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Original article

Conception rates and contraceptive use after bariatric surgery among women with infertility: Evidence from a prospective multicenter cohort study[1,2]

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Abstract

Background: Lack of prospective trials have resulted in a dearth of information regarding postbariatric surgery conception rates in women with a preoperative history of infertility.

Objective: To examine associations between preoperative history of infertility and postbariatric surgery conception.

Setting: A multicenter cohort study at 10 United States hospitals (2006–2009).

Methods: Participants completed a preoperative reproductive health questionnaire, with annual postoperative assessments for up to 7 years until January 2015. This report was restricted to women 18- to 44-years old with no history of menopause, hysterectomy, or hormone replacement therapy. The primary outcomes were postoperative (0 to <90 mo) conception rate, early conception rate (0 < 18 mo), and postoperative unprotected intercourse with a male partner while not trying to conceive.

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Results: Of 740 eligible women, 650 (87.8%) provided required responses. Median interquartile range (IQR) preoperative age was 34 (30–39) years and follow-up was 6.5 (5.9–7.0) years. Nulliparous women with a preoperative history of infertility represented 8.0% (52/650) of the total cohort, 63.5% (33/52) of whom had never conceived. Compared with women without this history, these women had a higher postoperative conception rate (121.2 [95% confidence interval (CI), 102.3–143.5]/1000 versus 47.0 [95%CI, 34.2–62.9]/1000 woman-yr; $P < .001$), early conception rate (115.4 [95%CI, 96.1–138.5]/1000 versus 33.9 [95%CI, 23.6–47.1]/1,000 woman-yr; $P < .01$), and a higher risk of unprotected intercourse (ARR 1.48 [95% CI, 1.14-1.90], $P = 0.003$).
Conclusion: After bariatric surgery, preoperative history of infertility and nulliparity was associated higher conception rates and unprotected intercourse. (Surg Obes Relat Dis 2019;15:777–785.)
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Keywords: Bariatric surgery; Contraception; Infertility; Conception

Obesity has an inverse association with female reproductive potential that includes increased time to conception [1], increased lifetime odds of nulliparity [2,3], and decreased efficacy of treatment options for infertility [4]. For patients with severe obesity (body mass index [BMI] ≥40 or 35 to <40 kg/m^2 with serious co-morbid conditions), bariatric surgery is the most effective intervention for weight management [5]. A recent position statement by the American Society for Metabolic and Bariatric Surgery, endorsed by the American College of Obstetricians and Gynecologists and the Obesity Society, notes improvements in fertility after bariatric surgery. However, evidence was primarily retrospective and based on case series studies [6,7]. The lack of prospective trials has resulted in a dearth of information regarding postoperative conception rates in women with a preoperative history of infertility.

Data are similarly sparse regarding the overall postoperative reproductive practices of women with infertility [8]. We previously reported that 41.9% of women who had attempted to conceive before undergoing bariatric surgery had experienced infertility [9]. While most conceived and had at least 1 live birth before surgery, 38.6% of these women remained nulliparous [9]. This group of nulliparous women with infertility is of particular interest with regard to (1) postoperative fertility and (2) adherence to global recommendations to delay conception 12 to 18 months after bariatric surgery [10].

The Longitudinal Assessment of Bariatric Surgery-2 study is a multicenter, prospective cohort study that has previously reported preoperative reproductive health status of women undergoing bariatric surgery [9] as well as postoperative reproductive-related practices and outcomes [11]. This report extends that work by examining postoperative conception rates and contraceptive practices among nulliparous women with a preoperative history of infertility.

Methods

Recruitment methodology and study design have previously been described [9,11–14]. Patients ≥18 years of age who underwent a first bariatric surgical procedure as part of routine care were recruited into Longitudinal Assessment of Bariatric Surgery-2, a multicenter prospective cohort study, at 10 hospitals within 6 clinical centers throughout the United States between 2005 and 2009.

