International Urogynecology Journal (2019) 30:1639–1646
https://doi.org/10.1007/s00192-019-03895-z

ORIGINAL ARTICLE

Outpatient visits versus telephone interviews for postoperative care: a randomized controlled trial

Jennifer C. Thompson[1] · Sara B. Cichowski[1] · Rebecca G. Rogers[2] · Fares Qeadan[3] · Julissa Zambrano[1] · Cynthia Wenzl[1] · Peter C. Jeppson[1] · Gena C. Dunivan[1] · Yuko M. Komesu[1]

Received: 20 November 2018 / Accepted: 28 January 2019 / Published online: 19 February 2019

Abstract

Introduction and hypothesis Our aim was to determine whether postoperative telephone follow-up was noninferior to in-person clinic visits based on patient satisfaction. Secondary outcomes were safety and clinical outcomes.

Methods Women scheduled for pelvic surgery were recruited from a single academic institution and randomized to clinic or telephone follow-up. The clinic group returned for visits 2, 6, and 12 weeks postoperatively and the telephone group received a call from a nurse at the same time intervals. Women completed the Consumer Assessment of Healthcare Providers and Systems Surgical Care Survey (S-CAHPS) questionnaire, Pelvic Floor Distress Inventory (PFDI)-20, and pain scales prior to and 3 months postoperatively. Randomized patients who completed the S-CAHPS at 3 months were included for analysis. Sample size calculations, based on a 15% noninferiority limit in the S-CAHPS global assessment surgeon rating, required 100 participants, with power = 80% and alpha = 0.025.

Results From October 2016 to November 2017, 100 participants were consented, underwent surgery, were randomized, and included in the final analysis (clinic group $n = 50$, telephone group $n = 50$). Mean age was 58.5 ± 12.2 years. Demographic data and surgery type, dichotomized into outpatient and inpatient, did not differ between groups. The S-CAHPS global assessment surgeon rating from patients in the telephone group was noninferior to the clinic group (92 vs 88%, respectively, rated their surgeons 9 and10, with a noninferiority limit of 36.1; $p = 0.006$). Adverse events did not differ between groups ($n = 26$; 57% fclinic vs 43% telephone; $p = 0.36$). Patients in the telephone group did not require additional emergency room or primary care visits. Clinical outcome measures improved in both groups, with no differences (all $p > 0.05$).

Conclusions Telephone follow-up after pelvic floor surgery results in noninferior patient satisfaction, without differences in clinical outcomes or adverse events. Telephone follow-up may improve healthcare quality and decrease patient and provider burden for postoperative care.

Clinical trial registration ClinicalTrials.gov, www.clinicaltrials.gov, NCT02891187.

Keywords Postoperative care · Patient satisfaction · Telephone visits

Introduction

Healthcare in the United States paradoxically delivers poorer outcomes at higher cost, compared with other developed nations. To realign US healthcare delivery, the focus must shift to quality care. Quality incorporates clinical outcomes, safety, and patient satisfaction [1]. Quality is achieved by improving outcomes and patient satisfaction while decreasing adverse events (AEs) [2]. The necessity of routine, in-person postoperative visits is unknown, as these visits are based on historic norms. Pediatric and adult surgical literature increasingly reports on changes in this traditional practice by performing follow-up care via telephone in place of outpatient

Study conducted in Albuquerque, NM, USA

✉ Sara B. Cichowski
scichowski@salud.unm.edu

[1] University of New Mexico Department of Obstetrics and Gynecology, Division of Urogynecology, 2211 Lomas Blvd. NE, ACC-4th Floor, Albuquerque, NM 87131, USA

[2] Dell Medical School, The University of Texas at Austin, Austin, TX, USA

[3] University of New Mexico Clinical and Translational Science Center, Albuquerque, NM, USA

postoperative visits [3–9]. In observational studies, telephone-based postoperative care provides safe and effective care at reduced patient costs and improved patient satisfaction on nonvalidated global scales [3–9]. The utility and acceptability of postoperative telephone visits for patients undergoing surgery for pelvic floor disorders, such as incontinence and prolapse, have not been evaluated. Pelvic floor disorders are very common, with one in four women experiencing incontinence or prolapse for which one in five will undergo surgery in their lifetime [10]. In the United States, >300,000 surgeries are performed for pelvic organ prolapse (POP) each year [11], with an estimated annual surgical cost of more than US$1 billion [12]. Routine postoperative visits contribute to surgical costs, impede access to care for other patients, consume healthcare resources and patients' time, and cause additional nonmedical costs. Developing an innovative alternative approach to postoperative care that is both safe and convenient has the potential to improve healthcare quality.

