomednet Research Tools, Cochrane Library y Lilacs. La muestra fue conformada por 37 artículos. Posterior al análisis de los artículos incluidos en esta revisión, los resultados evidenciaron que el tratamiento para la fístula faringo-cutánea es de tipo conservador, el cual es basado en cuidados intensos de higiene y tratamiento de la herida. La utilización de estos resultados en la práctica clínica brindará mayor consistencia al trabajo de la enfermera para el cuidado del paciente con fístula faringo-cutánea.

DESCRIPTORES: neoplasias laríngeas; laringectomía; complicaciones postoperatorias

FÍSTULA FARINGOCUTÂNEA APÓS LARINGECTOMIA TOTAL: REVISÃO SISTEMÁTICA

A assistência de enfermagem prestada ao paciente laringectomizado total deve ser baseada em conhecimento científico. A prática baseada em evidências é abordagem que incentiva a utilização de resultados de pesquisas na prática clínica. A presente pesquisa é uma revisão sistemática que teve por objetivo identificar os principais tratamentos da fístula faringocutânea, após laringectomia total. Para a seleção dos artigos utilizou-se cinco bases de dados Pubmed, Cinahl, Biomednet Research Tools, Cochrane Library e Lilacs. A amostra desta revisão foi constituída de 37 artigos. Após análise dos artigos incluídos na revisão, os resultados evidenciaram que o tratamento para a fístula faringocutânea é o conservador, o qual preconiza cuidados higiênicos intensivos e o tratamento da ferida. A utilização de resultados de pesquisas na prática clínica trará maior consistência à atuação da enfermeira no cuidado ao portador de fístula faringocutânea.

DESCRITORES: neoplasias laríngeas; laringectomia; complicações pós-operatórias

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INTRODUCTION

Nursing healthcare for oncological patients with head or neck cancer includes complex knowledge about the best types of care to be provided in a multidisciplinary approach. Since nursing is part of the multidisciplinary team, it has a very important role in healthcare for all patients submitted to cancer treatment, especially those with head and neck cancers, who demand comprehensive and specialized nursing care during the diagnosis, treatment and rehabilitation, with a view to effective results.

Regarding the epidemiology of larynx cancer, its incidence is higher in men than in women, predominantly affecting the age range between 50 and 70 years old. For 2005, it is estimated that there will be 160,000 new cases in males and 22,000 in females, with an estimated number of 89,000 deaths among men and 12,000 among women[1].

The main forms of treatment for head and neck cancer include surgery and radiotherapy. Initially, these are used aiming for cure. However, in some circumstances, they serve as a palliative treatment, and may be associated to other therapies or not, depending on the type of tumor, extension, clinical condition and patient preferences. The correct diagnosis and staging are essential in the decision making process[2].

During the 1990's, surgical innovations focused on preserving organic functions and effective means for organ reconstruction. These innovations favored the total recession of malignant larynx tumors, with the partial loss of the organ by subtotal laryngectomy, whose goal is to preserve the function, or at least one of three functions: respiratory, phonatory and sphincterial[3].

Total laryngectomy consists of the complete resection of the cartilagenous larynx, the hyoid bone and the infra-hyoid muscles connected to the larynx, with the possibility of removing the pre-epiglottic space when there is an injury. This surgical procedure is always associated to bilateral anterior selective cervical dissections, in levels II, III and IV, also named interjugular dissections, which characterize the total laringectomy[3].

Among postoperative complications deriving from total laryngectomy, hemorrhages, bruises, respiratory obstructions, infection of the surgical wound and pharyngocutaneous fistulae are noteworthy[3].

The fistula "is an abnormal passageway between two organs, or between an organ and the outer part of the body". Fistulae are caused by inadequate scarring or complications of some diseases, such as larynx cancer, which prevent adequate union between tissue layers, facilitating the formation of the fistula pathway[4]. When postoperative complications of total laryngectomy are analyzed in literature, pharyngocutaneous fistula is the most common occurrence. It has significantly increased morbidity and mortality rates among patients, which shows the importance of treating those who have undergone total laryngectomy[5-6].

One activity area for perioperative nurses regards the early detection of postoperative complications, with the implementation of interventions aimed at minimizing the effects of these complications, and to shorten the surgical patient's recovery time. Evidence-based practice provides decision-making based on scientific knowledge.

In view of the above, this systematic review was elaborated. This research method is an EBP resource, aimed at collecting and analyzing the scientific knowledge produced about the investigated theme. Systematic reviews identify finished studies that address a research topic and evaluate the results of these studies to reach conclusions about a body of knowledge. In trying to contribute to healthcare for surgical patients, aiming at minimizing the effects of pharyngocutaneous fistulae complications, this review was developed to identify the main treatments for pharyngocutaneous fistulae after total laryngectomy.

