Original Article

Description of Wound Complication Post-Surgical Procedure in Mosul City

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Abstract

Background: Health care provider perform experience in deal with chronic wound management by identifying the exact cause, location, and type of wound which must be assessed to provide appropriate care and minimize complications of wound which is essential in the current healthcare environment and for that wound assessment tools are designed to support all qualified nurses in the wound management field in delivering safe and appropriate wound care.

Methodology: Longitudinal follow-up study design was adopted to conduct and accomplish the research objectives, to describe chronic wound patient demographic and health status characteristics, and to assess wound complication post - surgical intervention, a period from 9th of November 2021 until to 12th of July 2022. A non-probability (purposive) sample of (37) patients was selected, data were gathered by using assessment sheet to collect demographic data such as Age, gender, body mass index, lifestyle (which includes smoking, nutritional status; and mobility status)and a wound description data, Wound types, Type of surgery, Duration, Surgical debridement, Allergy from dressing materials, Wound location: head, chest, and abdomen, arms and legs, and back and Wound dimension.

Results of the research show distribution of age group that majority (32.4%) of sample was in age group between (18 – 29) years and the lowest value of (2.7%) of the sample between age group (70 – 79) years, body mass index (BMI) finding indicates there was a high percentage (40.5%) of obese according to value (7.30), first assessment observation of wound type shows a high proportion of (62.2%) for clean wounds and (27%) for clean contaminated with mean and S.D (1.513± 0.768).

Conclusion: essential of assessment tools and strict implementation is basic element for prevention of chronic wound post – operative.

1. INTRODUCTION

Postoperative wound infection is the most frequent complication of surgical procedure and many important factors as bacterial contamination increase occurrence of wound infection at the site of operation (Mundhada & Tenpe, 2015).

Surgical site infections and tissue dehiscence are well-known postoperative complications, and severity of these complications varies from mild cases needing local wound care and antibiotics to serious cases with multiple reoperations and a high mortality rate. (Jindal & Swarnkar, 2020).

Traditionally, local factors such as the degree of contamination and the surgical technique have been regarded as strong predictors for surgical site infection and wound dehiscence. Other systemic factors such as high age, gender, lifestyle, and coexisting morbidity play a significant role in the pathogenesis of these complications (Fu et al., 2016).

Surgical wound complications remain a major cause of morbidity, leading to higher costs and reduced quality of life. (Britteon et al., 2017).

Choosing the appropriate dressing material for wound management decrease the amount of time that patient takes to heal, cost-effective, and improve the patient's quality of life (Ousey et al., 2019).

The nursing role in the wound care management has developed and progressed to meet the patient requirement in wound healing. Intervention of scope practice, and impact of the wound care in all area has obligatory tasks that remain gaps in knowledge around the evidence role of the wound care nurse. (Dutton et al., 2014).

2. Material and Methods

Longitudinal follow-up study design was adopted to conduct and accomplish the research objectives, To describe chronic wound patient demographic and health status characteristics, and to assess wound complication post - surgical intervention, a period from 9th of November 2021 until to 12th of July 2022.

For the establishment, conducting, and completing the study requirements, the researcher assigned a time period for data collection and patient follow-up that started from March 13th, 2022 until 12th of July 2022.

A non-probability (purposive) sample of (37) patients was selected. All subject patients were selected purposively while admitted to the surgical wards according to the following inclusion and exclusion criteria; for study implementation purposes, the researcher used a tool that consists of 2 contents. The Holistic Framework and Systemic Approach: Each one has information related to an aspect of the patient's status and related management as the following: first one which is related to patient demographic and health characteristics Age, gender, body mass index, lifestyle (which includes smoking, nutritional status; and mobility status),and the second deals with wounds according to surgical discerption and assessment form for data collection post-operative that contains :

- Wound types: clean wound, clean–contaminated wound, contaminated wound, and dirty wound.
- Type of surgery: purpose of surgical intervention.
- Duration of wound post-surgery: The time of wound post-surgery is demonstrated from the date of surgical intervention till the date of sample inclusion.
- Surgical debridement.
- Allergy from dressing materials.
- Wound location: head, chest, and abdomen, arms and legs, and back.
- Pain assessment level.
- Wound dimension: wound size according to length, width, and depth, and then collected data obtained by using a wound measuring ruler, which designed and printed the score of millimeters and centimeters to meet the purpose of wound dimension.

