

USE OF EARLY CONTROLLED AMBULATION TO PROMOTE
URINATION AFTER VAGINAL DELIVERY

by

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DEDICATION

This thesis is dedicated with love to the memory
of my father.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
ABSTRACT	viii
CHAPTER	
1. INTRODUCTION	1
Statement of the Problem	2
Statement of the Purpose	2
Hypothesis to be Tested	2
Assumptions	3
Definitions	3
Significance of the Study	4
2. REVIEW OF THE CURRENT LITERATURE	6
Literature on Urinary Function During Pregnancy and Immediately Postpartum . . .	6
Survey of the Literature on Early Ambulation	9
3. RESEARCH DESIGN	14
Criteria for Including Patients in the Study	14
Criteria for Excluding Patients from the Study	15
The Study Group Using Early Controlled Ambulation	16
The Control Group	16
The Collection of Data	17
Analysis of the Data	18
4. PRESENTATION OF FINDINGS	20
Characteristics of the Sample	21
Age	21
Parity	22
Anesthesias	22
Episiotomy	24
Forceps	24
Ice Chips	25

TABLE OF CONTENTS--Continued

	Page
Medications	26
Fluids	27
Significance of Catheterization	
Crosstabulated by Variables	28
Parity	28
Anesthesia	28
Episiotomy	30
Forceps	31
Catheterization for Residual	31
Catheterizations	32
Summary	36
5. INTERPRETATION OF FINDINGS	38
Review of the Study	38
Conclusions	39
6. SUMMARY	45
APPENDIX A. LETTER REQUESTING PERMISSION TO CONDUCT STUDY AT PRIVATE HOSPITAL	49
APPENDIX B. LETTER GRANTING PERMISSION TO CONDUCT STUDY AT PRIVATE HOSPITAL	50
APPENDIX C. CONSENT OF PHYSICIANS	51
APPENDIX D. DATA COLLECTION SHEET	52
SELECTED BIBLIOGRAPHY	54

LIST OF TABLES

Table	Page
1. Crosstabulation of Age Ranges by Group	22
2. Crosstabulation of Parity by Group	23
3. Crosstabulation of Anesthesias by Group	24
4. Frequency of Episiotomy by Groups	25
5. Crosstabulation of Forceps by Group	26
6. Crosstabulation of Parity with Catheterization and Groups	29
7. Crosstabulation of Anesthesia with Catheterization	30
8. Crosstabulation of Episiotomy with Catheterization	31
9. Crosstabulation of Forceps with Catheterization	32
10. Crosstabulation of Catheterization for Residual Urine with Groups	33
11. Crosstabulation of Catheterization with Groups	34
12. Summary of Variables for Four Patients Catheterized in the Experimental Group	34
13. Crosstabulation of Catheterization with Urinary Tract Infections	36

ABSTRACT

The purpose of this study was to determine the effectiveness of early controlled ambulation in reducing the incidence of catheterization in postpartum women. Sixty-one patients were divided into two groups--a control group with whom the investigator had contact limited to conversation, and an experimental group who were ambulated by the investigator at predetermined intervals. The time of initial voidings and the incidence of catheterizations were recorded for each patient in each group. These data were then analyzed according to variables and correlated between groups. Comments made by the patients were also described.

Early controlled ambulation was shown to be significant in reducing the incidence of catheterization at a level of .009 using Chi-square analysis. The incidence of urinary tract infections was significantly reduced in the experimental group at a significance level of .001. These data suggest that early controlled ambulation decreased the need for catheterization, thereby reducing the incidence of urinary tract infections.

The results of the study seem to support the hypothesis that there is a relationship between early controlled ambulation and a decrease in postpartum urinary catheterizations and infections.

Several implications became evident as the result of this study and recommendations for further research were indicated.

CHAPTER 1

INTRODUCTION

Historically the length of rest imposed upon women after childbirth has varied considerably from culture to culture and generation to generation. During World War II a mother was encouraged to ambulate freely on the day of delivery so that she was prepared to take herself and her baby to the air-raid shelter, should the need arise (Guttmacher, 1973).

Today many postpartum patients are permitted to remain in bed for twelve to twenty-four hours following delivery, or in some instances, until they choose to get up. In one hospital, however, the investigator observed nurses giving mothers assistance in ambulating freely and in functioning independently within two to four hours after delivery. The primary difference noted regarding the nursing intervention on the contrasting units was the frequency of catheterizations performed. The patients on the units allowing extended rest after delivery were catheterized with greater frequency than on the unit encouraging early activity and ambulation.

Nurses on one unit have expressed concern to the investigator regarding the frequency of catheterizations and

the relationship of this procedure to increased bladder infections. Patients have also expressed their concern with the inability to void, stating that this causes increased abdominal discomfort as well as prolonged recovery and lengthened hospitalization. As a result of these observations and concerns from staff and patients a study was organized to investigate the relationship between early ambulation and the frequency of catheterizations after delivery.

Statement of the Problem

Because of the difficulty in voiding that postpartum patients often encounter after delivery and the frequency of catheterizations performed, the investigator seeks to answer the following question: is early ambulation an effective nursing measure to assist postpartum patients to void, thereby reducing the incidence of postpartal catheterizations?

Statement of the Purpose

This study was conducted to determine the effectiveness of early controlled ambulation in assisting postpartum patients to void without the use of catheterization.

Hypothesis to be Tested

The hypothesis to be studied was whether controlled early ambulation is associated with the reduction of

postpartum catheterization. The statistical hypothesis tested was: Patients experiencing early controlled ambulation will require catheterization due to inability to void as frequently as those not experiencing early controlled ambulation.

Assumptions

Assumptions that were made for this study consisted of the following:

1. Difficulty in voiding is a common occurrence following vaginal delivery.
2. Catheterization is commonly used as the initial nursing measure to facilitate the emptying of the postpartum bladder.

Definitions

1. Early controlled ambulation: This consisted of two periods of ambulation assisted by the investigator. Patients were ambulated for five minutes, the encouraged to rest in bed for one hour. Following this patients were ambulated a second time for ten minutes, then encouraged to rest in bed for two hours.
2. Immediate postpartum period: The second to sixth hours following expulsion of the placenta.
3. Nursing measures: Those activities based on scientific principles that can be applied by nursing

personnel to maintain or restore the normal life processes (Lambertson, 1965:64).

