

TEN-YEARS RESULTS OF OUT PATIENT SERVICE OF PATIENTS WITH SURGICAL WOUND

Resultados de dez anos de atendimento ambulatorial a pacientes com ferida cirúrgica

Resultados de diez años de atención ambulatorial a pacientes con herida quirúrgica

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ABSTRACT: Objective: To identify the healing rate complex surgical wound and to characterize these patients. **Method:** Retrospective, descriptive, exploratory study conducted in the outpatient clinic of a large hospital from 2003 to 2013, with a sample of 138 patients, 18 years or older, with wounds located on the breast and abdomen. **Results:** The healing rate was 71.74%, with an average of 3 months of treatment. The majority were female, biracial, married, with an average age of 47.4 years old and a low education level. Cancer was the main reason for surgery. **Conclusion:** The majority of patients were discharged with their wound healed. The knowledge produced in the study can contribute to the strengthening of the nurse's clinical practices in terms of the importance of evaluating patients with a surgical wound and the expected time it takes for it to heal.

Keywords: Wound Healing. Surgical Wound Dehiscence. Nursing. Risk Factors.

RESUMO: Objetivo: Identificar a taxa de cicatrização de ferida cirúrgica complexa e caracterizar esses pacientes. **Método:** Estudo tipo descritivo exploratório e retrospectivo, realizado em um serviço ambulatorial de um hospital de grande porte de 2003 a 2013, com amostra de 138 pacientes com idade igual ou superior a 18 anos e ferida localizada na região da mama e abdome. **Resultados:** A taxa de cicatrização foi de 71,74%, com tempo médio de tratamento de 3 meses. A maioria era do sexo feminino, de cor parda, casada, com média de idade 47,4 anos e baixa escolaridade. O câncer foi o principal motivo para a cirurgia. **Conclusão:** A maioria dos pacientes recebeu alta com a ferida cicatrizada. O conhecimento produzido com o estudo poderá contribuir para o fortalecimento da prática clínica dos enfermeiros quanto à importância da avaliação dos pacientes com ferida cirúrgica e tempo esperado para a cicatrização das mesmas.

Palavras-chave: Cicatrização. Deiscência da ferida operatória. Enfermagem. Fatores de risco.

RESUMEN: Objetivo: Identificar la tasa de cicatrización de herida quirúrgica compleja y caracterizar esos pacientes. **Metodología:** Estudio descriptivo exploratorio y retrospectivo, realizado en ambulatorio de un gran hospital de 2003 a 2013, la muestra fue de 138 pacientes con edad igual o superior a 18 años, con herida localizada en la región de la mama y abdominal. **Resultados:** la tasa de cicatrización fue de 71,74% con un tiempo medio de tratamiento de tres meses. La mayoría de pacientes fue del sexo femenino, de color pardo, casadas, con edad media de 47,4 años y baja escolaridad. El cáncer fue el principal motivo para cirugía. **Conclusión:** Las pacientes recibieron alta con la herida cicatrizada. El conocimiento producido con este estudio podrá contribuir para el fortalecimiento de la práctica clínica de los enfermeros, evidenciando la importancia de la evaluación de los pacientes con herida quirúrgica y tiempo necesario para su cicatrización

Palabras clave: Cicatrización de Heridas. Dehiscencia de la Herida Operatoria. Enfermería. Factores de Riesgo.

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INTRODUCTION

Skin lesions, also called wounds, can be classified as acute or chronic, according to the tissue repair time. Chronic wounds can take over four weeks to close¹. Surgical or operatory wounds, with juxtaposition of edges, heal by primary intention and, when there is no approximation of the edges, the healing occurs through second intention.

Because they are intentional, surgical wounds are planned and executed in a way that will reduce complications. They are classified as acute when they have a tendency for complete and spontaneous regression within a provided timeframe. Surgical wounds that heal by second intention demand more healing time since they require the formation of a large quantity of granular tissue, so that there is contraction and epithelization, until the space between the edges is filled^{2,3}. Surgical wounds that heal by primary intention can become complex when they present complications, such as infections, hematomas, and seromas, which can lead to dehiscence and compromise the healing process^{2,4,5}. The incidence rate for complex surgical wound described in the literature varies from 0.5% to 3.0% in adults and 10% in the elderly, with a mortality rate which varies from 10% to 45%³⁻⁵. This data has remained unchanged despite the scientific advancements that have occurred^{2,4,5}.