3. Result

Table (1) Distribution of patient sample according to their demographic characteristics

Variable	Group	Frequency	Percentage	$\bar{X}$	S.D.
Age	**18-29**	**12**	**32.4%**	**40.05**	**15.93**
	30-39	**6**	**16.2%**		
	40-49	**8**	**21.6%**		
	50-59	**7**	**18.9%**		

	60-69	3	8.1%		
	70-79	1	2.7%		
Gender	Male	24	64.9%	------	------
	Female	13	35.1%		
BMI	(<18.5) Under weight	1	2.7%	28.59	7.375
	(18.5 – 24.9) Normal	13	35.1%		
	(25 – 29.9) Over weight	8	21.6%		
	(≥ 30) Obese	15	40.5%		
Smoking	Non-smoker	21	56.8%	1.648	0.823
	X-smoker	8	21.6%		
	Currently smoker	8	21.6%		
Nutritional Status	Balanced diet	22	59.5%	1.405	0.497
	Un-Balanced diet	15	40.5%		
Mobility Status	Dependent	18	48.6%	1.513	0.506
	Independent	19	51.4%		

Table (2) Descriptive statistics for patient sample according to their general description for surgical wound characteristics

Variable	Group	Frequency	Percentage	$\bar{X}$	S. D
Wound type	Clean	23	62.2%	1.513	0.768
	Clean – Contaminated	10	27%		
	Contaminated	3	8.1%		
	Dirty	1	2.7%		
Type of Surgery	Major	25	67.6%	1.324	0.474
	Minor	12	32.4%		
Duration of Wound post-Surgery	10-15 Days	29	78.4%	1.216	0.417
	16-20 Days	8	21.6%		
Surgical debridement	Yes	14	37.8%	1.621	0.491
	No	23	62.2%		
Allergy from dressing materials	Yes	9	24.3%	1.756	0.434
	No	28	75.7%		
Wound location	Head	1	2.7%	2.756	0.548
	Chest and Abdomen	8	21.6%		
	Arm and Leg	27	73%		
	Back	1	2.7%		
Pain Level	No pain	1	2.7%	2.378	0.545
	Mild	21	56.8%		
	Moderate	15	40.5%		
	Sever	0	0.0%		

Table (3) Descriptive statistics for patient samples according to the wound assessment characteristics

Parameter	categories	Frequency	Percentage
Tissue	Necrotic	0	0%
	Sloughy	1	2.7%
	Granulation	2	5.4%
	Epithelization	0	0%
	Suture Wound	0	0%
	Sloughy and Granulation	28	75.7%
	Necrotic, Sloughy and Granulation	5	13.5%
	Suture and Granulation and Sloughy	1	2.7%
Infection	Healing-no signs of infection	0	0.0%
	No healing	10	27.0%
	Infected	27	73%
Moisture	Exudate 0	1	2.7%
	Exudate Aspect serous +	5	13.5%
	Exudate Aspect serous ++	5	13.5%
	Serous +++	3	8.1%
	Exudate Aspect Pus+ and odor	2	5.4%
	Pus ++ and Odor	13	35.1%
	Pus +++ and Odor	8	21.7%
Edges	Normal	18	48.6%
	Maceration	18	48.6%
	Undermining	1	2.8%
	Thickened/rolled edge	0	0.0%
	Keratinized	0	0.0%
periwound	Healthy skin	30	81.1%
	Maceration	1	2.7%
	Excoriation	4	10.8%
	Dry skin	2	5.4%
	Hyperkeratosis	0	0.0%
	Callus	0	0.0%

4. Discussion

Table (1) indicate that (37) patients in rolled and distributed to the age group, which ranged between (18 – 79) years old. In addition to that, the study finding reveals the mean and standard deviation to the age (40.05 ∓ 15.93), and the majority (32.4%) of sample was in age group between (18 – 29) years and the lowest value of (2.7%) of the sample between age group (70 – 79) years. These result of participant shows most of the patient are young, so this give suggestion that they are at risk group for trauma and accident in a various type. This finding is in congruent with (Kihla et al., 2014) which showed that more than more than (75%) of patients with chronic wound infection that their age group between (16 – 30) years. So, these findings were also consistent with a previous study by (Fentahun et al., 2021) that found a (55.8%) of total (310) patient age group between (18-40) years. In contrast of these result by study of (Yao et al., 2020) which finds that most of (1977) patient age group were between (60 years – and above) where 72.23% according to the population size, risk for infection and decrease of immunity and for surgery type.