4. Primipara: A woman who has had one pregnancy that resulted in a living child.
5. Multipara: A woman who has had two or more live births.
6. Mechanically unassisted voiding: Urination which occurs without the introduction of a catheter into the urethra or bladder to stimulate or cause emptying of the bladder.
7. Catheterization: The procedure of withdrawing urine by introducing a sterile tube into the bladder via the urethra.

Significance of the Study

Attempts to research the subject of early ambulation in the postpartum patients revealed scant information. Some attention had been given to this problem earlier, as in 1941 when Bennetts and Judd criticized the lack of information regarding the problems with the postpartum patient's bladder. Still earlier, Traut, McLane, and Kuder (1937) stressed the need to reduce the incidence of postpartal urinary retention for the purposes of inhibiting the occurrence of urinary tract infections. They cited the changes in the pregnant and postpartal urinary tract as most significant in creating stasis, which "favors the growth of pathogenic

micro-organisms in this stagnant medium" (p. 51). More recently, discussion of the postpartum urinary tract has centered on the prevention of urinary tract infections. Emphasized in many sources is the role of catheterizations in the promotion of this problem. Mitchell (1971:48) states that:

The short female urethra, its meatus constantly bathed by vaginal discharges, is vulnerable to ascending infections especially when the junctional epithelium has become everted as a result of childbirth trauma or has been violated by catheters, sound, or cystoscopes.

Reams and Powell (1960) in discussing postoperative care, criticize the use of frequent urethral catheterizations as being unnecessary in most cases in emptying the bladder. They state that sitting, standing, and frequent movement are of equal value in providing for adequate aid to eliminate the possibility of compounding the patient's problems by inducing urinary tract infections by catheterizations. It is significant to this study that one nursing measure instituted by Reams and Powell involved ambulating patients to the bathroom to stimulate voiding.

CHAPTER 2

REVIEW OF THE CURRENT LITERATURE

It is important that the reader review the physiology of the urinary tract during pregnancy and in the postpartum period to understand the extent of the problem of postpartal dysuria. These basic concepts are provided in this review of the literature. Also reviewed is the literature available on ambulation in the postpartum period.

Literature on Urinary Function During Pregnancy and Immediately Postpartum

The bladder is a hollow muscular organ that lies in the true pelvis. The uterus and vagina are interposed between the bladder and the rectum. The function of the bladder is to act as a reservoir, to retain urine as it collects from the ureters, and to expel it periodically during the act of urination. Average capacity of the bladder is from 300 to 500 milliliters of urine but when greatly distended, the bladder is capable of containing up to 1500 milliliters (Verralls, 1969; Whitehead, 1970; Smith, 1972). The capacity of the bladder varies greatly within individuals, but is affected primarily by the tone of the detrusor muscle and on its reflex excitability.

The physiology of the female urinary tract is altered considerably during the course of pregnancy. There is an increase of approximately 35 per cent in renal plasma flow until the last trimester, when there is a gradual return to normal levels. The glomerular filtration rate is increased approximately 60 per cent during pregnancy. The ureters undergo some dilation and there is a progressive decrease in bladder tone and an increase in bladder capacity. The bladder, which rests behind the symphysis pubis and anterior to the uterus, is primarily a pelvic organ. During pregnancy it becomes an abdominal organ, due primarily to the descent of the presenting part of the fetus. Danforth (1971) explains the increased urinary frequency as resulting from increased vesical pressure caused by the enlarging fetal size compressing the bladder and diminishing its capacity. During labor, the bladder may be enlarged up to two-thirds of the distance to the umbilicus as it is stretched over the anterior wall of the uterus. For this reason postpartum bladder atony is a common and understandable occurrence (Mattingly, 1967). This atony is believed to be significant in fostering urinary stasis following delivery but the relationship is as yet unclear.

Bennetts and Judd (1941) discuss the postpartum bladder with reference to the trauma caused during childbirth. They mention specifically the edema, increased capacity, decreased sensitivity to intravesical pressure,

overdistention, and urinary retention as frequent cystoscopic findings. They also state that bladder and voiding difficulties cannot be studied without examination of the paralyzing effects of anesthesia. Conclusions reached by Bennetts and Judd (1941) included:

1. Cystometric studies revealed hypotonic bladders with decreased bladder sensation and increased capacity in 86.2% of the entire series, and
2. type of delivery, trauma, and prepartum anesthesia do not account for this dysfunction, and
3. a plea is made for attention to the relief of overdistention of the postpartum bladder (p. 427).

After delivery, diuresis begins promptly as the mother begins to excrete the excess fluids once stored in the interstitial spaces. The ureters take from three to six weeks to return to the normal non-pregnant state. The bladder mucosa for twelve to eighteen hours after delivery is edematous and hyperemic, with decreased sensation and increased distention. The patient will find voiding difficult due to the removal of intra-abdominal pressure, the swelling and bruising of the tissues around the urethra, and the decreased sensitivity of the bladder and resultant increased tolerance to fluid volume. For these reasons, overdistention, inability to void, and incomplete emptying are quite common (Danforth, 1971; Hunter, 1971; Kaiser,

1971; Taylor, 1971; Ziegel and VanBlarcom, 1972; Bennetts and Judd, 1941).

Survey of Literature on Early Ambulation

The extreme lack of current literature on the problem of early ambulation or alternative methods of intervention to deal with postpartal dysuria is evident after lengthy search. To date, the most recent research designed to study this problem occurred in 1946, when Guerriero conducted an investigation into early ambulation following delivery. Ambulation of the mothers was performed with planned rest periods following controlled activity. Both primiparas and multiparas were included in the study, and all methods of delivery were considered. General conclusions indicated mothers expressed "that a general feeling of well-being occurred from the ambulation" (Guerriero, 1946:211). Multiparas also noted more favorable results as compared with previous experiences with long periods of inactivity following delivery. More specific findings related to bladder function indicated "In not a single incidence was catheterization necessary" (Guerriero, 1946: 211). The study results also indicated more rapid healing and fewer complications in areas of bowel function uterine involution, lochia flow, episiotomy discomfort, and other related postpartal disorders.

