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Articles

A Study to Assess the Incidence and Risk factors of Surgical Site Infection following Caesarean Section in a Selected Hospital of Odisha. **81**
Dharitri Swain

A literature review: Transitional care in ICU **89**
Suchana Roy Bhowmik

Organ Transplantation – A New Arena in Nursing **93**
Jaya Kuruvilla

Guidelines for Authors **97**

Subject Index **101**

Author Index **102**

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A Study to Assess the Incidence and Risk factors of Surgical Site Infection following Caesarean Section in a Selected Hospital of Odisha.

Dharitri Swain

Abstract

Title: A Study to Assess the Incidence and Risk factors of Surgical Site Infection following Caesarean Section in a Selected Hospital of Odisha. **Background** : Surgical site infection (SSI) is a common postoperative complication, constituting a major public health problem in terms of mortality; morbidity, prolonged hospital stays, and increased antimicrobial resistance due to the inappropriate use of broad spectrum antibiotics. Factors which affect post-caesarean section SSI rate include the maternal pre-operative medical and obstetric conditions, the type of surgical procedure, and the absence of antibiotic prophylaxis. **Objective:** The aim of this study was to find out the incidence and associated risk factors of surgical site infection among caesarean section cases. **Method :** A prospective, descriptive study was undertaken in a tertiary teaching hospital (SUM hospital), Odisha, India. Total 546 Women were included in the study, who underwent surgical procedure for delivery during study period. Wound was evaluated for the development of SSI on third day, and fifth post-operative day, and on the day of discharge. **Results** :The mean age of the women was 26±3.08. Among the studied cases 87.17% were literate and 12.82% were illiterate. Maximum (77.10%) women were housewife and primpara (59.70). Antenatal clinic was attended by 78.02%. The most common indications for caesarean delivery observed were cephalopelvic disproportion (25.82%), malpresentation (18.86%) and fetal distress (16.84%). The incidence rate of surgical site infection (SSI) was 62 (11.35%). SSI was found to be common in women who underwent emergency surgery, rupture of membrane before surgery, who had frequent vaginal examination and prolonged labour, statistically significant ($p<0.05$). Also women who had vertical skin incision and interrupted skin suturing ($p<0.01$) during surgery had develop more SSI. **Conclusion:** SSI is found to be multi-factorial and various modifiable risk factors were observed in this study. Formation of hospital protocol and its strict implementation by all the health care professionals could be effective to minimize and prevent the infection rate after caesarean section.

Key Words: Caesarean section, SSI, modifiable risk factors, maternal infection,

Introduction

Caesarean section (CS) is a surgical procedure where a baby is delivered by cutting through the front wall of the abdomen to open the uterus. Surgical site infection (SSI) after a caesarean section increases maternal morbidity prolongs hospital stay and medical costs. [3]

In the literature, the rates of SSI after caesarean section reported 3% to 15%, depending on the surveillance methods used to identify infections, the patient population, and the use of antibiotic prophylaxis. Maternal infectious morbidity has been shown to be eight-fold higher after caesarean delivery than after vaginal delivery. Due to the worldwide continuous rise in the incidence of caesarean deliveries, it is expected to increase the number of postpartum infection. The SSI after caesarean section causes physical, psychological and economical burden to woman, her family and to the community. [15]

The knowledge of incidence and associated risk factors of SSI after CS will help to increase the awareness among the health care professionals for the prevention of this problem in the hospital.

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Objectives

1. To find out the common indications of Caesarean Section.
2. To find out the incidence of Surgical Site Infection following Caesarean Section.
3. To find out the risk factors related to Surgical Site Infection following Cesarean Section.
4. To find out the association between Surgical Site Infection following Cesarean Section and selected demographic variables.

Methods

(i) Study population

The study was conducted in the maternity ward of SUM hospital, Bhubaneswar, Odisha, a tertiary care teaching hospital during ten months period (May 2012 – February 2013).The population consists of women who had undergone Caesareans Section and were admitted in the selected SUM hospital at BBSR during the study period.

(ii) Study design and sampling procedure

The study was a descriptive and prospective study. A sample size of 546 was obtained using the hypothesis testing method and based on the following assumptions: 95% confidence level, findings from a previous study and a 5% margin of error. Non-Probability convenience sampling technique was used to select patients.

Inclusion criteria

Total of 546 women who had undergone caesarean section for delivery during study period were considered as eligible.