Before data collection, the institutional review boards at each center approved the protocol and all participants gave written informed consent to participate. Research assessments were conducted by Longitudinal Assessment of Bariatric Surgery–trained and –certified personnel independent of surgical care within 30 days before scheduled surgery dates and annually after surgery for up to 7 years or until January 2015. This report was restricted to women who were 18- to 44-years old and reported no history of surgical or natural menopause, hysterectomy, or hormone replacement therapy before their preoperative or first follow-up reproductive health assessment. Data collected after any of these criteria were met were excluded. Of 1931 female participants, 740 women met eligibility requirements, 650 (87.8%) of whom reported preoperative history of infertility and parity and provided postoperative conception information (Fig. 1).

The primary exposure was preoperative history of infertility and nulliparity. Postoperative (0 <90 mo) conception rate was the primary outcome of interest. Conception rates stratified by postoperative interval and postoperative unprotected intercourse with a male partner while not trying to conceive were secondary outcomes. Use of fertility medications and pregnancy outcomes were exploratory outcomes.

Assessments and definitions

The preoperative Reproductive Health Questionnaire has been described [9]. A postoperative version was self-administered annually to obtain outcomes in the year before assessment [15]. In addition to the annual postoperative Reproductive Health Questionnaire, which assessed pregnancies in the past year, an annual Short Form (administered starting March 2010) and an Event and Complications Form (completed at the 4- or 5-yr

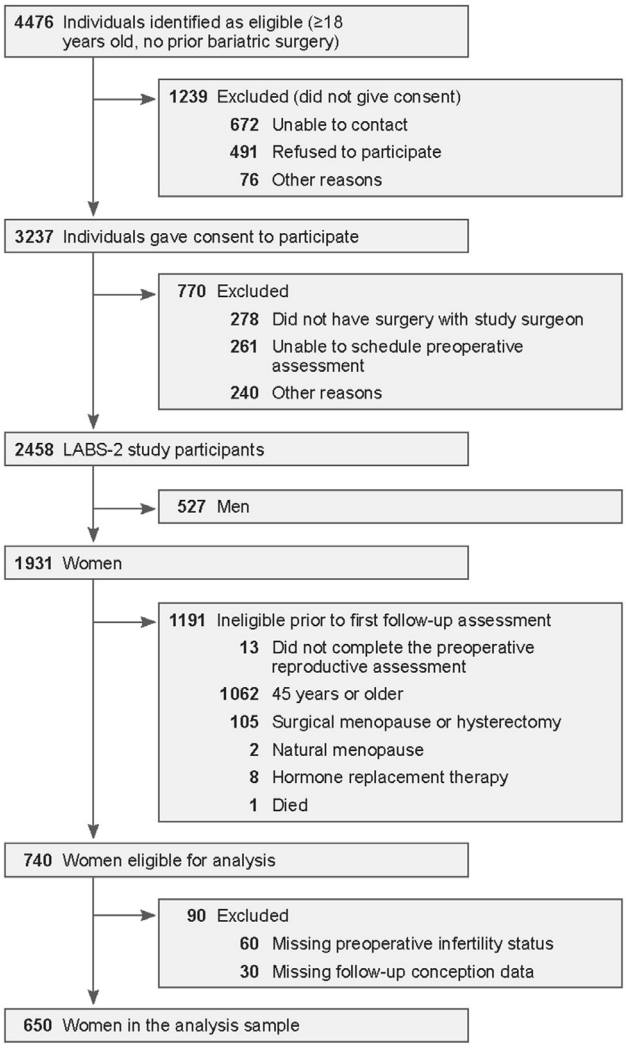

Fig. 1. Longitudinal Assessment of Bariatric Surgery-2 (LABS-2) Study Flow From Approached Patients to Analysis Sample.

postoperative assessment) assessed pregnancies "since surgery" to address missing data. If a postoperative pregnancy was reported on any form, participants were asked to complete a Pregnancy Questionnaire.