Peel (1969) comments on the radical changes occurring with regards to the length of hospital stay; before 1942 it was a standard practice to keep maternity patients in the hospital, in bed most of the time, for ten to fourteen days after delivery. "Some physicians by 1942 were becoming so radical that they sent patients home on the fifth day postpartum, but made a house call each day or two for the next week after discharge . . ." (Peel, 1969:348). In addition Peel believes that once the baby is delivered and is found normal, the sooner mother and baby are removed from the hospital environment the better.

It is a known fact that activity stimulates urination; upright positions assist with gravity flow and apply increased pressure on the bladder (Mattingly, 1967; Kottke and Blanchard, 1964). Campbell (1954) states that frequent movement facilitates the flow of urine thereby preventing stasis and reducing related complications. She also states that activity and exercise perform a significant role in the reduction of complications often associated with prolonged inactivity. Kottke and Blanchard (1964) state that normally after bodily injury, decreased functional ability occurs to the affected part. They state further, however, that with bedrest rather than rest merely of the injured part, there will be progressive deterioration of normal parts of the body. "Adequate protection must be provided for the injured part, but activity should be maintained in

normal parts of the body to prevent or minimize their deterioration" (Kottke and Blanchard, 1964:59).

The practice of confining puerperal women to bed for extended periods of time originated with the concept that early rising contributed to numerous complications, including uterine prolapse and hemorrhage. But there are some serious disadvantages to the aforementioned practice. According to Huffman (1962:502):

Early ambulation decreases the incidence of phlebo-thrombotic phenomena and improves vesical and bowel function. It makes for better uterine drainage and may hasten involution of the uterus. [it] does not interfere with episiotomy healing or cause excessive bleeding, nor is it a factor in uterine decensus or vaginal wall relaxations.

Llewellyn-Jones (1969) states that if the postpartal patient is ambulated, muscle tone is not lost and the flow of lochia is enhanced. It is obvious that the newly delivered woman requires more rest, "but this can be ensured by insisting on at least 2 hours in bed after the midday meal" (Llewellyn-Jones, 1969:123). Baird (1969) claims that the retention of urine is becoming less of a common occurrence due to the more current practice of encouraging patients to become ambulant earlier.

Bethea (1968) believes that the current trend in medical and nursing care is toward greater emphasis on activity as a preventive measure. She states that many physicians do encourage early ambulation after delivery due to the increased evidence that this plays a definite role in

decreasing circulatory and excretory complications. Bethea also states that maternal strength is regained more rapidly with activity than if she is permitted to remain in bed.

Harmer and Henderson (1971) discuss the importance of early ambulation and activity in the postoperative patient. "Those unfamiliar with hospital care during the last ten years are amazed to see that a high value is set on activity, particularly walking . . ." (p. 990). They further state that through exercise and ambulation "the body is quickly restored to its average physical performance, which was interrupted by the surgical procedures" (p. 1028).

Myles (1971:460) states that "Normal patients are allowed to be out of bed on the first day of the puerperium; they may have a shower . . . six hours after delivery. The practice appears to have no immediate deleterious effect."

Hunter (1971) states that mothers are frequently permitted to rest until voluntarily arising. "Following normal, uncomplicated delivery, the patient is allowed out of bed within the first 12 to 24 hours, provided she so desires" (p. 718). He continues, however, to state, somewhat contradictorily, that "Early ambulation promotes better drainage of lochia and spontaneous urination and is considered important in the prevention of thrombophlebitis" (p. 718). He also believes that urinary tract infections are the second most common cause of fever in the postpartum period. He cites dilatation, bacteriuria, and stasis as

the three most frequent predisposing factors to this problem. Hunter (1971:718) also states:

Following delivery, diuresis occurs, along with relative atony of the bladder. This sequence of events requires careful checking for bladder distention every 2-3 hours. The patient should be given every chance to void spontaneously before resorting to catheterization.

Harmer and Henderson (1971:4) state that part of the "unique" function of the nurse is "to help the individual gain independence as rapidly as possible." They also state that designing and instituting a program of ambulation is a nursing function and should be carried out under the supervision of the nurse.

It is apparent from the literature that the most prevalent opinion favors the use of early ambulation to promote recovery. Early ambulation stimulates the return of normal body functions following trauma and is instrumental in preventing the occurrence of complications. It hastens the recovery process, thereby reducing the length of hospitalization and the period of patient dependence on the nurse. It is also evident that it is the responsibility of the nurse to supervise a program of early ambulation to ensure the safety of her patient.

CHAPTER 3

RESEARCH DESIGN

This study was organized to determine if early ambulation after childbirth would assist the patient to void. Facilitating voiding would reduce the need for catheterizations and thereby lessen the risk of urinary tract infections. The population consisted of all primiparas and multiparas who delivered at a private predominantly middle-class hospital during February 18-26 and March 13-30, 1974, were two to six hours postpartum, and who had delivered a living child. The sample included those primiparas and multiparas two to six hours postpartum available to the investigator and who satisfied the criteria for inclusion in the study. Patients were randomly assigned to one of two groups. One group served as the control group with whom the investigator had contact limited to conversation. The second group was ambulated by the investigator at predetermined intervals during the six hour period following delivery.

Criteria for Including Patients in the Study

Patients selected for the study met the following criteria set forth by the investigator. Patients were

selected if they were two to six hours postpartum and had delivered a live infant. Because the effects of paracervical, pudendal, and perineal anesthetics were primarily local, patients experiencing these during labor were included. Patients were included whether or not forceps were used during delivery in order to study a more average sample. The majority of patients delivering experienced episiotomies, therefore these patients were included.

Criteria for Excluding Patients from the Study

Patients were excluded from the study if they were delivered by Cesarean section. Most obstetricians believe that these patients require longer rest periods than those limits established for this study. Patients who had general or spinal anesthesia were also excluded. These anesthetics have a paralyzing effect on the nerves innervating the bladder. This would interfere with the reactions of the majority of the patients (Lambertson, 1965). Patients with known vaginal, cervical, or uterine lacerations were omitted at the request of obstetricians at the hospital where the study was conducted. Patients who delivered stillborn infants and those who had Scopolamine during labor were excluded at the request of several obstetricians. Any patient diagnosed as pre-eclamptic, eclamptic, or as having any other complication such as heart disease or kidney problems was excluded.

