

Unfulfilled Requests for Postpartum Tubal Ligation at a Southern Tertiary Care Center

Casey L. Rosser, Jonas J. Swartz, Gretchen S. Stuart

BACKGROUND Nationally, multiple barriers lead only 50% of women who request postpartum tubal ligation to receive it prior to discharge. We aimed to identify characteristics associated with unfulfilled requests for postpartum tubal ligation at a tertiary medical center in the South.

METHODS We conducted a retrospective chart review of all women delivering a live infant with a documented desire for postpartum sterilization between September 1, 2018, and November 30, 2018. The primary outcome was receipt of postpartum sterilization prior to discharge. We used chi-square and Mann Whitney U tests for descriptive analyses.

RESULTS(S) One thousand seventy-two women delivered a live infant at our institution during our sampling frame. One hundred twenty-four had a documented desire for postpartum sterilization (124/1072, 12%). Eighty-one women (81/124, 65%) received their postpartum sterilization and 43 women (43/124, 35%) did not. Women who delivered by cesarean were more likely to receive their postpartum sterilization (63/68; 93%) than if they delivered vaginally (18/56; 32%) ($P < .001$). Lack of valid Medicaid consent ($P = .006$) was associated with unfulfilled requests for postpartum sterilization following vaginal delivery while BMI > 40 ($P = .158$) approached significance.

LIMITATIONS Our sample is small and from a single institution. Additionally, the specific reason for tubal ligation nonfulfillment was often not documented.

CONCLUSION(S) In this Southern institution, women delivering vaginally, those without a valid Medicaid consent form, and women with BMI > 40 were less likely to receive desired postpartum sterilization. Multipronged process changes are needed to fulfill patients' sterilization requests.

Surgical sterilization, especially immediately postpartum bilateral tubal ligation (PPBTL), is the most popular method of contraception in the United States [1, 2]. Surgical sterilization is significantly more commonly utilized by women of ethnic and racial minorities, women in the South, women in underserved communities, and women with public insurance—the same cohort of women disproportionately affected by unintended pregnancy [2–4]. Half of the 600,000 sterilization procedures occurring in the United States annually are performed in the immediate postpartum period, with 8%–10% of all hospital deliveries followed by PPBTL. However, only 50% of women who request PPBTL during prenatal contraceptive counseling actually receive it despite its known safety and efficacy [5–8]. More strikingly, up to 50% of women discharged with an unmet sterilization request will become pregnant within 1 year, twice the proportion of those who had not initially requested PPBTL [6]. Less than 10% of women discharged without their desired PPBTL will have this procedure performed within the following 27 months [9].

Barriers impeding fulfillment of PPBTL requests can be categorized into factors related to the patient themselves, the hospital system, the provider, or the payer. In North Carolina, 42% of all deliveries are covered by Medicaid, compared to 43% nationally [10, 11]. Being insured by Medicaid is a known barrier to fulfillment of postpartum sterilization due to federal requirements mandating completion of a consent form between 30 and 180 days prior to the procedure

[5, 12, 13]. While many studies have reported on barriers to fulfillment of PPBTL across the country, none have focused on the Southern United States, where historic rates of sterilization are among the highest in the country [3, 14].

The primary objective of our study was to identify characteristics associated with unfulfilled requests for PPBTL at a tertiary medical center in the South. We hypothesized that having Medicaid insurance and lack of a valid federal consent form would be associated with unfulfilled requests for PPBTL in our cohort. The identification of other potentially modifiable characteristics in our cohort could help our hospital and other Southern health care systems reevaluate approaches to PPBTL. Our second objective was to identify perceived barriers to providing PPBTL identified by labor and delivery personnel.

Methods

We performed a retrospective cohort study at North Carolina Women's Hospital in Chapel Hill, North Carolina (NC Women's Hospital). We also performed a cross-sectional survey of all obstetric providers and clinical support staff on labor and delivery. This study was approved by the

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University of North Carolina Institutional Review Board (Study# 18-2955, Reference ID 241373).