Exclusion criteria

- Patients who were discharged on 3rd day.
- Who underwent exploratory laparotomy following caesarean section.
- Who developed infection after discharge. (Post discharge infection cases)

(iii) Instrument Description and Data Collection

Structured proforma and observational check list, patient records were used to collect the data. The structured interview schedule and patient record was used for assessing the risk factors and incidence proforma used to find the incidence. The tool was constructed in two parts and the constructed tool was validated by seven experts in the field of Nursing and medicine based on their experience clinical expertise. The suggestion and recommendations given by the experts were accepted and necessary corrections were done for modifying the tool. The tool was pretested among five samples for simplification and then the reliability was done. The tool was found reliable (r=0.89).

Part I: Includes items of demographic variables such as age, education, occupation, parity, antenatal check up and place of antenatal check up, co-morbidities, weight and BMI.

Part II: Consists of items related to indications of Caesarean Section

Part III: Includes items related to incidence and risk factors of surgical Site Infection following Caesareans Section

Section A: observational checklist for assessment of CS wound infection

Section B: Consists of statements related to risk factors of SSI following Caesarean Section

Ethical consideration was obtained by taking written permission from the authority of the hospital. Self-introduction and the purpose of the study to the participants were explained. Informed consent was obtained from the study samples and Interviewed patients to get the information. Surgical Site Infection following Caesarean Section was collected by observation and from Patient records. Wound observation was done for the development of SSI on third, fifth post operative day and on the day of discharge. All the suspected surgical sites were evaluated irrespective of the day of operation until complete recovery.

(iv) Data Analysis plan

Data was recorded and were checked for completeness, entered into the computer and analyzed using SPSS version 16. Collected data was compared in terms of presence of surgical site infection and study variables. Result of data was calculated in descriptive statistics like mean, frequency and percentage for numerical data and Chi-square' test was used for comparing descriptive variables and for finding association. P value of 0.05 was taken as statistically significant.

Results

(i) Patient characteristics

This study has included 546 cases, among which, age 19 and below were 1.04%, age 35 and above were 22.16% and remaining maximum (76.73%) were between 20 to 34 years. Maximum no of women (87.17%) were literate and 12.82% never attended any formal and informal education. Seventy seven percent were engaged in their house hold activities. Out of 546 cases, 59.7% were primpara, 40.29% were multipara and 56.41% had a gestational age less than 37 weeks and 80% were found to be obese. Total of 78.02 percent did regular ANC check up; 21.97% of women had not attended ANC clinic regularly throughout pregnancy. Among ANC attended cases, 76.52% had attended ANC at government Hospital. On admission, 4.21% were febrile, only two presented with hypertensive, six were gestational diabetes and had complained anaemia **(Table-1)**.

Table 1: Demographic Characteristics of women underwent CS

Variables	Frequency	Percent	Variables	Frequency	Percent
Age in years			**Educational background**		
= 19	06	1.1	Illiterate	70	12.82
20-34	419	76.73	Literate	476	87.18
= 35	121	22.17			
Occupation			**Parity**		
Housewife	421	77.10	Primpara	326	59.70
Service	13	2.38	Multipara	220	40.29
Labourer/Agriculture	78	14.29	**BMI**		
Business	27	4.95	=18.5	30	5.49
Others	07	1.28	18.5-24.9	79	14.47
Antenatal regular check-up			=25	437	80.04
Yes	426	78.02	**Gestational age**		
No	120	21.97	**<37 weeks**	308	56.41
Place of ANC			**=37 weeks**	238	43.59
Government hospital	326	59.7	**Co morbidities**		
Private hospital	184	33.7	Gestational diabetes	06	1.09
Primary health centre	18	3.3	Hypertensive disorder	02	0.36
Private clinics	18	3.3	Anaemia	03	0.54
Any other			Febrile	23	4.21

(ii) Common indications of caesarean section delivery

The most frequent indication for caesarean section delivery was cephalopelvic disproportion (25.82%) followed by malpresentation (18.86%) and fetal distress (16.84%), presented in **Table-2**.