The Study Group Using Early Controlled Ambulation

Two hours after delivery of the placenta, the patients in the study group were ambulated for five minutes with the assistance of the investigator. They were then encouraged to rest in bed for one hour. Following the rest period, each patient was ambulated a second time for ten minutes with the assistance of the investigator. Patients were then encouraged to rest in bed for two additional hours. The time and amount of the first voiding of each patient were then recorded. If catheterizations were performed, the time and amount obtained were noted. Catheterizations for the purpose of measuring residual urine were also noted.

The Control Group

Patients in the control group satisfied the criteria set by the investigator for inclusion in the study. The investigator utilized no direct physical nursing measure with patients in this group. In order to control for the possible effect of any nursing attention by the investigator each patient had contact limited to conversation with the investigator. The first contact lasting five minutes took place two hours after the expulsion of the placenta. A second contact occurred one hour later for a duration of ten minutes.

The Collection of Data

Prior to the selection of the patients for the study, a letter (Appendix A) was sent to the director of nursing service at the hospital requesting permission for the investigator to conduct the study. Following the granting of permission (Appendix B) a letter (Appendix C) was sent to all obstetricians practicing at the hospital requesting written permission to include their patients in the study. All obstetricians contacted by the investigator allowed their patients to participate in the study. The investigator was present on the hospital unit daily to identify patients eligible to participate in the study. The nursing staff of the hospital agreed to call the investigator at home within one hour of a delivery during the night or early morning hours. These patients were included if they satisfied the criteria for inclusion in the study.

The patients were placed at random into two groups with 30 in the control group and 31 in the experimental group. A data collection sheet (Appendix D) was devised by the investigator for each patient in each group for the purposes of organizing information and identifying variables. The data collection sheet included a summary of the patient's obstetrical history as well as the account of fluids during labor and delivery, medications and anesthesia received, and length of labor. Pertinent information

regarding voiding, catheterizations, and infant statistics was also recorded. The data sheet was also utilized to record comments made by the patients regarding nursing intervention pertinent to the study.

Analysis of the Data

Those participants in each group requiring catheterization due to inability to void and those able to void without catheterization were tabulated. This was done to determine whether early ambulation was effective in assisting the patients in the experimental group to void. Data cards were punched and the data analyzed by a model 6400 computer at The University of Arizona. Data were summarized for each of the two groups and analyzed collectively. The patients in each group were further subdivided according to the variables listed in the inclusion criteria. Statistical analysis was performed by computer using Chi-square. The Chi-square test was utilized as it is used to test hypotheses about entire frequency distributions. The sample frequencies were compared with the frequencies expected according to the investigator's hypothesis. The Chi-square provided a measure of the discrepancy between the expected and obtained frequencies. This indicates the probability that such frequencies might occur by chance, if variables were not significant. The chart of each patient was reviewed three days postpartum by the investigator to

determine if the diagnosis of urinary tract infection had been made on any patient. Findings were noted on the patient's data sheet.

CHAPTER 4

PRESENTATION OF FINDINGS

This chapter represents the findings of the data gathered in the experimental study of two groups of women on the postpartum unit in a local hospital. The analysis of the data compared and measured the incidence of catheterizations in the control and experimental groups. This occurred after the nursing measure of early controlled ambulation was instituted with the patients in the experimental group. Analysis of the relationships between variables is presented as well as discussion of how patients felt about early ambulation and the procedure of catheterization.

During the time period of February 18-26 and March 13-30, 1974, the investigator was present on the unit daily to identify patients eligible to participate in the study. The data gathering process was interrupted for a two week period from February 26-March 13, 1974, as a personal emergency required that the investigator leave the state. The nursing staff on the unit called the investigator at home during the night and early morning hours to ensure that eligible patients delivering at these times were included in the study.

During the period of February 18 to March 30 there were 134 patients delivered at the hospital utilized during the study. Fifty of these deliveries occurred during the investigator's absence and were not included in the study. A total of 84 patients participated. Nine were excluded from the sample as they did not meet the criteria for inclusion set for the study. Seventy-five patients were initially included in the sample; however, 14 were excluded when the accuracy of pertinent information was questionable.

Patients were randomly assigned to one of two groups. One having 30 patients served as the control group with whom the investigator had contact limited to conversation. The second group of 31 patients served as the experimental group. Patients in the experimental group were ambulated by the investigator at predetermined intervals during the six hour period following delivery.

Characteristics of the Sample

Data were analyzed first to learn if the two groups differed systematically for some variable.

Age

The ages of the patients in the entire sample ranged from 13 to 41 years with a mean age of 25.90 years. The mean age of the patients in the control group was 24.90 years. The mean age of patients in the experimental group was 26.87 years. With an F value of 1.4320 at 1 and 59 df,

age was not shown to be significantly different between the two groups. A detailed account of age ranges and related data are presented in Table 1.

Table 1. Crosstabulation of Age Ranges by Group

Group	Age Range	Mean Age
Control	13-37 years	24.900 years
Experimental	16-41 years	26.871 years

Parity

Parity of the sample ranged from one to eight living infants. Each group in the sample contained 15 primiparas. The control group contained 15 multiparas, the experimental group 16 multiparas. Crosstabulation of parity by group revealed a Chi-square of 3.1273 with 6 df and a significance level of .7927. This indicates that parity was not statistically different between groups. Further cross-tabulation of parity with group appears in Table 2.

Anesthesias

All 61 patients received some form of anesthesia during labor and/or delivery. A combination of paracervical and pudendal blocks was the most common anesthesia employed throughout the sample. Twenty-one patients experienced this

Table 2. Crosstabulation of Parity by Group

Parity	Control Group	Experimental Group	Total
1	15 patients	15 patients	30
2	7	5	12
3	2	4	6
4	4	3	7
5	0	0	0
6	2	2	4
7	0	1	1
8	0	1	1
Column Total	30	31	61

type of anesthesia. Fourteen patients utilized only local anesthesia, primarily for the purpose of performing an episiotomy. Twelve patients experienced pudendal block anesthesia, 11 had a combination paracervical and local, and 3 had only a paracervical block. Chi-square with 4 df revealed a significance level of .4845, indicating that type of anesthesia was not of significant difference between the two groups. A more detailed description of anesthetics appears in Table 3.