North Carolina Women’s Hospital is a tertiary referral center serving women throughout the state. In 2019, 4065 women delivered a live infant at NC Women’s Hospital, with the majority of births covered by public insurance (56%) [15]. Thirty percent of women who delivered at NC Women’s Hospital had a cesarean delivery in calendar year 2019. NC Women’s Hospital is a teaching hospital where fellows, residents, and medical students are integral to the clinical care provided. Postpartum tubal ligation procedures at this institution are performed either intraoperatively at the time of cesarean section or after vaginal delivery via infraumbilical minilaparotomy.

Women delivering a live infant were included in the cohort if their desire to receive PPBTL was documented in the electronic health record upon admission to labor and delivery between September 1, 2018, and November 30, 2018. Confirmation and documentation of planned postpartum contraception method upon admission to labor and delivery is standard practice at NC Women’s Hospital. We abstracted data from the electronic health records for characteristics known to be associated with fulfillment of desired PPBTL requests, as well as sociodemographic characteristics and insurance coverage. For women with unfulfilled requests for PPBTL, we abstracted data for documented contraception plan at time of postpartum discharge as well as fulfillment of interval sterilization between the time of postpartum discharge and the time of data abstraction, which was a maximum of 7 months from the index delivery.

The primary outcome was PPBTL status at the time of discharge from the hospital. Descriptive analysis was performed using chi-square and Mann Whitney U tests where appropriate and can be seen in Table 1. We planned a logistic regression model for further characterization of risk factors for nonfulfillment of tubal ligation but did not have an adequate sample size. STATA (Version 14, College Station, Texas) was used for all data analysis.

To better inform our understanding of practice at our institution, we conducted a survey of all obstetric providers (attending, residents, fellows, certified nurse midwives) and clinical support staff who work on labor and delivery. The objective of this survey was to identify perceived barriers to PPBTL fulfillment by labor and delivery staff. The survey consisted of 2 multiple-choice questions. The first question asked respondents to choose factors they thought were the greatest barriers to fulfillment of PPBTL at our institution. If they selected either “patient obesity” or “patient declining,” a follow-up question sought further detail (Appendix 1). The final question asked the respondent to describe their primary role on labor and delivery for context.

Results

One thousand seventy-two women delivered at NC Women’s Hospital between September 1, 2018, and

APPENDIX 1 Survey Administered to Staff Working on the Labor and Delivery Unit at North Carolina Women’s Hospital

This appendix is available in its entirety in the online edition of the *NCMJ*.

November 30, 2018. Of these, 124 women had a documented desire for PPBTL and thus were included in our cohort (124/1072; 12%). Forty-three women (43/124, 35%) did not receive their PPBTL prior to discharge (Figure 1).

Characteristics of the women who did not receive their PPBTL were similar to those who did (Table 1). Age, race/ethnicity, gravidity (number of times a woman has been pregnant), and parity were similar in both groups. Most women in both groups had Medicaid or presumptive

TABLE 1.
Characteristics of 124 Women at a Southern Tertiary Care Hospital Who Did or Did Not Receive a Requested Postpartum Bilateral Tubal Ligation