(iii) Analysis of risk factors

(a) Incidence of surgical site infection and associated demographic factors

During the study period, out of 546 caesarean cases, total of 62 women was found to have SSI: (2 deep and 60 superficial) infections. The overall infection rate was 11.35%. **(Table-3)**

Twenty four women out of 285 respondents under the age of 30 years (38.7%) developed surgical site infection compared to 38 (61.29%) 30 years or older. This difference was statistically not significant. Women who had formal education (n=27, 87.17%) were less likely to develop SSI, compared to (n=35, 12.82%) those with non-formal education (P=NS). Similarly, a significantly higher proportion (n=41, %) of women less than 37 weeks gestation develop SSI compared to 21 (%) women more than 37 weeks gestation (P=NS). Furthermore, a higher proportion

Table 2: Indications for caesarean section

Indication	No. Of Patients (%)
Previous delivery by caesarean section	44 (8.05)
Preeclampsia	85 (15.56)
Cephalopelvic disproportion	141 (25.82)
Breech and malpresentation	103 (18.86)
Fetal distress	92 (16.84)
Dystocia	33 (6.04)
Placenta previa, placenta increta, or placental abruption	12 (2.19)
Twin pregnancy	13 (2.38)
Others*	18(3.29)
Total	546 (100.0)

Others include maternal diseases, pelvic trauma.

Table3: Incidence of Surgical site infection.

Variables	Number (%)
Infected cases	62 (11.35)
Non infected	484(88.65)
casesTotal	546 (100.0)

(n=326, 83.87%) of primpara women had SSI compared to multipara (n=220, 16.12%). Also obese women had a higher proportion (n=437, 67.74%, P<0.01) SSI compared to non obese (n=109, 32.25%, P<0.01). No significant association was found between the patients demographic characteristics except BMI of women **(Table-4).**

Table 4: Incidence of surgical site infection (SSI) and associated demographic factors.

Variables	SSI (n= 62) (Frequency (%)	No SSI (n= 484) (Frequency (%)	Total (Frequency (%)	P-value
Age group (yrs)				
<30	24(38.7 %)	261(53.92%)	285(52.19%)	
>30	38 (61.29%)	223(46.07%)	261(47.8%)	NS
Educational status				
Illiterate	35(56.45%)	35(7.23%)	70(12.82%)	NS
Literate	27(43.54%)	449(92.76%)	476(87.17%)	
Gestational Age(Wks)				
<37	41(66.12%)	267(55.16%)	308(56.41%)	NS
>37	21 (33.87%)	217 (44.83%)	238(43.58%)	
Parity				
Prime para	52(83.87%)	274(56.61%)	326(59.70%)	NS
Multi para	10(16.12%)	210(43.38%)	220(40.29%)	
BMI				
<25	20(32.25%)	89(18.38%)	109(19.96%)	p<0.01
=25	42(67.74%)	395(81.61%)	437 (80.03%)	

Table 5: Incidence of surgical site infection (SSI) and associated risk factors.
N= 546

Variables	SSI cases (n= 62)	no SSI (n= 484)	Total (N= 546)	P value
Obstetric factors				
ANC attended				
Yes	39 (62.9%)	248(51.24%)	426(78.02%)	NS
No	23 (37.1%)	235(48.56%)	120(21.97%)	
Previous C. section				
No	18 (29.03%)	393 (81.19%)	411 (75.27%)	NS
Yes	44 (70.97%)	91 (18.81%)	135(24.73%)	
Types of surgery				
Elective	09 (14.51%)	95(19.62%)	204(37.36%)	p<0.05
Emergency	53 (85.49%)	389 (80.37%)	342(62.64%)	
Rupture of membrane				
Yes	36 (58.06%)	222(45.87%)	258(47.25%)	p<0.05
No	26 (41.94%)	262 (54.13%)	288(52.75%)	
Per- vaginal examination				
2- 6 times	38 (61.29%)	263 (54.33%)	301(55.13%)	p<0.05
<2 times	24 (38.71 %)	221 (40.47%)	245(44.87%)	
Prolonged labour				
Yes	36 (58.07%)	190 (39.25%)	226(41.39%)	p<0.001
No	26 (41.93%)	294(60.74%)	320(58.61%)	
Surgical factors				
Types of incision (skin)				
Vertical	38(61.29%)	224(46.28%)	262(47.98%)	p<0.01
Horizontal	24 (38.71%)	260(53.71%)	284 (52.02%)	
Types of suturing (skin)				
Interrupted	41 (66.13%)	287(59.3%)	328(60.07%)	p<0.01
Continuous	21 (33.87%)	197 (40.7%)	218(39.93%)	
Long duration of surgery				
Yes	39 (62.90%)	145(29.95%)	184(33.70%)	NS
No	23 (37.10%)	339(70.05%)	362(66.30%)	
Medical factors				
Gestational diabetes				
Yes	03(4.83%)	03(0.62%)	06(1.10%)	NS
No	59 (95.17%)	481 (99.38%)	540(98.90%)	
Hypertensive disorder				
Yes	00(0 %)	02(0.41%)	02(0.37%)	NS
No	62(100 %)	482(99.59%)	544(99.63%)	
Anaemia				
Yes	02(3.22%)	01 (0.2 %)	03(0.55%)	NS
No	60(96.78 %)	483(99.8%)	543(99.45%)	
Febrile				
Yes	06(9.68%)	17(3.51%)	23(4.21%)	NS