Table 3. Crosstabulation of Anesthetics by Groups

Anesthesia Used	Control	Experimental	Total
1. Paracervical Block	0	3	3
2. Pudendal Block	7	5	12
3. Local only	7	7	14
4. Paracervical and Pudendal Blocks	11	10	21
5. Paracervical and Local	<u>5</u>	<u>6</u>	<u>11</u>
Column Totals	30	31	61

Episiotomy

Fifty-one patients had an episiotomy immediately prior to delivery. All patients not experiencing episiotomies were multiparous, with 3 in the control group and 7 in the experimental group. A corrected Chi-square of .96230 with 1 df indicated a significance of .3266. This reveals that the occurrence of episiotomies is not statistically significant between groups. Table 4 indicates frequency of episiotomy in each group.

Forceps

Fifty-one patients delivered their infants spontaneously and 10 required the use of forceps. The use of forceps was classified as none, low, mid, or high. No

Table 4. Frequency of Episiotomy by Groups

Episiotomy	Control	Experimental
Yes	27 patients	24 patients
No	3 patients	7 patients
Column total	30 patients	31 patients

patients in either group required the use of high forceps. Five patients required low forceps and five required mid forceps. A more detailed account of the frequency of forceps is presented in Table 5. With a Chi-square of .40332 and 2 df, a significance level of .8174 indicates that the frequency of intervention through forceps is not a significant difference between the two groups of patients.

Ice Chips

If patients desired, ice chips were given throughout labor. Patients were never permitted an intake of more than one 80 cc cup of ice, and none of the patients consumed the entire contents of one cup. Ten of the patients refused ice chips. Fifty-one did utilize the ice as a means of keeping their mouths moist and also as a means of satisfying thirst to a slight degree. Fourteen patients brought hard candies or lollipops to suck on during labor. Two patients, one in each group, also had 40 cc's each of water. With a

Table 5. Crosstabulation of Forceps by Group

Type of Forceps	Control Group	Experimental Group	Total
None	25	26	51
Low	2	3	5
Mid	3	2	5
Column Total	30	31	61

corrected Chi-square at 1 df the resulting significance level of .2738 indicates that the use of ice chips was not significantly different between groups.

Medications

Medications used during labor were recorded for each patient, as well as the number of doses given. Findings of these data indicated almost exclusive use of Demerol 25-75 milligrams and/or Valium 5-10 milligrams. Only two patients in the sample each received Phenergan 25 milligrams. The number of doses ranged from one to four, with a mean number of doses of 2.4. Nine of the patients in the sample had attended La Maze classes and received no medication during labor. Six of these patients were in the control group and 3 were in the experimental group. None of the patients received any medications in the recovery room.

Fluids

Fifty-six patients had intravenous fluids during labor, delivery and recovery room periods. Of the five patients who did not have IV's, 2 were multiparas in the control group and 3 were multiparas in the experimental group. Intravenous fluids were continued until the 1000 cc's had all been absorbed in all but 2 multiparous patients in the control group. These IV's were both discontinued in the recovery room at the request of the patients. All but 4 patients had oral fluids in the recovery room, with two of these patients being in each of the two groups. Crosstabulation of total fluid intake between groups during the six hours postpartum was done using analysis of variance. A value of T of .1554 indicated that there was no significant difference between groups in the amount of fluids received during this period.

In summary, during the course of investigation numerous variables including age, parity, forceps, anesthesia, episiotomy, and fluids were considered. Each of these variables was crosstabulated with groups using Chi-square analysis. The purpose of this was to determine the difference between the two groups regarding the pre-existing variables and the treatment measure.

Subsequent findings revealed that there was no statistically significant difference in variables between the control and experimental group.

Significance of Catheterization
Crosstabulated by Variables

The purpose of this study was to learn if early controlled ambulation might be effective in assisting postpartum patients to void without the use of catheterization. To determine the relationship of ambulation to catheterization, crosstabulation of catheterization with significant variables was performed using Chi-square analysis.

Parity

Catheterization due to the inability to void was necessary with 13 of the total sample of primiparas. Only 5 multiparas required catheterization. Raw Chi-square of 9.960 at 6 df revealed a significance level of .1263. This indicates that the frequency of catheterization was not significantly different between primiparous and multiparous patients in the sample. A complete description of parity crosstabulated by group and frequency of catheterization appears in Table 6.

Anesthesia

The most commonly used anesthesia in this sample was a combination of paracervical and pudendal blocks. Seven patients experiencing this type of anesthesia required catheterization. Five patients receiving only pudendal blocks required catheterization. Four patients who received

Table 6. Crosstabulation of Parity with Catheterization and Groups

Parity	Control Group		Experimental Group	
	Catheterization Required			
	Yes	No	Yes	No
1	10	5	3	12
2	3	4	0	5
3	0	2	0	4
4	0	5	0	3
5	0	0	0	0
6	1	0	1	1
7	0	0	0	1
8	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
Total	14	16	4	27

paracervical and local anesthesia required catheterization, compared with 2 who received only local anesthesia. As previously noted, there was no significant difference between the control and experimental groups to types of anesthesia. Crosstabulation of anesthesia with catheterization revealed a significance level of .3973 with 4 df. This indicates that type of anesthesia was not of significant difference between patients who required catheterization and

those who did not. Table 7 demonstrates a complete description of this variable.

Table 7. Crosstabulation of Anesthesia with Catheterization

Anesthesia	Catheterization Required	Not Required
Pudendal	0	3
Paracervical	5	7
Local	2	12
Paracervical and Pudendal	7	14
Paracervical and Local	<u>4</u>	<u>7</u>
Total	18	43

Episiotomy

Fifty-one patients required an episiotomy immediately prior to delivery. The frequency of episiotomy was previously shown to be of no significant difference between the control and experimental groups. Further crosstabulation with catheterization revealed that the frequency of episiotomy was not statistically different at .7325 between patients requiring catheterization and those not requiring it. Analysis of episiotomy and catheterization crosstabulation is presented in Table 8.