METHOD

Systematic reviews enable researchers to evaluate the evidence available in literature, particularly in the clinical practice area, since the knowledge acquired in this investigation will contribute to the treatment and implementation of interventions with a view to better healthcare. The systematic review is "the application of scientific strategies that limit the biases for a systematic gathering, critical evaluation and synthesis of all the relevant studies about a specific topic"[7].

Nurses have developed studies using the systematic review as their method of choice, whose goal is to gather scientific knowledge to support the interventions that respond to patients' problems in clinical practice.

The elaboration process of the systematic review covers the following stages: (a) formulation of a research question; (b) search in literature to

identify articles about the chosen theme; (c) selection of studies to be included in the review; (d) data collection; (e) analysis and synthesis of the data, employing statistical methods such as meta-analysis or qualitative methods; and (f) presentation of the results. There are strict guidelines established for each stage, as well as the previous elaboration of a transparent protocol (a research project) to eliminate biases and guarantee scientific rigor[8].

METHODOLOGICAL PROCEDURE

The guiding question to construct the present systematic review was "What are the main treatments available for the patient with a pharyngocutaneous fistula after total laryngectomy".

In order to reach the proposed objective, a systematic review was carried out, covering all studies about treating pharyngocutaneous fistulae after total laryngectomy published in the period from 1992 to 2002, because the authors understand that this is a relevant topic of interest to Nursing, about which research remains to be done.

The sample of the systematic review included the studies that met the inclusion criteria. The studies were selected according to their relevance to the theme, according to four specific criteria: study design, participants, treatment and results. Random methods were not used.

In this systematic review, articles meeting the following criteria were included:

- Type of study: all studies dealing with the effectiveness of the treatment of pharyngocutaneous fistulae after total laryngectomy, due to larynx scaly cell carcinoma with T3/T4 staging;
- Type of participants: Participants with larynx scaly cell carcinoma, submitted to total laryngectomy followed or not followed by cervical dissection, presenting pharyngocutaneous fistulae in the postoperative period;
- Type of treatment: Articles dealing with conservative and surgical treatment
- Type of outcome: the outcomes related to the patient, such as risk factors related to the origin of the pharyngocutaneous fistulae after total laryngectomy; type of treatment used to correct the pharyngocutaneous fistulae after total laryngectomy; length of hospital stay for the patient after total laryngectomy with pharyngocutaneous fistulae;
- Complications: studies addressing the complications of total laryngectomy.

For the search and critical evaluation of the studies included in the systematic review, a number of stages were followed

Stage 1: Electronic search

In order to select studies from the sample, the following databases were searched: Pubmed, Cinahl, Biomednet Research Tools, Cochrane Library e Lilacs, without restrictions to language or place of publication. The following keywords were used: "Larynx cancer or total laryngectomy", or "larynx fistulae"; or "pharyngocutaneous fistula"; or "complication; or "treatment or support; or "conservative"; and/or "surgical".

Stage 2: Contact with researchers

Contacts were established with specialists and authors of the studies included in the review, by e-mail, requesting a list of references identified in their studies and in others, either published recently or not. Some months later, the e-mails were answered, praising the research, even though no contribution was sent for the investigation.

Stage 3: Manual search

For the manual search, four specific journals, available in the Central Library of the University of São Paulo –Ribeirão Preto Campus (SP) were selected: Ann Otol Rhinol Laryngol; The Journal of Otolaryngology; Arch Ololaryngol Head Neck Surgery and Laryngoscope. The option for a manual search is justified by the importance of the journals for the area, which were not indexed in the databases in the corresponding period, and also because some of the articles were not available online.

Stage 4: Selection of studies

A standard form was used to verify if each study found met the inclusion criteria of the review, such as: methodological characteristics, participants, diagnosis, treatment and results. It is important to highlight that two independent reviewers analyzed the identified studies in a "funneling process", accessing titles, abstracts and full articles whenever necessary.

Stage 5: Data collection

The data were collected independently by two reviewers. These data were checked for agreement. The discordant results were solved by consensus. The data about study population, treatment and outcomes were collected by both reviewers, using an instrument to evaluate the articles, which was built by the researchers and was subject to face and content validation.

After collecting data from the studies included in the systematic review, a descriptive analysis was performed, allowing the evaluation of the data from the studies included in this systematic review about the quantitative distribution of an event in the population.

RESULTS

Studies included in the systematic review

Thirty-five articles were obtained through the bibliographic commuting service, and three through manual searching, totaling a sample of 38 articles. One of those was excluded because it did not deal with human beings (rabbits).