The complex surgical wound causes a great impact in the patient's quality of life due to the pain, unpleasant odor and the exudate of the lesion, which are associated with alteration in sleep, restriction of activities and leisure, reduction of work productivity, and social isolation, in addition to the economic burdens tied to the treatment of the lesion⁶. A study for phase II intervention, for a protocol to reduce the incidence of complications from surgical wounds in obese gynecologic oncology patients, conducted in the United States, estimates an elevated cost of at least 3,500 dollars in the surgical procedure due to the treatment of the complex surgical wound⁷.

Even with the evolution of knowledge concerning this subject, it can be observed that there are still doubts, in clinical practice, regarding which factors slow down the healing process of complex surgical wounds and what are the effective dressings to cure this lesion. Therefore, it is necessary to know the problems involved and the handling of the topical treatment to reduce the time it takes for these wounds to heal, with the purpose of minimizing aforementioned

doubts, considering that it is imperative that health professionals are clear regarding these two aspects, are working safely, and are backed by scientific evidence.

OBJECTIVES

Identify the healing rate of patients with complex surgical wounds, cared for at the outpatient care center of a large hospital in Belo Horizonte (MG), Brazil. In addition, the objective is also to characterize the sociodemographic and clinical profile of patients with a complex surgical wound that require this care.

METHODS

It is a retrospective, descriptive, exploratory study on patients with a complex surgical wound, cared for between 2003 and 2013 in the outpatient service of Belo Horizonte, in the state of Minas Gerais. During this period, 200 patients of both genders, with complex surgical wounds on different parts of the body, were cared for.

The inclusion criteria were patients 18 or older with a complex surgical wound resulting from a breast or abdomen surgery. These surgeries and their specific regions were pre-selected for containing a higher concentration of subcutaneous tissue, which makes the area more vulnerable to complications. The convenience sample constituted in 138 patients, being that each one of these presented one complex surgical wound, totaling in 138 wounds. All the patients that met the inclusion criteria were included.

The data was extracted from the patient's records and collected between May and July of 2013. This data was registered on an instrument that included information regarding the patient's city of origin and the study variables, organized into: sociodemographic variables, variables related to health-harming habits and clinical variables. The sociodemographic variables were distributed into: gender (male and female); age group (18 to 25 years old, 26 to 39 years old, 40 to 59 years old, 60 years old and over); color/race, as proposed by the Brazilian Institute of Geography and Statistics (IBGE)⁸ (white, black, biracial, asian, indigenous); family income, as proposed by IBGE⁸ (one minimum wage salary, 2 to 3 minimum wage salaries, 4 to 5 minimum wage salaries, more than 5 minimum wage salaries); marital status

(married or in a stable union, single, separated/legally separated or divorced, widowed). As for the variables related to health-harming habits, the following were included: consumption of alcohol (yes, no, abstinent) and cigarettes (yes, no, abstinent). In the clinical variables, the following was investigated: the disease that resulted in the surgery (cancer, benign diseases); neoadjuvant therapy, that is, therapy administered prior to surgery (chemotherapy, radiation therapy, chemotherapy and radiation therapy); albumin serum (<3.5 g/dL, ≥ 3.5 g/dL); hemoglobin (<12 g/%, ≥ 12 g/); fasting blood glucose (≤ 126 mg/dL, >126 mg/dL) and body mass index (BMI), the resulting value of height/weight², the reference from the World Health Organization (WHO) was considered⁹ (underweight <18.5 kg/m², normal=18.5 to 24.9 kg/m², overweight 25 to 29.9 kg/m², obese >30 kg/m²); area of the wound during the initial evaluation (cm²); depth of wound during the initial evaluation (cm); and percentage of necrotic tissue in the wound (%). In this study, the categories for overweight and obese were combined into only one.