The next result finding shows frequency and percentage according to gender variable, which indicate the majority of group are male patient were (n=24) (64.9%), while females patient record (n=13) (35.1%). These results are extremely reliable for studded group to the admission for male result by un-commitment of post-operative mobility restriction and care less of wound care.

These findings are in consentient with a study by (Gibb, 2016) which found that (80) patients (54%) of a total sample consisting of (146) patients were randomized to wound care were male patient according to admission are higher than female patient in controversial of these findings a result by (Salomé et al., 2015) found the proportion and ratio (70%) of female patients group were higher than male (30%) according to population statistics and type of gynecological surgery, which resulted in a high incidence of chronic wound infection.

By reviewing the result variable of body mass index (BMI) finding, it indicates there was a high percentage (40.5%) of obese according to value (7.30), so this finding may be due to many factors that are determined by a past history of medical problems such as DM, or cardiovascular disease with metabolic disorder.

This finding is also supported by the study by (Thelwall et al., 2015) which reported that almost all patients with chronic wound infection post operation had obesity (79.8%) by fold (4.4) increase than other group, and this related to the disease.

Table (2) shows the general description of wound characteristics for patients with chronic wounds according to various parameters, which are presented as finding results by first assessment observation, which gives a direct clue of wound status as following: wound type, which shows a high proportion of (62.2%) for clean wounds and (27%) for clean contaminated with mean and S.D (1.513∓ 0.768).

The finding is compatible with the explanation gained through the study, which revealed most post-operative wounds are clean in its nature and develop over time with mismanagement technique and the presence of other factors associated with medical history. The results agree with a study by (De Vries et al., 2016) The review includes 19 articles summarizing 21 investigations (6 RCTs and 15 OCTs). Both randomized controlled trials and observational studies demonstrated a substantial benefit of NPWT over standard wound dressings in lowering SSIs, odds ratios of 0.56 (95% confidence range, 0.32–0.96; P = 0.04) and 0.30 (95% confidence interval, 0.22– 0.42; P 0.00001). This reduces the SSI rate from 140 to 83 (49–135) and 106 to 34 (25–47) per 1000 patients. These findings were consistent across clean and clean-contaminated operations and types of surgery in stratified analysis. Orthopedic/trauma surgery findings weren't notable. GRADE-qualified evidence was low. The next values related to the type of surgery that (67.6%) and (32.4%) for major and minor with mean and S.D (1.324 ∓ 0.474). This study shows the major types of surgery that have the highest value results for physical, pathological, and traumatic reasons that require in most cases admission to the operative theater. This result corresponds with the results of multi-center cohort study by (Bhangu et al., 2018) which found The Cholecystectomy (4412 [35%] of 12539 patients) and appendicectomy (4179 [33%]) were most prevalent. 6117 (48%) had emergency surgery, 5887 (46%) had open surgery, which belong to a major type of surgery.

By reviewing the duration of wound post-surgery un-healing or chronic wound, the results show (78.4%) and (21.6%) mean and S.D (1.216 ± 0.417) for (10- 15) day and (16-20) day alternatives, which can be explained as mostly due to mis-use of appropriate dressing and unproper strict field for wound management of the wound.

This finding is coincided with the results of research by (Tengberg et al., 2017) which show that the majority (64%) of complications within (15 – 30) days of emergency laparotomy surgery. However, it also found that (60%) of patients who had surgical site infection within 30 days post-surgery had high mortality rate. long time period for wound healing related to medical problems, steroid use, anemia, and mishandling of wound care. Other parameters of surgical debridement that show (62.2%) has no early procedure with mean and S.D (1.621± 0.491) which work with the concept of most wound types doesn't have a procedure of debridement, result from lack of knowledge by staff nurse, which later is the core of care in wound management. This result is harmonize with study of (Pollak et al., 2010) that revealed (84) patients (27%) experienced an infection within the first two weeks following surgery. When the groups were examined in terms of the intervals between the injury and the first debridement, the interval between admission and the first debridement, there were no discernible differences between patients who developed an infection and those who did not. An independent predictor of the likelihood of infection was the interval between the post-surgery and infection occurrence. The next parameter of allergy from dressing materials shows (75.7%) and (24.3%) alternatively for no and yes, with mean and S.D (1.756 ± 0.434) this result is by soft tissue and area of abdomen and face, and there was a small proportion of individuals who had sensitivity to iodine povidone.