Infertility was defined as having tried to conceive and a history of at least 12 months of regular, unprotected intercourse with a male partner that did not result in a pregnancy. Based on preoperative assessment, participants were categorized as (1) women who had never tried to conceive, (2) women with no history of infertility, (3) parous women with a history of infertility, and (4) nulliparous women with a history of infertility. Due to the sample size, frequency distribution of categories, and study aims, the first 3 categories were collapsed to evaluate "preoperative history of infertility and nulliparity" status [16].

Conception rate was calculated as the number of postoperative pregnancies divided by follow-up time. Woman-years of follow-up were calculated using the time from date of surgery to the last date pregnancy status was known through the 7-year assessment window (90 mo postoperatively). In addition to the conception rate across follow-up (i.e., 0 to <90 mo), conception rates were calculated for (1) the early postoperative period during which pregnancy is not recommended (<18 mo), (2) the following 2 years, during which pregnancy is no longer contraindicated (18 to <42 mo), and (3) the remaining follow-up period (42–90 mo), using reported conception dates. If unavailable, conception date was estimated based on other data (due date, length of pregnancy, pregnancy outcome, and outcome date). The adjudication process for inconsistent data has been described previously [10]. Early conception (<18 mo; i.e., yes or no) was determined from conception dates. Pregnancy outcomes were reported as a live birth, still birth (baby lost after 20 wk or 5 mo), miscarriage (fetus lost before 20 wk or 5 mo), ectopic or tubal pregnancy, or abortion.

Unprotected intercourse, defined as not "always" using contraception during sexual intercourse with a male, was determined at each assessment among women who were sexually active with a male, were not pregnant and were not trying to conceive [9,17]. This classification scheme reflects the fact that the proportion of women reporting contraceptive use "most of the time" or "about half of the time" was small, and that such practices increase risk of pregnancy. Thus, these categories were grouped with "rarely" and "never" using contraception as "unprotected intercourse."

Preoperative reproductive health characteristics. Participants self-reported characteristics of their menstrual cycle; past diagnosis of polycystic ovary syndrome (PCOS) by a healthcare professional; number of prior pregnancies (gravidity), live births and still births (parity); use of contraception for any reason in the past 12 months (yes or no); the importance of being able to become pregnant in the future (on a scale from 0–10); and the anticipated timeframe in which they would first try to become pregnant after surgery. Menstrual regularity was defined as a history of 10 to 12 menstrual periods lasting between 1 and 7 days on average, a usual cycle length of 21 to 35 days, and no spotting or bleeding at times other than menstrual period within the last 12 months. Importance of postoperative pregnancy was categorized as (1) important (rating of 8–10), (2) importance unclear (rating of 3–7), or (3) unimportant (rating of 0–2) or not planned (i.e., 'never') [9].

Additional covariates. Age, race, ethnicity, education, medical insurance, marital status, and smoking were assessed using self-administered questionnaires. Race was considered missing for participants who did not report their race as at least 1 of the following: white or Caucasian, Black or black, Asian, American Indian or Alaska Native, or Native Hawaiian or Other Pacific Islander. When >1 type of insurance was reported, insurance type was coded according to the following hierarchy: government, private,

other, or unknown. Medical history was determined using a combination of laboratory values, physical examination measures, participant-reported medication use, and co-morbid diagnoses from healthcare providers and medical records review [14,18]. Nonsurgical contraceptive risk was defined as any level 3 or 4 medical risk for contraceptive use as reported by the United States Medical Eligibility Criteria for Contraceptive Use [19].

Statistical analysis

Analyses were conducted using SAS versions 9.4 (SAS Institute, Cary, NC, USA) and in OpenEpi, Version 3 [20]. All reported P values were 2-sided; P values $< .05$ were considered statistically significant. Conception rates, with 95% confidence intervals (CI) constructed assuming the Poisson distribution, are reported by preoperative history of infertility and nulliparity. The mid-P exact test was used to determine whether conception rates differed by group.

A Poisson mixed model with robust error variance with a person-level random intercept was used to test and estimate associations between preoperative history of infertility and nulliparity with early conception with a person-level random intercept. Analysis was repeated controlling for the following potential preoperative confounders: age [11,21], race [22], ethnicity [23], education [24], marital status [11], BMI [25], current or recent smoker [26], menstrual regularity, any contraceptive use, history of PCOS [27], and surgical procedure.