To analyze the data, a database was elaborated using the software EPIDATA[®], version 3.1, in which the data collected was inserted by a typist. Subsequently, the data for the entire database was checked and typos were fixed. After this step, the data was transferred to the software *Statistical Package for the Social Sciences for Windows* (SPSS), version 20.0, and the exploratory data analysis was conducted. The study variables were explored for simple and relative frequencies, for descriptive measures of centrality (mean, median), of dispersion (minimum, maximum and standard deviation).

The research project was approved by the Ethics Committee of the institution of the field of research and approved under peer review n° 01978412.0.0000.5149. The study respected the terms in Resolution n° 466, from December 12, 2012, from the National Health Council. Since it is a study of records, the researchers signed the Form of Consent to utilize the data.

RESULTS

The sample was composed of 138 patients, with a recent complex surgical wound, who received long-term treatment with interactive wound dressings (polyurethane film, hydrocolloid, calcium alginate, hydrofiber, charcoal with silver, silver foam) according to clinical records. Time of treatment varied from 1 to 12 months (a mean of 3 months and 12 days), being that the majority was treated for 1 to 3 months and only

one patient (0,72%) was kept in treatment for 12 months. The obtained healing rate was 71.74%. Of the 138 patients, 38 were discharged only with a reduction of the wounded area for various reasons: 16 were transferred to the Health Center located nearest to their residence, 14 were referred to surgery, due to cancer recurrence or for tertiary intention closure of the surgical wound, and 9 were discharged upon request.

The majority (81.9%) of patients were female, biracial (58.7%), white (30.4%) or black (10.9%). Regarding marital status, 81 (58.8%) were married; 48 (34.7%), single or widowed; and 9 (6.5%), separated. The majority (52.9%) resided in the city of Belo Horizonte. The rest were from the metropolitan area (30.4%) or from the countryside of Minas Gerais (16.7%). Their age varied between 18 and 82 years old, with a mean of 47.4, standard deviation of 15.8 years and a median of 46.5.

As for the education level, 17 (12.3%) were illiterate; 76 (55.1%) had 5 to 8 years of education; 35 (25.3%), 9 to 12 years of education; and 10 (7.3%) had tertiary education level, being that three had not yet graduated from university. The family income for 31 (22.5%) of the patients was one minimum wage salary; for 86 (62.3%), from 2 to 3 minimum wage salaries; and for 21 (13.2%) it was 4 to 5 minimum wage salaries.

The use of cigarette was denied by 97 (70.3%) patients and nine (6.5%) were in abstinence from this habit. The 32 (23.2%) who smoked consumed, on average, 13.2 cigarettes/day. As for alcohol consumption, 111 (80.4%) patients denied this habit, 6 (4.3%) were in abstinence and 21 (15.2%) confirmed the consumption of alcoholic beverages, with beer and cachaça being the most consumed ones.

Cancer was the cause of surgery for 74 (53.6%) patients, with 44 (59,5%) in the abdominal area and 30 (40.5%) in the breast area. The neoadjuvant therapy was given to 64 (46.4%) patients, with 34 having radiation therapy, 19 chemotherapy and 11 patients needed to have both treatments.

The main causes for the surgery of the 64 (46.4%) remaining patients, diagnosed with a benign disease were: incisional hernia (8.0%), mastitis (7.3%), myoma (7.3%) and cesarean section (4.4%). Only 49 (35.5%) did not represent associated diseases, the others presented high blood pressure (57, 41.3) with diabetes mellitus (22, 15.9%), depression (7, 5.1%) and cardiomyopathy (3, 2.2%).

Table 1 demonstrates that the alteration in body mass was present in 89 (64.5%) of the patients. From these, 79 were overweight or obese and 10 were underweight. The variables

DISCUSSION

albumin serum, hemoglobin, and fasting glucose rate were not investigated for all the patients in the sample, due to incomplete records or an inexistent original source. The first variable was registered in 90 medical charts and the others in 108 and 99, respectively. As for the alterations identified in the laboratory tests, 36 (40.0%) patients had an albumin rate <3.5 g/dL, 48 (44.4%) an hemoglobin rate <12.0 g/% and 18 (18.2%) had a fasting glucose index >126 mg/dL.