(b) Incidence of surgical site infection and associated other risk factors

However Surgical site infection were found to be higher and statistically significant in women who underwent emergency CS (n=342, 85.49%, p<0.05); who had per vaginal examination more than two to six (n=301, 61.29%, P<0.05). SSI was found to be higher in those who had membrane ruptured status before going to surgery and statistically significant (n=258, 58.06%, p<0.05); who had vertical skin incision (n=262, 61.29%, p<0.0001) and had interrupted skin suturing (n=328, 66.13%, p<0.01) during surgery **(Table-5).**

Discussion

In present study overall surgical site infection following caesarean section found was 11.35%, whereas a lower rate infection was found in other studies conducted in different parts of the world: UK 9.6% [18], Norway 8.3 % [7] , US 5% [6] and Oman study 2.66% [6]. However a higher rate of infection was observed in a study conducted at Nepal, which comprises 12.6% [15] and also 16%, was found in studies conducted in US and India (24.2%) before intervention. [11, 1] Similar rates were found in other studies conducted in UK 11.2% and Ethiopia 11.4%.[2,4] The SSI rate was found to be only 2.7% in a retrospective study done in Patan hospital in Nepal which is lower compared to this study. [5] However, a randomized trial conducted in Chitwan showed that; overall wound complications rate was found 15.2%. [12]

The risk of developing SSI after C-section is multi-factorial and has been found to be influenced by the demographic factors, obstetric factors, surgical and medical factors in this study: No significant association was found between the patients demographic and medical conditions except BMI of patient. However emergency surgery, membrane rupture before surgery, prolonged labour, vertical skin incision and interrupted skin suturing which were found statistically significant.

In this study, women who were obese developed more SSI compared to non-obese (n=437, 67.74%) and was statistically significant (p<0.05). Similar type of finding was observed in a study conducted at Tartu University Hospital, Estonia. [13] Women who had undergone emergency LSCS (n=342, 85.49%) developed more SSI compared to elective LSCS (n=204, 14.51%) and was statistically significant (p<0.05). Similar finding was observed in a study conducted in Nepal revealed that Emergency caesarean section predisposes more to SSI as compared to elective (80.16%). [15] Similar findings were identified in a study conducted in Ethiopia where emergency surgery had two times increased risk of surgical site infection (11.9% vs. 5.4%) than elective cases. [4] This finding could be attributable to the fact that in emergency cases membrane rupture and multiple vaginal examinations are frequent. There is also increased risk of bacterial contamination or breaks in sterile technique or lack of timely antibiotic prophylaxis.

The length of time between rupture of the membranes and surgery also showed statistically significant (P<0.05) risk for surgical site infection (n=258, 58.06%). Study conducted in Oman revealed four-fold increased risk in the rate of PROM among the case group compared to the controls. They found association between PROM and wound infections highly significant (P <0.001). [6] A study done in Tanzania, rupture of membranes prior to surgery lasting 8 hours or longer, (HR = 2.7; 95% CI = 1.3-5.8; p = 0.011) and 3 or more vaginal examinations (HR = 3.3; 95% CI = 1.7-6.5; p = 0.001) were found to be significant risks for SSI development. [14] Once the membrane is ruptured the amniotic fluid has increased chance to get infected induced by multiple vaginal examinations. It is thought that the non-sterile amniotic fluid may act as a transport medium by which bacteria come into contact with the uterine and skin incision leading to chorioamnionitis and its complications. These findings were supported in other studies. [6, 18, 14, 10] Also present study shows women who had prolonged labour developed increase rate of SSI which was statistically significant (n=226, 58.07%, p<0.001). Similar type of finding was observed in a study conducted at Tartu University Hospital, Estonia. [13]In this study, increased rate of SSI was observed in vertical incision cases which was statistically significant (n=262, 61.29, p<0.01). A study conducted in India (Nepal), type of skin incision had been found to be a risk factor for developing SSI. [15] Vertical incision was significantly found to predict SSI; women with vertical skin incisions had a 3.6 fold risk of developing a SSI compared to those with transverse skin incision. [14] Study conducted in New York based hospital found a significantly greater incidence of wound complications (35% compared with 9%) in women with vertical skin incisions. The difference was significant (p <0.05). [16] In this study, the SSI was also found to be significantly higher (P <0.01) in those with interrupted suturing (n=328, 66.13%) whereas, women who had continuous suture had less SSI (n=218, 33.87%). Study conducted in UK revealed

the lowest SSI rate in patients where a continuous suture had been used; 1.3% in 2009, to 6.7% in 2010 and 10.7% in 2011. [17, 9] The choice of subcuticular suture rather than interrupted site is associated with a significantly lower incidence of infection. [8, 15, 2]