Poisson mixed models with robust error variance were used to test and estimate the association between preoperative history of infertility and nulliparity and risk of postoperative unprotected intercourse with a person-level random intercept, controlling for site, preoperative education, and preoperative BMI, which were associated with missing follow-up data, as fixed effects. An interaction with time was considered and retained if significant. Analysis was repeated controlling for the following potential confounders: preoperative age [28], race [11,29], ethnicity [29], education [28], BMI, any contraceptive use [11], and history of PCOS [30]; surgical procedure; and postoperative marital status [28], medical insurance [28], menstrual regularity [31], and nonsurgical contraceptive risk [11,19]. Unadjusted relative risk (RR) and adjusted relative risks (ARR), 95%CI and P values are reported.

Exploratory analysis. To explore whether importance of postoperative pregnancy might mediate the association between a preoperative history of infertility and nulliparity with early postoperative conception, it was added to the multivariate model. In addition, to explore whether risk of early conception and unprotected intercourse, respectively, differed by the more refined preoperative history of infertility categorizations, the models describe above were repeated comparing, "history of infertility and nulliparity," "parous with a history of infertility," and "never tried to conceive," versus "no history of infertility." Descriptive statistics were used to report fertility medication use and pregnancy outcomes by preoperative history of infertility and nulliparity.

Results

This report includes data provided by 650 women for whom a medical history of infertility or parity was reported. The median follow-up time was 6.5 (5.9–7.0) years. The median interquartile range (IQR) preoperative age was 34 (30–39) years. At preoperative assessment, 53.8% (350/650) reported an interval in their past medical history when they had attempted to conceive, 49.1% (172/350) of these women reported a history of infertility. Most women with a history of infertility subsequently conceived and delivered a live birth before bariatric surgery (69.8%, 120/172); 30.2% (52/172) remained nulliparous. Women with a preoperative history of infertility and nulliparity represented 8.0% (52/650) of the entire sample and 14.9% (52/350) of women who had ever tried to conceive. An additional 18.5% (120/650) of the sample reported a history of both infertility and delivery (i.e., parous with a history of infertility) before bariatric surgery, while 27.2% (177/650) had no history of infertility and 45.5% (296/650) reported never having tried to conceive. Five women (1.0%) reported a history of a live or still birth but did not disclose whether they had a history of infertility.

Demographic characteristics of women by preoperative history of infertility and nulliparity are reported in Table 1. Nulliparous women with a preoperative history of infertility were not significantly different compared with those without this history with respect to age ($P = .19$), ethnicity ($P = .08$), being married or living as married ($P = .69$), and smoking status ($P = .37$). However, lower proportions were white ($P < .001$) and had a college degree ($P = .047$).

Clinical characteristics by preoperative history of infertility and nulliparity are provided in Table 2. Preoperative BMI ($P = .37$) did not differ by this history. Nulliparous women with a preoperative history of infertility, compared with those without this history, were less likely to have a regular menstrual cycle ($P = .02$) and to have used contraception in the year before the preoperative assessment ($P < .001$), and more likely to have a history of PCOS ($P < .001$). They also had fewer prior pregnancies ($P < .001$; 63.5% had never conceived), and by definition, no history of live birth. Importance or plan for postoperative pregnancy did vary by this history ($P < .001$); over half (56.9%) of nulliparous women with a history of infertility reported postoperative pregnancy plans as 'important'. Surgical procedure did not differ among nulliparous women with a preoperative history of infertility compared with those without this history ($P = .60$).

Conception rates stratified by preoperative history of infertility and nulliparity are reported in Table 3. Women

Table 1
Demographic characteristics of women aged 18–44 years before bariatric surgery, stratified by infertility status.