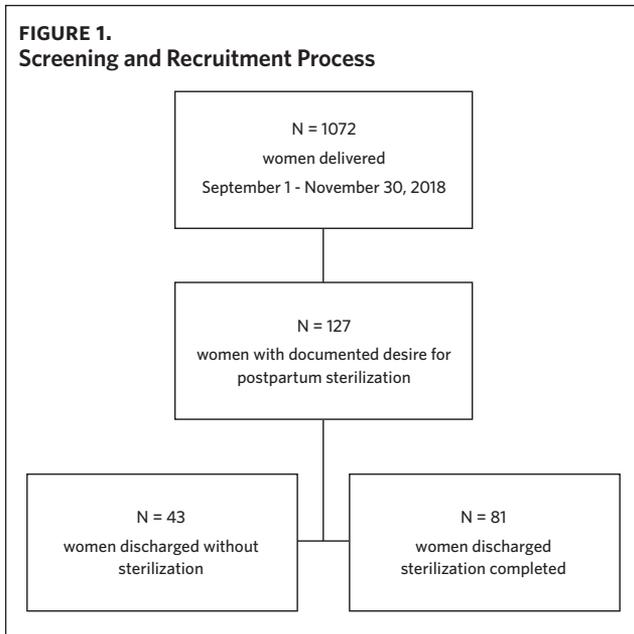
Characteristic	Did Receive PPBTL n = 81		Did Not Receive PPBTL n = 43		P-Value
	n	(%)	n	(%)	
Age					
≤ 24	1	(1)	2	(5)	
24-29	19	(23)	11	(26)	
30-34	25	(31)	16	(37)	
≥ 35	36	(44)	14	(33)	.396
Parity					
1	1	(1)	1	(2)	
2	24	(30)	8	(19)	
≥ 3	56	(69)	34	(79)	.33
Race/Ethnicity					
Non-Hispanic White	35	(43)	11	(26)	
Hispanic	25	(31)	15	(35)	
Non-Hispanic Black	15	(19)	13	(30)	
Other, Multiracial	6	(7)	4	(9)	.212
BMI^a					
< 30	27	(34)	7	(17) ^b	
30-39	39	(49)	25	(60)	
≥ 40	14	(18)	10	(24)	.135
Mode of Delivery					
Vaginal	18	(22)	38	(88)	
Cesarean	63	(78)	5	(12)	0
Primary Insurance					
Medicaid	39	(48)	26	(60)	
Emergency Medicaid	4	(5)	1	(2)	
Medicare	6	(7)	3	(7)	
Private	32	(40)	13	(30)	.652

Hypothesis testing with chi-square and Mann Whitney U-tests

^aBMI not calculated for 2 subjects who did not have height documented.

^bDue to rounding, does not equal 100.

FIGURE 1.
Screening and Recruitment Process



Medicaid eligibility. Those who delivered by cesarean were much more likely to receive their postpartum tubal ligation (63/68; 93%) than those who delivered vaginally (18/56; 32%) ($P < .001$). Age, parity, race/ethnicity, primary insurance provider, nor BMI were statistically different among these groups.

We performed a subgroup analysis of the 70 women with Medicaid or Emergency Medicaid (Table 2). In this subgroup, cesarean delivery remained highly associated with PPBTL fulfillment. Having a valid federal consent form on file was also associated with fulfillment of PPBTL. Eighty-six percent of women with Medicaid who received their sterilization had a valid Medicaid consent on file compared to only 52% of women with unfulfilled requests ($P = .006$).

In our cohort, 56 women had a vaginal delivery (56/124, 45%). Only 18 of the 56 women (32%) received their desired PPBTL following a vaginal delivery. None of the measured sociodemographic or personal characteristics predicted successful fulfillment of desired tubal ligation among those delivering vaginally after a subgroup analysis. We did not observe a statistically significant association between BMI and tubal ligation completion after vaginal delivery. However, there was a nonsignificant trend toward lower probability of completion among women with BMI > 30 (11/41; 27%) and BMI > 40 (1/9; 11%) as compared to BMI < 30 (7/14; 50%) ($P = .158$).

Only 19 of the 43 women with unmet requests had a documented reason for tubal ligation unfulfillment in the medical record with the remaining 24 having no documented explanation. Two of the nineteen women had tubal ligations attempted that were unsuccessful. Three had documentation listing patient obesity as the reason the PPBTL was not performed following vaginal delivery. Nine of the nineteen had documentation reporting that they elected either to pur-

sue an interval tubal ligation or to use an alternative form of contraception. Two had confirmation that a problem with the Medicaid consent form was the reason for unfulfillment and the remaining three cited other reasons—lack of insurance, surgical history, and unclear fetal prognosis—as to why PPBTL was unfulfilled.