Table 8. Crosstabulation of Episiotomy with Catheterization

Episiotomy	Catheterization Required	Not Required
Yes	16	35
No	2	8

Forceps

The use of forceps was required by 10 patients in the sample. The use of forceps was previously shown not to be significantly different between groups in the sample. Further crosstabulation of forceps with catheterization revealed a significance of .7858 with 2 df. This indicates that the use of forceps was not a significant variable between the group that required catheterization and the group that did not. Further analysis of this relationship appears in Table 9.

Catheterization for Residual

Following the initial voiding a few patients required catheterization for residual urine. This was done if the amount voided was less than 200 cc's or if the physician requested a sample of the residual urine. Six patients in the control group were catheterized for residual. The amounts obtained varied from 75-600 cc's. Seven patients in the experimental group were catheterized

Table 9. Crosstabulation of Forceps with Catheterization

Forceps	Catheterization Required	Not Required
None	15	36
Mid	2	3
Low	1	4
Total	18	43

for this purpose. The amounts obtained varied from 50-100 cc's. Crosstabulation of catheterization with groups revealed a difference that was not statistically significant at the level of .9469. None of the patients was catheterized in the delivery room. Table 10 reveals the relationship of catheterization for residual in each of the two groups.

Catheterizations

There were 30 patients in the control group. The investigator had contact limited to conversation at predetermined intervals with patients in this group. Fourteen patients in the control group required catheterization due to their inability to void after delivery. Thirty-one patients comprised the experimental group utilizing early controlled ambulation. Only four patients ambulated by the investigator at predetermined intervals required

Table 10. Crosstabulation of Catheterization for Residual Urine with Groups

Catheterization for Residual	Control Group	Experimental Group
Yes	6	7
No	24	24

catheterization due to their inability to void. At a corrected Chi-square 6.811 with 1 df, this reveals a highly significant difference between groups of .0091. This level indicates that the early ambulation was statistically significant in reducing the incidence of catheterization in the experimental group. This causes the null hypothesis to be rejected at the .01 level. Table 11 indicates the results of this crosstabulation.

The four patients catheterized in the experimental group were generally dissimilar with regard to variables. Although all four had episiotomies during delivery, only 10 of the 61 patients in the entire sample did not. Two had paracervical blocks, one had both paracervical and pudendal blocks, and the fourth required only a local infiltration. Table 12 demonstrates further analysis of the four patients.

Table 11. Crosstabulation of Catheterization with Groups

Catheterized	Control Group	Experimental Group
Yes	14	4
No	16	21

Table 12. Summary of Variables for Four Patients Catheterized in the Experimental Group

Patient	Age	Parity	Anesthesia Used	Forceps	Episiotomy
#1	21	1	paracervical	no	yes
#2	22	1	paracervical/ pudendal	no	yes
#3	26	3	paracervical	no	yes
#4	36	3	local	no	yes

Further investigation attempted to determine the relationship between catheterization and the incidence of urinary tract infections. Three days postpartum the laboratory reports of a urinalysis on each patient was examined to determine if the diagnosis of urinary tract infection had been made. These data were then cross-tabulated with catheterization and groups to determine the level of significance present. It was demonstrated previously that there was a significant difference between the number of patients in the control group requiring catheterization and the number of patients in the experimental group requiring catheterization. Continued investigation revealed that 12 patients in the control group who were catheterized subsequently developed urinary tract infection, compared with 5 patients in the experimental group. With a corrected Chi-square of 3.215 with 1 df, this, although high, is not significant at the .05 level. Crosstabulation of urinary tract infections with catheterization demonstrated a corrected Chi-square of 16.480 with 1 df. This reveals that the incidence of urinary tract infection following catheterization is highly significant at a level of .0001. Complete analysis of these data is presented in Table 13.

Table 13. Crosstabulation of Catheterization with Urinary Tract Infections

	Control	Experimental
Catheterized	14	4
Not catheterized	16	21
UTI developed	12	5
no UTI developed	18	26

Summary

The total patient sample consisted of 61 patients who satisfied the criteria for inclusion in the study. Thirty of these patients comprised the control group with whom the investigator had contact limited to conversation. Thirty-one patients composed the experimental group. These patients experienced the nursing measure of early controlled ambulation. The time period involved in the collection of data was 27 days during February 18 to 26, 1974. Selected variables were controlled for throughout the sample. These included age, parity, forceps, episiotomy, and anesthesia. A complete description of each variable was recorded on each patient's data sheet for analysis. Each variable was then crosstabulated both with group and the frequency of catheterization. The purpose of these crosstabulations was to determine if these variables

created a significant difference between groups. Subsequent analysis with Chi-square revealed that the two groups of patients were not statistically different. These data also indicated that the variables considered were not statistically significant between the subpopulations requiring catheterization and those that did not.

It was evident from the high degree of significance that those patients in the control group required catheterizations more frequently than those who utilized early controlled ambulation. This level of significant difference was shown to be .0091. It was also evident that there is a strong relationship between the frequency of catheterization and the incidence of urinary tract infections. Using Chi-square analysis there was evidence of a high degree of significance between these two variables at a level of .0001.

CHAPTER 5

INTERPRETATION OF FINDINGS

Following a review of the study, this chapter discusses the conclusions and nursing implications of the findings. Recommendations for further research into this problem are also presented.

Review of the Study

Certain physiologic changes occur in the urinary tract during pregnancy. Among those normally found are decreased muscular tone of the bladder with subsequent increase in capacity. During pregnancy, the bladder becomes an abdominal organ, due primarily to the engagement of the presenting part of the fetus. Labor is a physiologically stressful period that creates trauma to the bladder and urethral mucosa. Uterine contractions compress the bladder, stretching it over the anterior wall of the uterus. This often enlarges the bladder up to two-thirds of the distance to the umbilicus. Postpartally the bladder tends to be edematous and hyperemic with marked decrease in sensation and increased capacity. This frequently predisposes to urinary stasis. Compounding these changes is the subsequent increase in susceptibility to urinary tract infections. Catheterization is commonly employed as a means of emptying

the bladder to compensate for the inability to void and to reduce urinary stasis. Other means have been suggested as alternatives for catheterization to reduce dysuria and stasis in the postpartum patient. Among these is early controlled ambulation (Guerriero, 1946; Reams and Powell, 1960).