	Total (N = 650*)		No history of infertility and/or parous (N = 598*)		Nulliparous with a history of infertility (N = 52*)		
	n	%	n	%	n	%	*P*
Age, yr							.19
median (25th, 75th percentile)	34	(30, 39)	35	(30, 39)	32	(30, 37)	
White race†							<.001
Missing	7		7		0		
No	103	16.9	86	15.6	17	32.7	
Yes	540	83.1	505	85.4	35	67.3	
Hispanic ethnicity							.08
No	602	92.6					
Yes	48	7.4	41	6.9	7	13.5	
Education							.047
Missing	5		5		0		
High school or less	111	17.2	101	17.0	10	19.2	
Some college	284	44.0	254	42.8	30	57.7	
College degree or higher	250	38.8	238	40.1	12	23.1	
Married or living as married							.69
Missing	6		6		0		
No	277	43.0	256	43.2	21	40.4	
Yes	367	57.0	336	56.8	31	59.6	
Current or recent smoker							.37
Missing	1		1		0		
No	529	81.5	489	81.9	40	76.9	
Yes	120	18.5	108	18.1	12	23.1	

*Data are reported as n (%) unless otherwise indicated. Denominators shift between variables due to missing data.
†Nonwhite races were combined due to the low frequency of each.

with a preoperative history of infertility and nulliparity had a higher conception rate (121.2 [95%CI, 102.3–143.5] per 1000 woman-yr) versus those with no such history (47.0 [95%CI, 34.2–62.9] per 1000 woman-yr) across follow-up ($P < .001$). Early (<18 mo) and delayed (18 to <42 mo) conception rates were also higher in women with a preoperative history of infertility and nulliparity versus woman without this history, whereas CIs overlapped for late (42 to <90 mo) conception rates (Table 3).

Among 52 women with a preoperative history of infertility and nulliparity, 33 postoperative pregnancies were reported by 22 women. Postoperative use of fertility medications was reported by 30% (6/20; 2 missing) of these women, although only 10% (2/20) reported use at the time(s) of conception. Two thirds (65.6%; 21/32) of pregnancies resulted in live births, 25.0% (8/32) in miscarriages, 6.3% (2/32) in abortions, and 3.1% (1/32) ectopic pregnancies. The outcome of 1 pregnancy was not reported (Table 4).

Women with a preoperative history of infertility and nulliparity versus no such history had a higher risk of early conception (unadjusted RR 2.99 [95%CI, 1.28–6.99], $P = .01$). However, the association was slightly attenuated and no longer reached the threshold for statistical significance after adjustment for confounders (ARR 2.53 [95% CI, 0.97–6.59], $P = 0.06$), likely reflecting low statistical power. When importance of post-surgical pregnancy was added to the multivariate model as an exploratory analysis, the association between preoperative nulliparity with a history of infertility and early conception became weaker still (ARR 1.34 [95% CI, 0.47–3.79], $P = 0.58$), suggesting it may mediate the association.

In a second exploratory analysis we utilized the more refined preoperative history of infertility categorizations. When compared to those with no preoperative history of infertility, a history of infertility and nulliparity was significantly associated with a greater risk of early conception, even with adjustment for confounders (RR 4.74 [95% CI, 1.73–12.96]. $P = 0.002$; ARR 3.85 [95% CI, 1.25–11.88] $P = 0.02$). RR estimates associated with parous with a history of infertility (RR 2.62 [95% CI, 1.05–6.52], $P = 0.04$; ARR 2.24 [95% CI 0.78–6.46], $P = 0.13$) and never tried to conceive (RR 1.72 [95% CI, 0.68–4.38], $P = 0.25$; ARR 1.53 [95% CI, 0.54–4.29], $P = 0.42$) versus no preoperative history of infertility were also > than 1, but were not significant.

With regard to contraception, nulliparous women with a preoperative history of infertility versus no such history had an increased risk of unprotected intercourse while not trying to conceive (RR 1.58 [95%CI, 1.24–2.01], $P < .001$); this association did not differ over time. After adjustment for potential confounders, this association

Table 2
Clinical characteristics of women aged 18–44 years before bariatric surgery, stratified by infertility status.