We wanted to learn more about subsequent contraception use by the 43 women in our cohort who did not receive their desired PPBTL. At the time of discharge, 23 of the 43 women (53%) did not have an alternative contraceptive plan documented. Twenty of the forty-three women (47%) did have an alternative contraceptive plan documented in their chart. Data abstraction from the electronic health records for this project occurred between 3 and 7 months following hospital discharge from the index delivery. Only 8 women had received their desired tubal ligation by 7 months postpartum.

Survey results from staff on labor and delivery demonstrated that staff perceptions of reasons for unfulfilled PPBTL differed from documentation in the electronic health record (Figure 2). Overall, 114 of 184 eligible persons completed the survey (62%). The respondents self-identified as OB/GYN attendings (17/98; 17%), OB/GYN fellows (8/98; 8%), OB/GYN residents (19/98; 19%), certified nurse midwives (5/98; 5%), registered nurses (35/98; 36%), OB anesthesia subspecialists (11/98; 11%), operating room staff (1/98; 1%), and other staff (2/98; 2%). The most commonly reported barriers to fulfillment of desired postpartum sterilization by our labor and delivery staff were “clinical volume

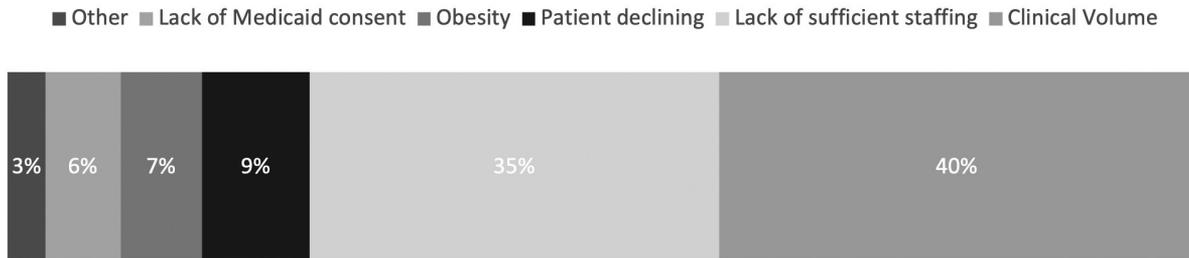
TABLE 2.
Risk Factors Associated with Unfulfilled Requests for Postpartum Sterilization Among the 70 Women Who Had Medicaid or Emergency Medicaid

Characteristic	Did Receive PPBTL	Did Not Receive PPBTL	P-Value
	n (%)	n (%)	
BMI^a			
< 30	15 (35)	3 (11)	
30-39	21 (49)	17 (63)	
≥ 40	7 (16)	7 (26)	.079
Mode of Delivery			
Vaginal	10 (23)	25 (93)	
Cesarean	33 (77)	2 (7)	.001
Type of Medicaid			
Medicaid	39 (91)	26 (96)	
Emergency Medicaid	4 (9)	1 (4)	.642
Consent Status			
Valid Consent on File	37 (86)	14 (52)	
Invalid Consent on File	2 (5)	5 (19)	
No Consent on File	4 (9)	8 (29)	.006

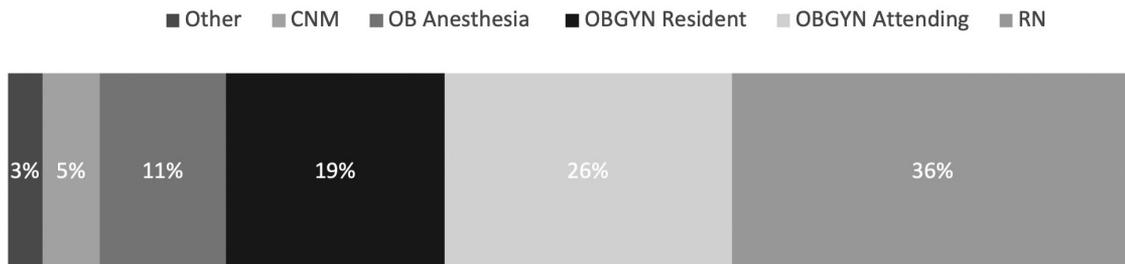
Data presented as N (%). Mann Whitney U-tests were used to detect differences between categorical variables
^aBMI not calculated for 2 subjects who did not have height documented.