Conclusion

SSI after caesarean section is a common problem in most of the tertiary care hospitals. The risk of developing SSI after C-section is multi-factorial and has been found to be most commonly influenced by the following factors in this study: emergency surgery, frequent vaginal examination, prolonged labour, membrane rupture before surgery, vertical skin incision and interrupted skin suturing.

Therefore, increased awareness on these risk factors, implementation of hospital policy and protocol should be done by all the health care professionals in order to minimize and prevent the infection rate after caesarean section.

Limitation

Present study has some limitations. Some of the cases during the study period were not followed up which could likely influence the calculated rate of surgical site infection. The various other potential risk factors that can cause SSI could not be assessed in this study, such as: wound contamination grade, ASA grade, amount of blood loss, post discharge cases.

Implications

From the findings of the study the following implication are stated.

-Present study would help nurses and other healthcare personnel to understand the risk factors of SSI following CS so that risk factors can be modified and infection rate can be prevented.

- The findings would help the health policy maker to develop and strictly implement the policy and hospital protocol for control and prevention of SSI which will help to reduce the maternal morbidity and mortality.

-The nurse administrator would further recommend practicing the hospital protocol for better quality care for reducing incidence of SSI following caesarean case.

Recommendations

- ☞ This type of study may be conducted in different region of India to know the incidence of SSI following caesarean delivery.
- ☞ Training strategy for health professional may be implemented to prevent the rate of SSI following caesarean delivery.
- ☞ This type of study may be conducted in large no of sample to know other risk factors of SSI following caesarean delivery

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A literature review: Transitional care in ICU

IJSN
Volume 3, Number 3

Suchana Roy Bhowmik

Abstract

Aims and objectives: This paper presents a critical review of published literature detailing the significance of transitional care in ICU. **Background:** Critically ill patients in the intensive care unit (ICU) often experience multiple transitions as they move through different levels of care. The transition process from Intensive Care Units, ICU, to the general ward involves the patient, their relatives, and the staff. The transfer of patients from the ICU is an everyday procedure. It is an accepted part of the ICU nurse's routine work, but also an important element of providing quality care. **Design:** This literature review study addresses the aims and objectives. **Methods:** Following a literature search of electronic databases, 30 articles were retrieved that met the selection riteria with papers discussed in relation to transition and significance of transitional care in ICU patients. **Results:** The physical and psychological effects of the ICU experience continue to affect many patients after discharge from the ICU. So there was need for ICU nurses, ward nurses and affiliated healthcare professionals to provide emotional support throughout ICU transfer. Strategies to provide this support must be developed, implemented and evaluated. **Conclusions:** There is a paucity of literature that specifically physical effect of transition among ICU patient and significance of transitional care in ICU. **Relevance to clinical practice:** Nurses' understanding of critically ill patients' transition may significantly impact the patients' care in the Intensive Care Unit. Thus, research is needed that focuses more on evaluating nurses' understanding of patients' transition and its consequences.

Introduction

Patients admitted to intensive care units (ICUs) need constant, close monitoring and usually one nurse looks after one patient.[1] Critically ill patients in the intensive care unit (ICU) often experience multiple transitions as they move through different levels of care. The transfer of patients from the ICU is an everyday procedure. It is an accepted part of the ICU nurse's routine work, but also an important element of providing quality care.[2]

Within the context of an intensive care unit (ICU), several transition processes can be observed. ICU transitional care as care provided before, during, and after the transfer of an ICU patient to another care unit that aims to ensure minimal disruption and optimal continuity of care for the patient. This care may be provided by ICU nurses, acute care nurses, physicians, and other healthcare professionals.[2]

Body of content

It is important that patients' transfers from the ICU are done properly and at the right time when there is no longer a need for intensive care. Patients want to feel safe and secure both before and after the transfer and they can easily become dependent on the staff. [3] Several studies have revealed that various physical, psychological other adverse effect are seen among ICU patients after transfer from ICU.