Each of the 138 patients presented a CSW, totaling in 138 wounds, 75 (54.4%) located in the abdominal region and 63 (45.6%) in the breasts. All of the complex surgical wounds were due to dehiscence, 38 (27.5%) were related to infection, seven (5.1%) derived from a hematoma and two (1.4%) were related to a seroma.

Table 2 presents the distribution of values related to area, depth and quantity of excess necrotic tissue in the initial evaluation of the complex surgical wound. The area varied between 0.04 a 403.7cm² and the majority (55.1%) of the wounds had an area of up to 20 cm². The depth varied from 0.1 to 10.0 cm, with a predominance (40.6%) of 1.1 to 3.0 cm. The percentage of necrosis varied between 10% and 100%, being that the majority (55.8%) presented necrotic tissue in more than half the extension of the wound.

Table 1. Distribution of the frequency of patients with CSW according to IMC and results from laboratory tests. Belo Horizonte, 2013.

Variables / Categories	n	%
IMC Classification		
Underweight	10	7.2
Normal Weight	49	35.5
Overweight	35	25.4
Obese	44	31.9
Total	138	100.0
Albumin (g/dL)		
<3.5	36	40.0
≥ 3.5	54	60.0
Total	90	100.0
Hemoglobin (g/%)		
<12.0	48	44.4
≥ 12.0	60	55.6
Total	108	100.0
Glucose Level (mg/dL)		
≤ 126	81	81.8
>126	18	18.2
Total	99	100.0

In clinical practice, one of the most frequent complications is dehiscence, the total or partial opening of the layer of fascia in the abdomen during the postoperative course¹⁰. When the opening is partial, there is a rupture in the superficial sutures, without risk of the bowls protruding from the abdominal cavity. Some patients can present total dehiscence, which presents an incidence of 0.5 to 5%, and a mortality rate of up to 30%. In this case, exteriorization of viscera can occur, a process called evisceration³⁻⁵.

All patients in the study presented a surgical wound in the breast or abdomen area, resulting from the dehiscence related or unrelated to infection, hematoma or seroma. A similar result was found in a study conducted over 12 months in the surgical care unit of a hospital in Pakistan, with a sample of 177 patients who were submitted to elective or emergency abdominal surgery. From the total number of evaluated patients, 14.7% presented dehiscence of the surgical wound (SW) preceded by infection. The presence of dehiscence was statistically significant ($p \leq 0.05$) in the patients operated in an emergency situation, in comparison to the elective cases.

Table 2. Distribution of the area, depth and quantity of necrotic tissue of the complex surgical wound during the initial evaluation. Belo Horizonte, 2013.

Variables / Categories	n	%	Mean (SD)
Área (cm²)			
0.04–20.0	76	55.1	36.2 (58.5)
20.1–60.0	41	29.7	
60.1–100.0	08	5.8	
100.1–400.0	12	8.7	
>400.1	01	0.7	
Total	138	100.0	
Depth (cm)			
0	29	21.0	2.1 (1.99)
0.1–1.0	17	12.3	
1.1–3.0	56	40.6	
3.1–5.0	23	16.7	
5.1–7.0	10	7.2	
7.1–10.0	03	2.2	
Total	138	100.0	
Percentage of necrotic tissue in the wound (%)			
0	15	10.9	56.01 (33.71)
10–50	46	33.3	
60–90	57	41.3	
100	20	14.5	
Total	138	100.0	

The infection of SW was a factor associated ($p \leq 0.05$) to dehiscence of suture². The risk of infection increases when the surgical procedure is performed on patients 50 years or older, in a state of hypovolemic or septic shock, with diabetes mellitus, obesity, malnutrition or when it is an emergency surgical procedure^{3,11}. The presence of hematoma and seroma can incite dehiscence, since the extravasated fluid infiltrates the surfaces with the least resistance, pushing the edges apart, impeding affixation^{3,7}. In another study, conducted at a hospital in India, with a sample of 50 patients, all of them presented dehiscence of SW, but with no statistical association to previous infection³.

In the present study, the predominant race of patients was biracial, followed by white. This study is similar to a study conducted in the city of Belo Horizonte (MG) with 132 patients who underwent incisional hernia repair, in which 59 (44.6%) were white and 53 (40.2%) were biracial¹¹. The data from both studies are inconclusive and require new studies with the objective of verifying if there is a correlation between its occurrence and the appearance of surgical wound complications.