To evaluate this approach, we performed a randomized controlled trial comparing routine postoperative outpatient clinic visits with telephone calls for women undergoing surgery for pelvic floor disorders. We hypothesized that telephone calls at regular intervals would result in noninferior satisfaction scores without differences in safety and clinical outcome measures.

Materials and methods

This randomized controlled noninferiority trial was conducted at a single academic institution. Study procedures were approved by the University of New Mexico Human Research Review Committee 16–103, and all women gave written informed consent. Women planning to undergo surgical management of pelvic floor disorder(s) were invited to participate. Eligibility requirements were women >18 years of age undergoing surgery for pelvic floor disorders, ability to give informed consent, having a reliable phone number, and the ability to speak and understand either English or Spanish. Patients were excluded if pregnant or incarcerated or if the surgeon decided clinic follow-up was medically necessary. Randomization allocation was determined by a simple computer-generated scheme. Allocation concealment was achieved using sequentially numbered, sealed, opaque envelopes and kept by a research assistant not directly involved in patient care.

The primary outcome was patient satisfaction based on the Consumer Assessment of Healthcare Providers and Systems Surgical Care Survey (S-CAHPS) questionnaire overseen by the US Agency for Healthcare Research and Quality (AHRQ). (https://cahps.ahrq.gov) [13]. This questionnaire was developed by the American College of Surgeons and endorsed by the National Quality Forum in 2012 [14]. It encompasses seven composites:

(1) Information to help prepare for surgery
(2) Surgeon communication preoperatively
(3) Surgeon attentiveness on the day of surgery
(4) Information to help during recovery
(5) Surgeon communication after surgery
(6) Qualities of office staff
(7) Overall surgeon rating (global response score)

The sample size was calculated based on the S-CAHPS reported scores for the global response score. This single item question was: Rate your surgeon from 0 (worst surgeon possible) to 10 (best surgeon possible), with top box responses of 9–10 out of 10. Top box responses in prior studies using this questionnaire ranged from 56 to 100%, with most responses scoring ~90% [14]. A noninferiority calculation was applied using 90% to represent success in both control and experimental groups, with 80% power, alpha 0.025, and 15% noninferiority limit determined as acceptable by surgeons and that allowed for a feasible study. Therefore, a total sample size of 100 patients were required, allocating ~50 patients to each group. Secondary analysis was safety and clinical outcomes. Safety was evaluated using adverse outcomes at the time of surgery and throughout the postoperative period based on the Clavien-Dindo scale, as well as patient-reported, unscheduled visits to the emergency room, urgent care, or primary care offices [15]. Clinical outcomes were evaluated using the Pelvic Floor Distress Inventory-20 (PFDI-20) and pain scales [16].

All study participants gave written consent. This was obtained by the surgeons and research staff at preoperative visits. Baseline questionnaires included preoperative Refere

AHPS, PFDI-20, and pain scales [16]. Demographic data were age, self-reported race and ethnicity, primary language, marital status, education, estimated annual income, living arrangements, and distance traveled from home to the hospital. Patients signed an authorization form for release of records to obtain detailed information regarding additional emergency room and primary care visits during the postoperative period. A Charlson Comorbidity Index was completed for each patient by chart review [17]. At the time of surgery, surgical procedure(s) and complications were recorded. AEs were rated on the Clavien-Dindo scale [15]. Prior to discharge, the immediate postoperative S-CAHPS questionnaire was completed, and patients were randomized to either clinic visits or telephone calls. Assignment was made by a research assistant not directly involved in patient care. At each follow-up interval (1–2, 6, and 12 weeks), data from moth groups were gathered regarding AEs and unscheduled emergency and primary care visits using standardized forms. These follow-up intervals were the typical timing required for follow-up clinic

visits. At each visit, a provider obtained data directly from the patient. Telephone calls were conducted by a registered nurse familiar with urogynecology patients and scripted to review specific assessment criteria. The same script, used for both groups, was developed specifically for this study to evaluate pain, bowel and bladder function, and return to daily activities. At 3 months, the final S-CAHPS, PFDI-20, and pain scales were administered.