Each transition represents unique challenges for patients, their family members, and the healthcare professionals involved in the patients' care. The physical and psychological effects of the ICU experience continue to affect many patients after discharge from the ICU. Compromised transitional care for ICU patients may result in complications, including adverse events, readmission to the ICU, and increased rates of mortality.[4] Organizing and performing patient transfers in the continuum of care is part of the work of nurses and other staff of the multiprofessional healthcare team. It is important to perform the preparations for a transfer to the general

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ward accurately and correctly. If this is not done, the patient must be readmitted to the intensive care unit (ICU) and be exposed to further stress. [3]

Effect of transition on ICU patient

Once transferred to an intermediate care unit, ICU patients may be the sickest patients on the new unit and may need close observation and constant nursing care. Some patients experience physical impairments, such as muscle weakness and neuropathies, and difficulties in eating, swallowing, chewing, coughing, moving the upper extremities, toileting, and mobilizing. Once in an intermediate care unit, patients may experience anxiety, panic attacks, and, in some instances, signs and symptoms of acute posttraumatic distress disorder. Patients may also withdraw emotionally or have indications of depression, paranoia, and confusion. The patient-to-nurse ratio of the intermediate care unit does not always accommodate the complex emotional and physical needs of these patients.[1]

Number of factors likely contribute to impaired quality of life after critical illness, including personal factors (e.g., older age, prior health status, preexisting disease and psychiatric disorders), critical illness factors (e.g., delirium, hypoxia, hypotension, glucose dysregulation, illness severity, immobility, inflammation, loss of muscle and sedative use), and post-ICU factors (impairments in physical, cognitive, and mental health. These various factors are not independent and likely interact. While many factors contribute to the development of PICS and the reduced QOL, some personal factors e.g., older age, prior health status.[4]

Researcher supported that few aspects reflected the complex and emotional nature of transfer out of intensive care. Those aspects are a sense of sudden abandonment, pervasive feelings of vulnerability and helplessness, a loss of importance and ambivalence about the experience.[5]

Patients in ICUs can lose up to 2% of muscle mass for each day of illness, and some patients may take a year to recover completely. After discharge from the ICU, patients may experience altered sleep patterns, anxiety, depression, disorientation, mood changes and lapses of memory and concentration. Some former ICU patients continue to have hallucinations, nightmares, or delusions even after their discharge from hospital.[6] So there was need for ICU nurses, ward nurses and affiliated healthcare professionals to provide emotional support throughout ICU transfer.[5-6]

Different factors have impact on patients' recovery from intensive care, premorbid state, social, family, psychological, physical status, and employment.[7] The struggle for hospital bed placement is becoming more and more frequent, and nowadays hospitals often are overcrowded, which also implies that the organization of transfers is especially important for patient safety. Discharge guidelines and policies are seen as important in the management of transfers.[2]

Transitional care

Transitional care is defined as a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care within the same location. Transitional care, which encompasses both the sending and the receiving aspects of the transfer, is essential for persons with complex care needs.[8] Many researches supported various aspects which can be part of transitional care to provide quality care.

A study by Goldfrad and Rowan (2000) found that the overall ICU mortality is 2–5 times higher if the patient is discharged at night. In their study, the staff estimated that only 44% of these patients were fully ready for the transfer, compared with over 80% of patients who were transferred during the day.[9]

It is also revealed in another study that Unexpected-events (UEs) are common during transport of critically ill ICU patients and these adverse events can be reduced when critically ill patients are accompanied by intensivist/medically qualified person during transport and following strict transport guidelines.[10]

It also specified in a research that the nurses who are involved in the care of critically ill patients should identify the family members' needs and provide a family centered nursing care in acute care settings.[11] As researchers increasingly include long-term quality of life, physical and psychological assessments as outcome measures, the knowledge of sequelae after critical illness and ICU stay has increased significantly. The awareness of these problems and an increased demand for information among ICU survivors has led to the development of national and international guidelines recommending ICUs to follow up patients after critical illness.[12]

A systematic evaluation carried out of patients by the CNS, before their transfer from the ICU to a medical unit, has been proven beneficial in ensuring a comprehensive patient care plan. Patients and

families have verbalized that this intervention is helpful. Staff members have indicated that this safety initiative is useful in planning patient transfers.[13]

Conclusion

Once transferred to an intermediate care unit, ICU patients may be the sickest patients on the new unit and may need close observation and constant nursing care. The patient-to-nurse ratio of the intermediate care unit does not always accommodate the complex emotional and physical needs of these patients. The need for ICU nurses, ward nurses and affiliated healthcare professionals to provide emotional support throughout ICU transfer is the most significant implication of the study. Strategies to provide this support must be developed, implemented and evaluated.