	Total (N = 650*)		No history of infertility and/or parous (N = 598*)		Nulliparous with a history of infertility (N = 52*)		
	n	%*	n	%*	n	%*	*P*
Body mass index†, median (25th, 75th percentile)	46.3	(42.5, 51.4)	46.3	(42.4, 51.4)	46.9	(43.7, 52.7)	.37
Menstrual regularity					2		.02
Missing	159		143		16		
No	239	48.7	215	47.4	24	66.7	
Yes	252	51.3	240	52.7	12	33.3	
History of PCOS	136	20.9	109	18.2	27	51.9	<.001
Gravidity							<.001
Missing	8		8		0		
None	208	32.4	175	29.7	33	63.5	
1	116	18.1	108	18.3	8	15.4	
2	122	19.0	117	19.8	5	9.6	
3	96	15.0	94	15.9	2	3.8	
4	50	7.8	48	8.1	2	3.8	
5	27	4.2	25	4.2	2	3.8	
≥6	23	3.6	23	3.9	0	.0	
History of live birth							<.001
Missing	8		8		0		
No	254	39.6	202	34.2	52	100	
Yes	388	60.4	388	65.8	0	0	
History of still birth					0	0.0	.47
Missing	8		8		0		
No	636	99.1	586	99.	52	100	
Yes	6	0.9	6	1.9	0	0	
Any contraceptive use in prior year	9		328	55.4			.04
Missing	6		6		0		
No	295	45.8	264	44.6	31	59.6	
Yes	349	54.2	328	55.4	21	40.4	
Importance or plan for postsurgical pregnancy							
Missing	9		8		1		<.001
Important	191	29.8	162	27.5	29	56.9	
Importance unclear	98	15.3	84	14.2	14	27.5	
Unimportant or not planned	352	54.9	344	58.3	8	15.7	
Surgical procedure							.60
Roux-en-Y gastric bypass	472	72.6	439	73.4	33	63.5	
Laparoscopic adjustable band	154	23.7	138	23.1	16	30.8	
Other‡	24	3.7	21	3.5	3	5.8	

PCOS = polycystic ovary syndrome.
* Data are reported as N (%) unless otherwise indicated. Denominators shift between variables due to missing data.
† Calculated as weight in kilograms divided by height in meters squared.
‡ Sleeve gastrectomy (n = 10), banded Roux-en-Y gastric bypass (n = 6), and biliopancreatic diversion with duodenal switch (n = 8) were combined due to the low frequency of each.

was slightly attenuated (ARR 1.48 [95% CI, 1.14–1.90], $P = 0.003$). Further insight was gained with the use of more refined preoperative history of infertility categorizations. Specifically, compared with those with no preoperative history of infertility, both nulliparous women with a preoperative history of infertility (RR 1.74 [95%CI, 1.33–2.27]; ARR 1.59 [95%CI, 1.21–2.08]) and parous women with a preoperative history of infertility (RR 1.39 [95%CI, 1.11–1.75]; ARR 1.30 [95%CI, 1.04–1.64]) were at increased risk of unprotected intercourse; risk did not differ for women who had never tried to conceive (RR 1.05 [95%CI, .83–1.32]; ARR 1.01 [95%CI, .80–1.27]).

Discussion

Throughout the postoperative follow-up period, nulliparous women with a history of infertility, compared with women without this history, had a 48% higher risk for unprotected intercourse while not trying to conceive. Our exploratory analysis suggests that compared with those with no history of infertility, parous women with a history of

Table 3
Conception rates after bariatric surgery among women aged 18–44 years by infertility status.

	Conception rate (95% CI) per 1000 person-yr		
	Preoperative history nulliparity and infertility		
	No (N = 598)	Yes (N = 52)	P^*
Time since surgery			
Overall: 0 to <90 mo[†]	47.0 (34.2–62.9)	121.2 (102.3–143.5)	<.001
Early: 0 to <18 mo	33.9 (23.6–47.1)	115.4 (96.1–138.5)	<.01
Delayed: 18 to <42 mo	53.1 (39.4–70.1)	147.3 (124.3–173.8)	<.001
Late: 42 to <90 mo	42.4 (30.3–57.7)	74.8 (58.7–95.0)	.06

[*] Mid-*P* exact test.
[†] Median follow-up time is 6.5 (5.9, 7.0) yr.