Characterization of the studies included in the systematic review

Of the 37 (100%) studies analyzed, 25 (67.6%) were retrospective studies, seven (18.9%) were case studies, three (8.1%) were prospective, one (2.7%) was a cohort study and one (2.7%) a literature review.

Table 1 shows the general characteristics of the study sample in the 37 articles reviewed in this study.

Table 1 – General characteristics of the sample

Characteristic / number	Number of articles	(%)
Sample - 2716	37	100
Most frequent age range 28-86 years old	29	78.3
Predominant gender - male 2473	37	100
Tumor characeristics		
Location - larynx tumor	5	13.5
TNM classification	5	13.5
Treatment		
Conservative	12	33
Surgical	15	40
Conservative / Surgical	10	27
Theme categories		
Treatment of pharyngocutaneous fistula	17	46
Risk factors for pharyngocutaneous fistula	10	27
Complications after laryngectomy	10	27

Study samples included 2716 individuals, with the most frequent age range from 28 to 86 years old in 29 (78.3%) articles analyzed. Males were predominant with 2473 (91%) individuals, and 243 (9%) were females.

The initial treatment of choice was the conservative type in 12 (33%) studies and the surgical type in 15 (40%). Among the remaining studies, both types of treatment were used in 10 (27%) studies, due to the results obtained with the initial treatment. The medical diagnosis of all patients involved in the studies was a head and neck scaly cell carcinoma, with one point in common: all (100%) had been submitted to total laryngectomy.

In the present systematic review, of the 37 (100%) studies included, 17 (46%) referred to the treatment of pharyngocutaneous fistulae after total laryngectomy; 10 (27%) were directed at risk factors and 10 (27%) related to complications after total laryngectomy.

Most studies were developed in hospital institutions, 28 (75.7%); in university hospitals, 7 (18.9%), and in research centers, 2 (5.4 %). The studies were developed in the following countries: United States 4 (11%); Canada 4 (11%); Turkey 4 (11%); Italy 3 (8.1%), Germany 3 (8.1%); Spain 3 (8.1%); United Kingdom 2 (5.4%); Japan 2 (5.4%); Mexico 2 (5.4%); Greece 1 (2.7%); Indonesia 1 (2.7%); Israel 1 (2.7%); Norway 1 (2.7%); Sweden 1 (2.7%); Finland 1 (2.7%); Pakistan 1 (2.7%); Thailand 1 (2.7%); England 1 (2.7%) and India 1 (2.7%). The results were published in English 32 (86.5%), Spanish 3 (8.1%) and German 2 (5.4%).

Results of the categories extracted from the studies

The conservative treatment of the pharyngocutaneous fistula aims to preserve and restore the injured region. It is a complex, dynamic and systemic process, depending on the general health conditions of the patient with larynx neoplasm, and can be delayed by several intrinsic factors (age, pre-existent diseases, radiotherapy, among others), which the nurse should identify in order to promote the continuity of the treatment process[9].

The conservative treatment is constituted by the reinsertion of the nasogastric tube; compressive bandage around the neck; daily debridement of all necrotic tissue; draining the exudate liquid retained under the patch; maintenance of hemoglobin levels

above 12.5g/dl; adequate nutrition; high doses of intravenous antibiotics; temperature measurement; removal of the nasogastric tube; commencement of oral feeding; use of antibiotics in the perioperative period; blood transfusion in the pre- and postoperative periods; wound care; application of cloth bandages around the neck for 24-48 hours; application of Botulinum Toxin A injection (BTX); placement of a neck suction drain; early oral feeding; hyperbaric oxygen and treatment with steroids[10-18].

Researchers have looked at surgical treatment using patches for the resolution of pharyngocutaneous fistulae in patients with total laryngectomy more recently. The concerns with this type of treatment started in the 1970s, when the use of cutaneous and fasciocutaneous patches (deltopectoral and frontal patches) was predominant in neck and head reconstructions. The adopted actions are: usage of the pediculate island patch of the surface temporal artery; debridement of devitalized tissue around the fistula; cutaneous patch of the deltopectoral muscle and miocutaneous pectoral patch; surgical closure of the fistula with simple stitching; application of 4 ml of fibrin glue; rerouting of the saliva; introduction of tube no. 19; use of prophylactic antibiotics; nutritional support; radial patch of the forearm; pectoral muscle patch; introduction of the nasogastric tube and/or jejunostomy; use of antibiotics and surgical creation of the pharyngostomy; compressive bandage after the surgery and non-muscular closure of the hypopharynx[19-26].