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Organ Transplantation – A New Arena in Nursing

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Jaya Kuruvilla

Abstract

A man waits and wonders if a new heart will arrive. A woman walks without pain with a bone transplant. A child grows up with a new liver. A mother in the midst of tragedies in her own life helps give life to others through organ donation. These are the stories we have heard about the lives transformed by the miracle of organ & tissue donation and the stories of men & women, who give and receive the gift of a lifetime. Please do remember they are not the statistics of medical literature. These are ordinary human beings who have made a difference in the life of another person and at any moment it could be each of us.

Introduction

Over the course of the last century organ transplantation has overcome major technical limitations to become the success as it is today. The breakthroughs include developing techniques for vascular anastomoses, managing the immune responses and devising preservation solutions that enable prolonged periods of ex-vivo storage, while preserving function. Life related and unrelated donation predominate all organ transplant done in India. Most commonly transplanted organs in India are Kidney and Liver

History

It is Jaboulay and Carrel who developed the techniques of vascular anastomoses which paved way for transplantation. First renal transplant was done by an Ukranian surgeon on Yu-Yu Voronoy in the year 1936. The first heart transplant was done in 1967 in Cape Town whereas the first liver transplant was at Pittsburgh in the year 1967. In India the first Kidney transplant is done in at CMCH Vellore in the year 1971. Reitz and colleagues performed the first heart and lung transplant in 1981. The real breakthrough happened with the introduction of chemical immunosuppression. The modern immuno suppressive era came with the advent of Cyclosporine. Advances have reduced incidence of acute rejection. It may be realistic to aim for a state of almost tolerance where minimal immuno suppression is required.

Organ Donation

Is the harvesting of an individual organ after a person dies or while living, for the purpose of transplanting to another person. The person who gives the organ is the donor and one who receives is the recipient. All can be donors who are not with any active medical conditions.

Organs Donated

Vital organs like liver, kidney, heart, intestine, lungs and pancreas can be transplanted. The scope of tissue donation also has advanced.eg. Skin, cornea.

Impact of Organ Donation

For organ recipients, transplant means a second chance of life. It allows many recipients to return to

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normal life style. For others it may be ability to regain or recovery of movement or freedom from pain.

Advantage to grieving families

It has the ability to comfort the grieving family members. They may draw comfort by participating in saving life of others. Most of the family members think that it was the only positive outcome from their loss.

Decision on organ donation is difficult especially when one has lost a dear one. But it is a generous and worthwhile decision by which you can save lives without costing anything just by handling the emotional conflict.

To be an organ donor there are many foundations with which one has to register. There are currently more than 150 centers on India performing 3500 to 5000 Kidney transplants each year. Four centers undertake approximately 50 to 300 liver transplants annually. Out of 1200 liver transplant approximately 20 to 50 transplants are done from deceased donors and the rest from living donors, so far in our country about 100 heart transplants are done.

Challenges faced in Organ transplantation

- **Shortage of Donors**

One challenge that remained from the beginning is shortage of suitable donor organs. It is satisfying to note that the results of organ transplantation continue to improve. The trend continues to be that there are less number of donors than potential recipients in waiting.About 30 Americans die every day waiting in vain for an organ, usually a kidney. Even if every American signed a donor card still there will be organ shortage .That is because all who die are not eligible to be donors. Only 10500 – 13000 Americans die under conditions that would allow organ donation. While the need is 90000 and life on dialysis is not an easy walk and total span of life on life is 4 years on dialysis. In India 500 000 people die because of non-availability of organs. Nationally with a population of 1.2 billion people the statistics stand at 0.08 persons as organ donors / million population. In USA, UK, Germany it is about 10 – 30 / million population. Countries like Spain, Belgium has more aggressive approach of presumed consent which permits organ donation by default unless the donor opposed during his life time. In an effort to lessen the gap between demand and supply, there is increased focus on live donors than deceased donors.

- **Trafficking**

At the same time there is another side of the story that is real. Trafficking in organ procurement, illegal sale or removal of kidney had been reported in many countries.We are no way different. The process of commercial donation of organs becomes a simple quick and attractive business proposition and a solution for many others. Those who can afford prefer to buy a kidney rather than donating.

- **Preservation**

Preservation of the organ is another challenging phase of the whole process. Preservation solutions are devised to counter the effects of ischemia and minimize injury associated with reperfusion.

The purpose of organ preservation is to prevent or arrest anaerobic metabolism leading to death of tissue.