Table 4
Pregnancy outcomes after bariatric surgery among women aged 18–44 years by infertility status (N = 650).

	Birth outcomen (%)				
	Live birth	Still birth	Ectopic	Miscarriage	Abortion
No history of infertility and/or parous (n = 598)[*]					
Outcome known (127 pregnancies)	87 (68.5)	2 (1.6)	1 (.8)	29 (22.8)	8 (6.3)
Potential values[†] (166 pregnancies)	87–126 (52.4–75.9)	2-41 (1.2–24.7)	1–40 (.6–24.1)	29–68 (17.5–41.0)	8–47 (4.8–28.3)
Nulliparous with a history of infertility (N = 52)[‡]					
Outcome known (32 pregnancies)	21 (65.6)	0	1 (3.1)	8 (25.0)	2 (6.3)
Potential values[‡] (33 pregnancies)	21–22 (63.6–66.6)	0–1 (0–3.0)	1–2 (3.0–6.1)	8–9 (24.2–27.3)	2–3 (6.1–9.1)

[*] Among 598 women without infertility without live birth, the outcomes of 127 of 166 pregnancies (76.5%) were reported.
[†] The range of potential values for each type of outcome was determined by assigning none to all of the unknown outcomes to each type.
[‡] Among 52 women with infertility without live birth, the outcomes of 32 of 33 pregnancies (97.0%) were reported.

infertility were also at increased risk. These findings may indicate a perceived inability to conceive among women with a preoperative history of infertility and need for counseling regarding the potential effects of bariatric surgery on fertility, which is currently considered adjunctive therapy for infertility [25]. Although lifestyle intervention is often recommended as first-line therapy, recent literature suggests that, compared with immediate infertility treatment, weight loss through a structured lifestyle program does not provide benefit in birth outcomes [32]. We were unable to compare pregnancy outcomes by preoperative history of infertility and nulliparity due to missing outcome data among those without this history. However, the proportion of miscarriages (25%) in women with preoperative history of infertility and nulliparity is comparable to miscarriage rates (15%–25%) in the general population [33].

We found that postoperative conception rates were approximately 2.5-fold higher in nulliparous women with a preoperative history of infertility compared with those without this history. This increase includes the early, postoperative time frame (<18 mo) when conception is contraindicated. This is consistent with our previous research [11] showing that postoperative contraceptive use and conception rates among women who undergo bariatric surgery do not reflect recommendations for an 18-month delay in conception after bariatric surgery [10]. Interestingly, delayed (18 to <42 mo) conception rates were also increased in this group suggesting that a preoperative history of infertility and nulliparity may not adversely affect fertility status during the timeframe in which postoperative conception is no longer contraindicated.

Limitations of this study are primarily related to statistical power, a result of the small number with a history of infertility and nulliparity. Although not as strict as the standard definition of primary infertility (i.e., infertility with no prior history of conception), we anticipated that inclusion of women with a history of infertility who previously conceived, but did not report a history of still or live birth, would capture the population most likely to engage in unprotected postoperative intercourse, as well as those most interested in early and overall postoperative conception, while increasing our statistical power. Still, we had low statistical power to evaluate whether preoperative parity with history of infertility was independently related to risk of early conception. Additionally, small sample sizes did not allow for comparisons of fertility medication use. Despite these limitations, this study's standardized assessment of a large, multicenter cohort of

geographically diverse participants over 7 years, distinguish it from previous case-series studies [6].

Conclusions

Nulliparous women with a preoperative history of infertility were at increased risk for unprotected intercourse without intent to conceive across follow-up and had higher early postoperative conception rates compared with women without this history, indicating that effective contraceptive counseling is particularly lacking in this subgroup. Counseling of these women could benefit from recognition that conception rates were also higher in the delayed timeframe. Given these findings, clarification of the role of bariatric surgery for infertility warrants further investigation.

Disclosures

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