FIGURE 2.
Results of Labor and Delivery Personnel Survey on Perceived Barriers to Fulfillment of Postpartum Bilateral Tubal Ligation

WHAT ARE THE TWO BIGGEST REASONS POSTPARTUM TUBAL LIGATIONS AFTER VAGINAL DELIVERY MAY NOT BE COMPLETED ON LABOR AND DELIVERY PRIOR TO PATIENT DISCHARGE?



RESPONDENT'S ROLE ON L&D



on labor and delivery (L&D) too high" (70/98; 71%) and "lack of sufficient nurse staffing" (49/98; 63%). Patient factors including obesity, patient declining, and lack of Medicaid consent were less commonly selected.

Discussion

In our cohort in North Carolina, we found that one-third (35%) of women were discharged with unmet sterilization requests. Further, 68% of women delivering vaginally were discharged with unmet requests for PPBTL, which is higher than previously described [5, 16, 17].

In both our survey and cohort, we found that extrinsic factors—as opposed to strictly patient factors—may present the biggest barriers to fulfillment of PPBTL requests at our institution. This is in contrast to the existing literature regarding barriers to PPBTL, which focuses primarily on patient factors [7-9, 16, 17]. The lack of documentation as to why PPBTL was not performed specifically for the majority of women in our cohort limits our ability to develop actionable interventions.

While originally drafted with the goal of protecting women's reproductive autonomy, the federally mandated Medicaid consent form has repeatedly been identified as a barrier to fulfillment of postpartum sterilization requests [16, 18]. This is particularly important in North Carolina, where both the percentage of publicly funded deliveries and the desire for postpartum sterilization are among the

highest in the country [3, 10, 11, 14, 15]. Among women with Medicaid in our cohort, the absence of a valid federal consent form was again associated with unfulfilled requests for PPBTL. Women with Medicaid who do not have a valid Medicaid consent on file may be more likely to have their PPBTL fulfilled at the time of cesarean than following a vaginal delivery, given the need in this group for scheduling a separate operative procedure that will not be covered by insurance as opposed to adding to an already ongoing, covered procedure.

Prior research suggests risk factors for failure to complete PPBTL may be distinct for vaginal and cesarean delivery. Studies of completion of PPBTL after vaginal delivery have identified obesity, operating room time, and gravidity as barriers in this population [16, 19]. Our sample size was insufficient to limit our analysis to women with 1 delivery type. However, we did perform exploratory subgroup analyses among women with each delivery type and noted nonsignificant trends toward differing predominant barriers depending on the mode of delivery.

The nonsignificant trend toward lower completion rate with BMI > 40 warrants further examination in a larger study. There is recent data demonstrating that PPBTL following a vaginal delivery is safe among women with BMI above 30 kg/m², is not associated with more postoperative complications, and does not require significantly more operative time [5, 19, 20]. Further investigation of outcomes of PPBTL

TABLE 3.
Characteristics Associated with Fulfillment of Postpartum Sterilization among Women Who Had Vaginal Delivery (n = 56) and Women Who Had Cesarean Delivery (n = 68)