- **Immuno suppression**

In 1950's success in bone marrow transplantation between siblings had been achieved by using total body irradiation. The real breakthrough came with chemical immune suppression that could suppress the immune system sufficient to prevent engraftment of the transplant, while ensuring protective immune responses. The first successful agent was Azathioprine which was shown to be effective.

The drug cyclosporine was discovered in mid1970's. Cyclosporine improved dramatically the results of kidney transplantation so much so 90 to 95% kidney transplants survive one year on cyclosporine. It is effective in liver, pancreas, heart and lung transplantation. It inhibits the cell proliferation by blocking the activation. Patients who are on immunosuppression have a higher risk for infection and malignancy. Nurses play a major role in preventing infection.

- **Complexity of Postoperative care.**

The recipients of transplant demands for specialized care with the goal of preventing all complications more importantly acute rejection. Nurses working in these units are to be equipped with required skill and knowledge of management of a patient undergoing transplant

Contra Indications for Organ Donation

Cancer, Active HIV, active infection, IV drugs usage, Hepatitis B& C.

Clinical results in organ transplantation

The results of transplantation of all solid organs have improved. Donors are now older and more commonly donate spontaneously.

Newer trends in Organ Allocation

Priority allocation

Several models of priority organ allocation have been proposed in the recent past. Attorney Jonathan K. proposed that a way to increase organ allocation is to give preferred status for who are registered as organ donors. Rupert Javis proposed that, in the setting of scare organs, only donors are allowed to be organ recipients. The central theme is that the people who are willing to give organ should be the preferred recipients. This is already practiced in U. S. A and this would improve the willingness for organ donation.Nothing could be simpler, fairer and nothing in the law says that priority allocation cannot happen.

Role of Nursing in Organ Donation and Transplant

Organ Donation

- Donors selection and preservation of tissue
- Creating strategies to improve to organ donation and recovery
- Educating public regarding organ donation

Organ Transplant

- Identifying possible donors
- Providing relevant information to general public.
- Providing relevant information to families, considering organ donation
- Being an advocate for families and patients on informed choice considering religious and cultural beliefs
- Working closely with health team members.
- Providing clinical expertise and emotional care to patients and their families.
- Participating in pre- transplant work up
- Peri- operative management of organ transplant.
- Post transplant monitoring ,management, infection control and health education

Agencies in India involved in organ donation:

- Mohan foundation – 1977- Chennai
- NOTTO – National Organ and Tissue. Transplant organization under Ministry of Health and family Welfare, in Safdarjung Hospital, Delhi. www.notto.nic.in
- Tata Memorial Hospital Tissue Bank. Mumbai
- Zonal Transplant – Co- ordination Centre at LokmanyaTilak Municipal General Hospital, Mumbai

Conclusion

Throughout the history of organ transplant nursing has played a major role in the provision and advancement of the care of organ recipients as well as donors and their families. Multiple factors determine the nursing care which is specialized and demands for expert knowledge and skill from experienced nurses. It also demands for high level expanded care inside and outside hospital setup

Allocating organ donors can save thousands of lives. Establishing national donor registry can improve the shortage. Improving public awareness's on registry and priority allocation can be also a major area for nursing personnel apart from providing direct care to donors and recipients

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Subject Index

Title	Page
A literature review: Transitional care in ICU	**89**
A Study to Assess the Incidence and Risk factors of Surgical Site Infection following Cesarean Section in a Selected Hospital of Odisha.	**81**
Case Study on Marfan's Syndrome and Bentall Procedure	57
Effectiveness of Meditation on Stress among Student Nurses	23
Global Burden of Non-Communicable Diseases	61
Health: Perceived by Spirituality and Religion	17
Hyperlipidemia: Primary Prevention Measures to Lower the Risk of Cardiovascular Disease	5
Management of CHARGE Syndrome: An Issue of Great Complexity	51
Mody Diabetes	65
Neonatal Abstinence Syndrome	41
Organ Transplantation – A New Arena in Nursing	93
Standard Precautions and Safe Practices for Patient Care Management	11

Author Index

Name	Page	Name	Page
Alex Zacharia C.	17	Jayaprakash S.	23
Amirtha Santhi S.	57	Malarvizhi S.	57
Anita Goswami	65	Malarvizhi S.	11
Anita Goswami	61	Pramilaa R.	5
Asha Thakur	61	S. Amirtha Santhi	11
Dharitri Swain	81	Suchana Roy Bhowmik	89
Dr. Jaya Kuruvilla	93	Thamarai Selvi P.	51
Ina Thakur	65	Vinu K.S.	41

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