The predominance of complex surgical wounds in people 60 years and older, still economically active, was also identified in other studies conducted in Brazil and in India^{3,12}. The presence of complex surgical wounds can cause a significant social impact and affect the productive capacity of the patients, since they are kept away from their work activities due to the treatment. These facts were confirmed in a study conducted in São Paulo (SP), Brazil¹².

Regarding civil status, the majority were married and in a stable union. A similar fact was found in a study conducted in the city of São Paulo (SP), in which from the 36 women examined, 58.3% lived with a partner¹². The coexistence with a partner can be a facilitator in support of the patient adopting the necessary care for her treatment. However, in a study related to the sexuality of people with a chronic wound, it was identified that patients considered pain, odor, the exudate and the dressing as characteristics responsible for the alterations which occurred in terms of sexuality, negatively interfering in the coexistence and in the relations with the partner¹³.

Regarding education level, in the present study there was a predominance of primary education level (5 to 8 years of education). The low education level was also found in the study conducted in the city of São Paulo (SP) with 30 women who had undergone a mastectomy, from which 36.6% had finished primary education¹⁴. The education level is a fundamental fact

to be considered by the nurse when choosing the strategies for the orientation which will be given in pre and postoperative phases, especially when the patient needs to be taught about self-care.

Some systemic and local factors can affect the healing process. Among the systemic factors, the following stand out: age, immobility, nutritional state, the associated diseases, and the use of continuous medication, especially immunosuppressors, which cannot be eliminated, however the detrimental effects should be controlled. The local factors are: the anatomical localization of the wound, the presence of infection, devitalized tissue, among others. The identification of the local factors is essential to choosing the topical treatment for the complex surgical wound^{3,4,6}.

It can be highlighted that a quarter of the sample from this study was 60 years old or older, being considered elderly people, according to classification from the IBGE⁸, which could motivate the increase in the healing time for complex surgical wound due to the characteristic transformations of getting older. It can also be highlighted that aging is a complex, continuous biological process, characterized by structural, numerical and functional alterations in all the cells of the body, even the skin. The thickness of the epidermis is reduced, the number of fibroblasts decreases, there are modifications in the collagen, elastic and reticular fibers, in the quantity of monosaccharides, water, hairs and melanocytes, in the number and lumen of blood vessels and nerve endings. These alterations are intensified after 60 years of age, which results in the slowing down of initial inflammatory responses, in the vascularization and loss of skin elasticity, slowing down healing and predisposing the patient to complications in surgical wounds, representing a large clinical and economical problem¹⁰.

Almost half of the patients presented a rate below the reference values for albumin and hemoglobin serum, which can influence in the healing time of the wound. There are even studies confirming that low serum albumin (< 3.5 g/dL) or hemoglobin (< 12 g/%) levels and low body weight are significantly associated with surgical morbidity in general, delay in healing and appearance of wound infections^{4,15}.

Many patients from the sample were outside of normal weight limits. This arouses much attention, due to the fact that obesity is a chronic non-communicable disease which directly interferes in the healing process of wounds, in addition to being significantly related to an infection rate in the surgical wound^{7,16}.

Healing is a dynamic process, directly influenced by the patient's nutritional state. Tissue repair and remodeling require sufficient supplement of precursors, cofactors and energy sources. The body mass index (BMI), the hemoglobin serum and the rate of the albumin serum are simple nutritional parameters that should be verified in order to reduce postoperative complications. Albumin is the most abundant protein in the blood. Despite the complexity of factors which interfere in its blood level, albumin continues to be an important biochemical parameter for the evaluation of the nutritional state since its form of detection is low cost and easily accessed^{16,17}. Malnutrition can adversely affect the clinical evolution of patients by increasing the time of permanence at the hospital, the incidence of postoperative complications, such as infections and slowing down of the healing of wounds, in addition to increasing the mortality rate^{3,15}.