Characteristic	Vaginal Delivery		Cesarean Delivery	
	Did Receive PPBTL n = 18	Did Not Receive PPBTL n = 38	Did Receive PPBTL n = 63	Did Not Receive PPBTL n = 5
	n (%)	n (%)	n (%)	n (%)
Age				
≤ 24	0 (0)	2 (5)	1 (0)	0 (0)
24-29	7 (39)	9 (24)	12 (40)	2 (40)
30-34	7 (39)	15 (39)	18 (20)	1 (20)
≥ 35	4 (22)	12 (32)	32 (40)	2 (40)
Parity				
1	0 (0)	0 (0)	1 (2)	1 (20)
2	3 (17)	8 (21)	21 (33)	0 (0)
≥3	15 (83)	30 (79)	41 (65)	4 (80)
Race/Ethnicity				
Non-Hispanic White	7 (39)	10 (26)	28 (44)	1 (20)
Hispanic	7 (39)	13 (34)	18 (29)	2 (40)
Non-Hispanic Black	4 (22)	11 (29)	11 (17)	2 (40)
Other, Multiracial	0 (0)	4 (11)	6 (10)	0 (0)
BMI^a				
< 30	7 (39)	7 (18)	20 (32)	0 (0)
30-39	10 (56)	22 (58)	29 (46)	3 (60)
≥ 40	1 (6)	8 (21)	13 (21)	2 (40)
Primary Insurance				
Medicaid	10 (56)	24 (63)	29 (46)	2 (40)
Presumptive Medicaid ^c	0 (0)	3 (8)	4 (6)	0 (0)
Medicare	2 (11)	1 (3)	4 (6)	0 (0)
Private	6 (33)	10 (26)	26 (41)	3 (60)

^aBMI not calculated for 2 subjects who did not have height documented.

^bDue to rounding, does not equal 100.

^cPresumptive Medicaid = Emergency/Pregnancy Medicaid

among women with BMI > 40 may help us better understand how we can best meet the reproductive needs of this population. Although not identified as an impediment by staff when surveyed, at least 3 women have “obesity” documented as the reason desired PPBTL was unfulfilled following vaginal delivery. Further training in surgical techniques to provide this service to postpartum women with BMI > 40 might help uphold reproductive autonomy for this population.

Additionally, we noted that we have inadequate systems for helping patients who have expressed that they do not desire future pregnancies when a requested PPBTL does not occur. Given that nonfulfillment is a frequent occurrence in our setting and is associated with a high risk of pregnancy in the next year, we need to facilitate access to alternative contraception for these patients while systems factors are being addressed to increase fulfillment rates.

We identified system- and provider-level barriers that impede patients’ reproductive autonomy. In contrast to prior data, patient-level factors were less predictive of tubal ligation fulfillment in our setting. Our responsibility to support our patients’ “human right to maintain personal bodily

autonomy, have children, not have children, and parent the children [they] have in safe and sustainable communities”—as reproductive justice collective SisterSong describes it—requires that we improve our health care delivery systems to ensure access to postpartum tubal ligation for those who request it [21, 22]. *NCMJ*

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APPENDIX 1.

Survey Administered to Staff Working on the Labor and Delivery Unit at North Carolina Women's Hospital

Question 1:

In your experience, what are the two biggest reasons postpartum tubal ligations after vaginal delivery may not be completed on labor and delivery prior to patient discharge? (Select TWO choices from below)

Answer choices *[in drop down radio button format]:*

- Lack of sufficient RN staffing
- Lack of sufficient Scrub staffing
- Lack of sufficient MD staffing
- No OR availability
- Anesthesia unavailable
- Patient declining
 - **Secondary Question:** please select the option below that best describes the patient's reasoning or your perception of their reasoning for declining *[select one]:*
 - Too long NPO and hungry,
 - No longer desires permanent contraception
 - Fear of anesthesia
 - Desire for hospital discharge
 - Other *[write in free text]*
- Patient obesity
 - **Secondary Question:** what do you perceive to be the biggest concern related to obesity as it pertains to postpartum tubal ligation. *[select one]:*
 - Technical difficulty of procedures
 - Fear of Complications
 - Both
 - Other *[write in free text]*
- Clinical volume on labor and delivery
- Lack of mature Medicaid consent
- Attending unable/unwilling to perform BTL
- Other *[write in free text]*

Question 2:

What is your role on labor and delivery?

Answer choices *[in drop down radio button format]:*

- Obstetrics & Gynecology resident
- Obstetrics & Gynecology fellow
- Obstetrics & Gynecology attending
- Certified Nurse Midwife
- Registered Nurse
- Operating room staff
- Obstetrics Anesthesia attending
- Obstetrics Anesthesia fellow
- Prefer not to say
- Other