This study was conducted to investigate further the problem of postpartal dysuria. The purpose was to learn about the effectiveness of early controlled ambulation in assisting postpartum patients to void without the use of catheterization. Patients in a local hospital were randomly assigned to one of two groups. The control group had contact with the investigator limited to conversation. Patients in the experimental group were ambulated by the investigator at predetermined intervals. The time and amount of each patient's first voiding were noted and recorded on a data collection sheet devised by the investigator. Catheterizations performed on any patient within the two groups were likewise noted and recorded. These data were then tabulated on cards and analyzed by computer.

Conclusions

There was no significant difference between the two groups in relation to variables tested. This indicates that the samples chosen at random formed homogeneous groups from which inferences can be made for the given population.

Selected variables were examined. These were analyzed by crosstabulation with groups and with catheterizations to determine the relationships of these variables within the groups. Findings revealed that these variables had no significant influence on the responses of the patients in either group.

Fourteen, or 46.6 per cent, of the 30 patients in the control group required catheterization due to their inability to void. One patient in this group was discharged home with a retention catheter. Only 4, or 12.9 per cent, of the 31 patients in the experimental group required catheterization due to their inability to void. At a level of .0091 there was a statistically significant difference in the frequency of catheterizations between groups.

Twelve, or 86 per cent, of the 14 patients catheterized in the control group developed urinary tract infections as determined by laboratory results and physician's diagnosis. Of the 31 patients in the experimental group, only 5, or 16 per cent, developed diagnosed urinary tract infections, four of whom were catheterized. At a level of .0001 findings indicate a statistically significant difference between groups in the incidence of urinary tract infections.

The results of this study strongly suggest that early controlled ambulation is an effective measure in

assisting the postpartum patient to void. When the patient is ambulated, there is a marked decrease in the need for catheterization and a subsequent decrease in postpartal urinary tract infections. This indicates that catheterization should not be utilized as a primary means of emptying the bladder. It should exist, in most instances, as a final means of solving a problem with which all other measures have failed.

Comments made by the patients were also analyzed. These comments had to do primarily with the ambulation and/or catheterization. Those primiparas who were catheterized expressed similar feelings of embarrassment or humiliation. This did not seem to be limited to the younger primiparas, but rather, characteristic of the majority of all primiparas. Multiparas commented primarily on the ambulation. However, all of the multiparas who were catheterized responded negatively. Their feelings were not discussed as openly as the primiparas', but indicated that they found the procedure unpleasant. This is indicative that the procedure of catheterization is unpleasant and creates negative rather than neutral or positive responses from the patient.

Primiparas said little regarding early ambulation and responded to it, or the absence of it, as though this were to be expected. Multiparas commented frequently on the early ambulation, seldom on the absence of it. Those

in the experimental group said they found early ambulation preferable to staying in bed, which all but one had experienced with previous pregnancies. Many related that they experienced less "stitch" discomfort, as well as fewer after-pains. These patients seemed to enjoy the hospitalization more than those women in the control group. Staff members indicated that they seemed more active and sociable than had been observed with other groups of postpartum patients. It seems evident, therefore, that patients who were ambulated appeared pleased with early ambulation and benefited by it.

The following nursing implications were evident from the study:

1. Nurses should recognize that postpartal dysuria is a problem that frequently occurs. Knowledge of the changes predisposing the patient to dysuria will assist the nurse to anticipate potential urinary problems. Subsequently, it will enable the nurse to plan and implement care to provide for the elimination need of the patient.
2. Recognition that catheterization often potentiates rather than solves urinary problems should encourage nurses to seek alternative solutions.
3. Assessing problems and implementing a plan of care to help resolve them effectively is a nursing function. Nurses are in contact with the patient

when dysuria first becomes evident. For this reason nurses are in an optimal position to intervene and encourage patients to ambulate. Nurses are also available to assist the patient ambulating for the first time to ensure safety.

4. It is imperative that nurses recognize the patients' feelings regarding catheterizations. Catheterizations may create feelings of embarrassment or humiliation which might have been avoided if alternative methods had proved successful.
5. Most patients enjoyed the freedom of being able to ambulate sooner. Nurses can assist patients to become independent more rapidly. This facilitates adjustment to increased activity at home.
6. The length of hospitalization is becoming shorter for most maternity patients. Assessment of needs occurs more rapidly of necessity and nurses have less time available for important patient teaching. Early ambulation, by allowing independence in the patients, frees the nurse to devote more time to patient teaching.
7. Many patients expressed that early ambulation provided relief in other problem areas, primarily those of flatus, afterpains, defecation and "stitch" discomfort. Nurses instituting a program of early

ambulation may find that patients experience fewer related discomforts and require analgesia less often.

8. Nurses should recognize that urinary tract infections require longer hospitalizations. This in turn creates potential financial stress for the patient and fosters disappointment due to a delayed discharge.

Areas recommended for further study include:

1. This study be replicated using a larger sample size, to insure a wider socioeconomic representation and patients not previously included.
2. Similar studies be conducted to determine the effectiveness of early controlled ambulation in reducing the incidence of other maternal problems; afterpains, episiotomy discomfort, constipation.
3. This study be replicated including a follow-up visit to the patient after discharge.
4. Studies be conducted to determine the effectiveness of early controlled ambulation in areas other than maternity nursing.
5. A study be conducted to evaluate additional nursing measures in preventing postpartal dysuria.

CHAPTER 6

SUMMARY

This study was conducted to determine the effectiveness of early controlled ambulation in assisting postpartum patients to void without the use of catheterization. The investigator reviewed the literature on early controlled ambulation in the postpartum period. This revealed scant information and a variety of conflicting opinions. The investigator applied the nursing measure of early controlled ambulation to 31 patients who delivered at a local hospital. The frequency of catheterizations in these patients was then compared to the frequency of catheterizations in postpartum patients who were not ambulated. Comments made by the patients concerning catheterization and the applied nursing measure were recorded.