Regarding diseases that resulted in the surgery, it was found that more than half of patients underwent an operation due to some type of cancer. Clinical conditions such as anorexia or migraines, malnutrition, anemia, metabolic disorders, reduced physical mobility, advanced age, cardiovascular disorders and neurological diseases can compromise skin's health. Specifically in cancer patients, epidermal, dermal and collagen changes can be associated with the use of antineoplastic agents and skin reactions are frequent in patients with breast cancer who undergo chemotherapy and radiation therapy.⁶ This assertion can be justified by the slowing down of healing time in patients who have undergone neoadjuvant therapy, especially with chemotherapy and chemotherapy in combination with radiation therapy.

Some patients from the study presented diabetes mellitus and arterial hypertension as associated diseases. Diabetes mellitus is one of the main diseases that interferes with the healing process of wounds, since the patient has a compromised immune system. In addition, there is a higher probability of infection^{3,15}. The presence of diabetes, the use of steroids, and advanced age were all statistically significant risk factors also identified in another study, conducted on the assessment of peritonitis and intra-abdominal sepsis cases¹⁸.

As for the treatment time of the patients from the study, the majority demanded 1 to 3 months. It is pointed out that the healing time for complex surgical wounds is longer in comparison to simple surgical wounds because the inflammatory and proliferative phases of wound healing are also longer^{1,3}.

Regarding the healing rate, the majority of patients from the study was discharged with their complex surgical wound

having closed with hydrocolloid, calcium alginate, charcoal with silver and silver foam dressings. A similar result was found in a study conducted in Belo Horizonte (MG), with a sample of 22 patients with CSW in the abdominal or pelvic region, where the healing rate was 68.2%⁶.

There are doubts, among working clinical practice professionals, regarding the best treatment to accelerate the healing process of complex surgical wounds and, currently, a tendency to utilize negative-pressure therapy, as the decisive option in the cure of these wounds, has been observed. In the literature, there are uncountable publications of primary research, conducted just in the last two decades, regarding this subject. However, a large part of these does not provide evidence regarding the efficacy of this therapy. In a review study, published in 2015 by Cochrane¹⁹, the sample counted on two studies considered eligible after the assessment of the methodology used. The first study of the aforementioned review compares the negative-pressure therapy to the alginate dressing, but it was considered small since it only had 20 participants, and it reported limited information regarding the healing rate of the wounds. The healing time was less for the participants in the negative-pressure group compared to the alginate dressing group (median of 57 days for the cure of the first group and 104 days for the second). The second study which compiled the same review²⁰ compared the use of negative-pressure therapy with the application of a silicone dressing in the patients that have been submitted to the surgical removal of the pilonidal cyst: the average time for cure in the negative-pressure therapy group was 84 days, in comparison with the average time of 93 days in the group that utilized silicone dressings¹⁹. However, it is known that the healing process of any wound, regardless of its etiology, is systemic and dynamic and it is directly linked to the overall conditions of the patient¹, which makes it difficult to relate the healing rate exclusively to the type of dressing utilized on the wound.

CONCLUSION

At the end of this study, it was possible to learn more about the sociodemographic and clinical characteristics of the patients that are cared for in the outpatient clinics that belong to the large-scale university hospitals, in addition to identifying that the healing rate in CSW in the thorax and abdomen areas, treated with interactive dressings, was 71.74%. It should be

noted that this information is not subject to comparison with studies that have been conducted in other countries due to the lack of publications concerning this subject. This observation highlights the relevance of the present study since it deals with a subject that deserves more research.

It is believed that the study presented a limiting factor: the retrospective collection of data, having patient records as its only source, since some of these records were incomplete and did not contemplate all the variables that were considered in this study. However, having conducted this study, it is now possible to affirm that the knowledge produced through it will contribute to the betterment of the

clinical practice of nurses in the evaluation of patients with complex surgical wounds regarding the expected healing time of these wounds.

However, for the advancement of knowledge, it is recommended that prospective comparative primary studies with sample calculation *a priori* be conducted, in search of further comprehension of the factors associated with arising complications of surgical wounds, as well as regarding the specific dressing for the cure of complex surgical wounds in the least amount of time. Future investigations will be able to guide specific interventions for the implementation of innovative strategies in the treatment of complex surgical wounds.

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