By review, wound location (73%) of the sample had arm and leg surgical procedures due to orthopedic surgery or even trauma that needed surgical intervention. Finally, pain level records at mild intensity (58.8%) and (40.5%) for moderate intensity which are caused by surgical site nerve damage and signs of infection, and pain caused by pre- and post-dressing changes or even with mobility.

Table (3) demonstrates the wound assessment pre-management or beginning to application of guideline protocol for a total of (37) of the sample, which is considered the first step in wound management. It's obvious that most of the presence of wound complications indicators are as following: Presences of slough and granulation in tissue is (75.7%), also infection (73%), while exudate aspect serous +, ++,+++ found (13.5, 13.5, 8.5) respectively and (pus ++, or +++) found (35.1% and 21.7%) respectively, next Edges of hound which shown normal, or maceration show (48.6%, 48.6%) respectively, and finally heathy periwound record (81.1%).

These findings can give a clear image of the wound status and the value of statistics, which indicates that the selection of patient samples is accurate and to gives an indicator for researchers about how to deal with and choose scientific approach for wound management by accomplishing that it is the database of the follow-up till wound healing. These findings can coincide with a prospective study by (Lim et al., 2015) which found the initial review of the patient modified TIME score (tissue necrosis, infection, moisture, epidermal constriction) started by a gradual change from contamination no exudate absence of tissue necrosis to progress developed over the time to prescience of the pus smelly exudate tissue necrosis over 50%.process or chronic illness, and to lifestyle, or genetic variation of advanced age with gained weight. While the result of the study by (Manrique et al., 2017) mentions that the majority of the sample is normal or underweight (<18.5) (70%) with medical problems such as malnutrition, malabsorption, and psychological problem. Ongoing to interpretation of result finding of patient variable, smoking cigarettes parameter of lifestyle, which finds most of the sample (56.8%) were nonsmokers with a mean and standard deviation (1.648 ± 0.823) while (21.6%, and 21.6) were x-smokers or smoking regularly, and this finding would be an important factor, especially for the development of wound healing and interfering with the result of progress management. These finding agree with a study by (Fu et al., 2018) which finds that most patient who undergo to surgical procedure and intervention with chronic wound infection are nonsmoker group ranged from (40.2% to 93.8%),and interfere with length stay shorter than smoker who remain long time period, while a study by (Lassig et al., 2017) disagree with the result findings which finds that majority of chronic wound infection in post-operative complication was (75%) of a total samples (28) patients were smoker who remain long time stay with a high mortality rate comparison with those nonsmoker. According to nutritional status variable, the result had been indicated that high percentage (59.5%) who had balanced diet with mean and standard deviation (1.405 ∓ 0.497), this may be due to good nutrition habits that most sample follow up keep there health in balanced that presented in (BMI) parameter (normal, and slight overweight) (n=22) (56.7%). These findings come along with a study by (Herberger et al., 2020) which finds that most post-operative patients had a good nutritional balanced diet (62%) of total (90) patients, that contributed to the wound healing process and low-hospital length of stay time. At last, the finding records a different value between mobility status parameter (n=18) (48.6%) and (n=19) (51.4%) for dependent and independent parameters, respectively, with mean and standard deviation (1.513 ∓ 0.506). From obvious findings, the interpretation can reveal that most cases had orthopedic surgery, which limited the mobility and made the patient dependently, while other types of surgical intervention didn't. On the other hand, pain in the surgical site and other areas had an effect on some dependently status. By reviewing the independent status, the age group between (18–19) which equals (32.4%) plays an important role in early mobility. The result finding come compatible with the research out comes by (Finlayson et al., 2017) which found 50% of patients reporting severe restrictions in mobility post-operatively according to type of surgery and presence of chronic disease with restricted orthopedic fixation that interfere with mobility.

5. Conclusion and Recommendation

Post-operative wound infection is widespread in surgical hospital in Mosul city. Body mass index, nutritional status, smoking, immobility are factors which effect and contribute to chronic wound infection. Effectiveness of guideline application outcomes in chronic wound management had a significant reduction in complications pre and post operatively.

Guideline application necessity by ministry of health and environment, as it scientifically and practically proven, as well as nursing staff training to implement programs in an integrated manner.

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