The conceptual framework provided the theoretical foundations of the study. A review of the literature was carried out focusing on normal anatomy and physiology of the urinary tract during pregnancy, the catheterization procedure, and early controlled ambulation. The purpose of this was to facilitate understanding of the relationship among these concepts.

The investigator established criteria for including and excluding patients from the study. This was arranged to protect the safety of certain patients and to comply with the requests of some physicians practicing at the hospital. Permission was obtained from the nursing director to conduct the research at the hospital. Permission was also obtained from several physicians who practice at the hospital to include their patients in the study.

The sample included 61 patients who delivered during February 18-26 and March 13-30, 1974. These patients were randomly placed into two groups. One group served as the control group that had contact limited to conversation with the investigator. A second group of 31 patients was ambulated by the investigator at predetermined intervals. A data collection form was devised by the investigator for use in the study. The time and amount of each patient's first voiding were noted on the form. If a catheterization was performed on a patient in either of the two groups, the time and amount of urine obtained were also noted on the data form. These data were recorded on cards and computer analysis was done using Chi-square and analysis of variance.

Seventeen of the 30 patients in the control group required catheterization due to their inability to void after delivery. Only 4 of the 31 patients in the experimental group required catheterization due to their inability to void after delivery. The hypothesis that patients

experiencing early controlled ambulation will require catheterization due to inability to void as frequently as those not utilizing early controlled ambulation was rejected at the .01 level. Twelve patients in the control group experienced postpartal urinary tract infections. Only 5 patients in the experimental group experienced this problem. This seems to indicate that the incidence of urinary tract infections decreases as the patient's ambulation increases.

The comments made by the patients could be categorized primarily by parity. Primiparas in both groups made few comments about their levels of activity. The majority of the comments offered by the primiparas were made by those who were catheterized. All of these patients expressed negative feelings including embarrassment, a sense of humiliation, and a loss of privacy and self-esteem. Multiparous patients commented most frequently on the level of their activity. Those in the control group generally indicated that decreased activity was common, expected and "normal" following delivery. Multiparous patients in the experimental group generally indicated positive feelings toward early ambulation. The most common response received was that they should have been able or encouraged to ambulate earlier after previous deliveries. Other feelings expressed by the multiparas indicated a decreased incidence of other discomforts; constipation, feelings of abdominal

"fullness" due to flatus, episiotomy discomfort and after-pains.

The findings of the study seem to indicate that early controlled ambulation is an effective nursing measure to assist postpartum patients to void without the use of catheterization.

APPENDIX A

LETTER REQUESTING PERMISSION TO CONDUCT STUDY
AT PRIVATE HOSPITAL

The University of Arizona
College of Nursing
Tucson, Arizona
February 15, 1974

Director of Nursing Service
Hospital
Tucson, Arizona

Dear:

Mrs. Wendy La Fage, R.N., is a graduate student in the College of Nursing, The University of Arizona. Currently she is preparing to conduct an investigation regarding the effectiveness of nursing intervention through early controlled postpartal ambulation. Mrs. La Fage is requesting permission to conduct the data gathering process on the maternity wing at _____ hospital during the period of February 18 to March 30.

Mrs. La Fage has received written permission from physicians practicing at _____ hospital to include their patients in her study. Results from this research will be used for scientific purposes and all data will be kept in the strictest confidence.

The chairman of Mrs. La Fage's thesis committee is Dr. Kay, and she can be reached through the University of Arizona College of Nursing.

Cordially,

APPENDIX B

LETTER GRANTING PERMISSION TO CONDUCT STUDY
AT PRIVATE HOSPITAL

Director of Nursing Service
Hospital
Tucson, Arizona
February 15, 1974

The University of Arizona
College of Nursing
Tucson, Arizona

Dear:

The letter regarding the research of Mrs. La Fage was received, and her request given careful consideration. It is understood that Mrs. La Fage has received permission from the physicians practicing at this hospital to include their patients in her study. It is also understood that the data received from this investigation will be used for scientific purposes and kept in strict confidence.

According to the stipulations set forth above, it is permissible for Mrs. La Fage to conduct her research at this hospital.

Cordially,

APPENDIX C

CONSENT OF PHYSICIANS

I understand that the study in which my patients are participating is part of an investigation to determine the effectiveness of early controlled postpartum ambulation. I therefore consent to have my patients included in this study. I understand also that the resulting data will be used for scientific purposes.

Signature _____

Dated _____

APPENDIX D

DATA COLLECTION SHEET

GROUP _____ AGE _____ GRAVIDA _____ PARA _____ AB _____ S _____

LENGTH OF GESTATION _____ WEEKS. ADMISSION DATE _____ TIME _____

TIMES VOIDED DURING LABOR _____. ANESTHESIA USED _____

MEDICATIONS USED DURING LABOR -- TIME GIVEN.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DELIVERY DATA _____ AND TIME _____. EPISIOTOMY (yes/no) _____

FORCEPS USED (none, low, mid, high) _____.

PLACENTA DELIVERED AT _____ (time). TO RECOVERY _____

AND TIME _____

TOTAL IV FLUIDS IN LABOR/DELIVERY _____ cc's

ICE CHIPS _____
(yes/no)

TOTAL FLUIDS P.O. LABOR/DELIVERY _____ cc's.

BIRTH WEIGHT INFANT _____ OUNCES.

OXYTOXICS USED: (name) _____ (dose) _____ (time) _____

(name) _____ (dose) _____ (time) _____

CATHETERIZATION NECESSARY (due to inability to void) _____
(yes/no)

DATE _____

TIME _____

AMOUNT _____ cc's

PATIENT'S FIRST VOIDING DATE _____

TIME _____

AMOUNT _____ cc's

CATHETERIZATION FOR RESIDUAL: _____ (yes/no)

AMOUNT _____ cc's

THREE-DAY POSTPARTUM CHECK: PATIENT DIAGNOSED WITH UTI BY
LAB REPORT AND DOCTOR'S DETERMINATION? _____
(yes/no)

PATIENT'S COMMENTS:

REMARKS:



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