The magnitude of the surgical procedure (total laryngectomy) the patient undergoes demands an in-depth technical-scientific knowledge of the nurses, so that they can plan nursing healthcare in the perioperative period to see to the real needs of the patient, who faces difficulties of physical, psychological, social and even spiritual order.

Therefore, for the nurses to be able to provide healthcare to the patient, either submitted to conservative or surgical treatment, they need knowledge that promotes their constant updating, based on scientific foundations, which enables them to implement interventions in clinical practice, directed at meeting the real needs of patients with pharyngocutaneous fistulae after total laryngectomy.

The studies reporting incidence, risk factors, complications and treatment of pharyngocutaneous fistulae after total laryngectomy are observational studies, such as case study reports and cohort studies. When the researchers chose this type of research, they missed plenty of information about exposure, the disease and treatment; however, they identified the incidence of pharyngocutaneous fistulae after total laryngectomy and other lower-incidence complications. Because of the characteristics of these types of study, their application is not usual in clinical research, but possible causal hypotheses can be concocted, and tested in other research types.

In the analyzed studies, risk factors are verified for the pharyngocuteneous fistula, whose data show a statistically significant difference, but previous radiotherapy treatment cannot be correlated with the development of the pharyngocuteneous fistula in the postoperative period. The authors of the study considered that the associations of other factors caused the development of the pharyngocuteneous fistula, such as the general clinical status of the patient, age and chronic diseases[26-30].

The nurses should plan the interventions in patients submitted to radiotherapy, aiming to preserve the balance of their general clinical state, skin integrity, adequate hydric ingestion, a balanced diet, besides monitoring clinical signs of infection, hygiene and hydration. Another important aspect is to explain patients and their families about the importance of follow-up evaluations during the whole treatment.

In view of the above, the need to develop future multicentric studies focusing on radiotherapy after total laryngectomy in patients with larynx cancer is highlighted.

The pharyngocutaneous fistula is the most common complication after total laryngectomy in the postoperative period. Its development can double the average time of patient hospitalization, and consequently increase the costs[10,15].

It is important to note that larynx cancer patients often present collaborative problems or comorbidities, which influence the evolution of the whole treatment. As such, the authors understand that the collaborative problems or comorbidities are risk factors for the formation of pharyngocutaneous fistulae after total laryngectomy.

The occurrence of pharyngocutaneous fistulae varied from 8.7% to 23%, and the length of hospital stay for the total laryngectomized patients with fistulae was from 12 to 46 days, i.e. an average hospital stay of 28 days[10,15-16,27-28,31-32].

Another important aspect to be emphasized regards the scarring period of the fistula, which lasted from 11.1 to 61 days, with an average of 36 days. Considering an average hospital stay of 28 days, with average time for scarring of pharyngocutaneous fistulae of 36 days[10,15-16,27-28,31-32], a significant increase in nursing care directed at these patients is observed during the whole period in hospital, because it is difficult to treat this problem, demanding more financial investments for hospital service maintenance.

FINAL CONSIDERATIONS

As known, research is essential for the advancement of science in the nursing area, and its application optimizes healthcare, since it can help to decrease healthcare costs and promote professional growth by renewing knowledge and, consequently, cause changes in the professional practice. Evidence-based practice will contribute to the development of nurses' critical judgment, providing better planning and implementation of efficient interventions in nursing healthcare.

This systematic review constitutes the first step in this theme, opening a number of possibilities for future research. Therefore, it will be possible to further the discussion of the application of knowledge obtained from practical scientific evidence.

The construction of the synthesis of scientific knowledge about the investigated topic contributes to the use of the research results in clinical practice, bringing evidence from different studies. In view of the results, we recommend nurses working in oncology to search knowledge about the principles of using of grafts and patches as an appropriate indication and the anatomy of the donor and receiver areas, so that this knowledge can serve as the base to direct the interventions towards the patient who will undergo a pharyngocutaneous fistula repairing surgery. When admitting the patient for pharyngocutaneous fistulae treatment, nurses should have access to previous information, by means of data collection, physical exam, diagnosis exams performed, as well as perioperative problems occurred in the entire total laryngectomy. It is also acceptable to evaluate the wound, indicate covers for the bandage and determine specific interventions in the postoperative period, aiming to prevent complications (hemorrhage, bruising, infection and dehiscence), recovering the general health status of the patient and avoiding surgical site infections.

Therefore, the effectiveness of the nursing interventions implemented is directly related with nurses' scientific knowledge, clinical competence and interpersonal relationships when approaching the total laryngectomized patient during the whole period of treatment. The results presented in this study are important for nurses to be able to plan and implement adequate healthcare actions for patients with pharyngocutaneous fistulae after total laryngectomy.

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