Randomized patients who completed the entire S-CAHPS at the 3-month follow-up were included for final analysis. An intention-to-treat analysis was performed using the chi-square tests to assess associations between categorical variables, Student's *t* tests to compare means between groups with respect to a continuous variable, one-way analysis of variance (ANOVA) to compare means between three or more groups with respect to a continuous variable, multivariate ANOVA (MANOVA) to compare means of outcomes for intervention and control arms at baseline and 3 months. For top-box measures (M1–M7), a noninferiority test of two proportions was conducted using a significance level of 0.025. *P* value <0.025 from the noninferiority tests validate noninferiority as not $P > 0.025$, but $P < 0.025$ concludes noninferiority.

Results

From October 2016 to November 2017, 430 potential patients had preoperative appointments (Fig. 1); 120 were enrolled at their preoperative visit. Most of the 430 preoperative visits were patients who were simply not asked to participate in the study. Seventeen were withdrawn prior to randomization due to surgery cancelations or surgeon preference for clinic follow-up. One hundred and three women underwent surgery and were randomly assigned to a postoperative follow-up group: 51 to the outpatient clinic group; 52 to the telephone group. Three patients (one from the clinic group and two from the telephone group) were lost to follow-up. For the final analysis, 50 patients from each group completed the full S-CAHPS questionnaire.

Patients in both groups were similar in demographic characteristics (Table 1). Mean age was 58.5 ± 12.2 years, and 48% were Hispanic. Surgery type was dichotomized into outpatient and inpatient. Outpatient surgeries involved midurethral sling (MUS), sacral neuromodulation, mesh excision, cystoscopy, colporrhaphy, laparoscopic Burch procedure, and levator ani botulinum toxin injections. In-patient surgeries involved native tissue prolapse repair with or without hysterectomy, sacrocolpopexy with or without hysterectomy, colpocleisis with or without hysterectomy, hysterectomy alone, and fascial sling. No difference in surgery type existed between groups, with half of all participants (53%) undergoing POP repair as inpatients.

S-CAHPS

The S-CAHPS questionnaire evaluated patient satisfaction. The global assessment question that rates the surgeon from 0 to 10 showed noninferiority of the telephone vs the clinic group. Most patients selected a top-box rating, which equates to 9–10/10: 92% of clinic vs 88% of telephone participants, with a noninferiority limit of 36.1, $p = 0.006$ (Table 2). One composite (M5) asks how well the surgeon communicates with patients after surgery. This composite showed inferiority, most likely because patients in the telephone group were communicating with the nurse rather than their physician during the postoperative period. All other composites showed noninferiority between groups.

Safety

The total number of AEs was 26 (Table 2), with no differences between groups ($p = 0.36$): the clinic group had 15 [95% confidence interval (CI) 18.29–44.78] and the telephone group had 11 (95% CI 11.99–36.33). Most AEs (58%) were urinary tract infections (UTIs) and did not differ between groups (clinic = 8; telephone = 7). There were four readmissions postoperatively—two in the telephone group (for pneumonia/sepsis and hematoma evacuation) and two in the clinic group (pelvic abscess treated with antibiotics IV and sacrospinous ligament suture removal for pain). There were no intraoperative complications. Other AEs within the clinic group were an emergency room visit for a hypertensive emergency, pelvic pain treatment with pudendal injections, and nausea postoperatively. Another AE within the telephone group was an allergic reaction to surgical glue. In total, the clinic group returned for 147 visits (range 0–7; mean 2.9). Patients randomized to the telephone group were invited to return to clinic at any point during their postoperative care if they desired a follow-up visit with their surgeon; there were 35 total clinic visits (range 0–5; mean 0.7).

Information regarding patients receiving care elsewhere (outside the urogynecology outpatient clinic or via telephone calls) was captured at each postoperative visit and telephone call. These included additional emergency room, urgent care, and primary care visits. In the clinic group, eight emergency room/urgent care and five primary care visits were reported. In the telephone group, three emergency room/urgent care visits and four primary care visits were reported. Telephone postoperative care did not increase the frequency of emergency or primary care visits ($p > 0.05$).

Clinical outcomes

PFDI-20 scores for each domain improved postoperatively in both groups (all $p < 0.05$)., with no difference in change scores between groups (Table 2). Pain scores were assessed from 0 to

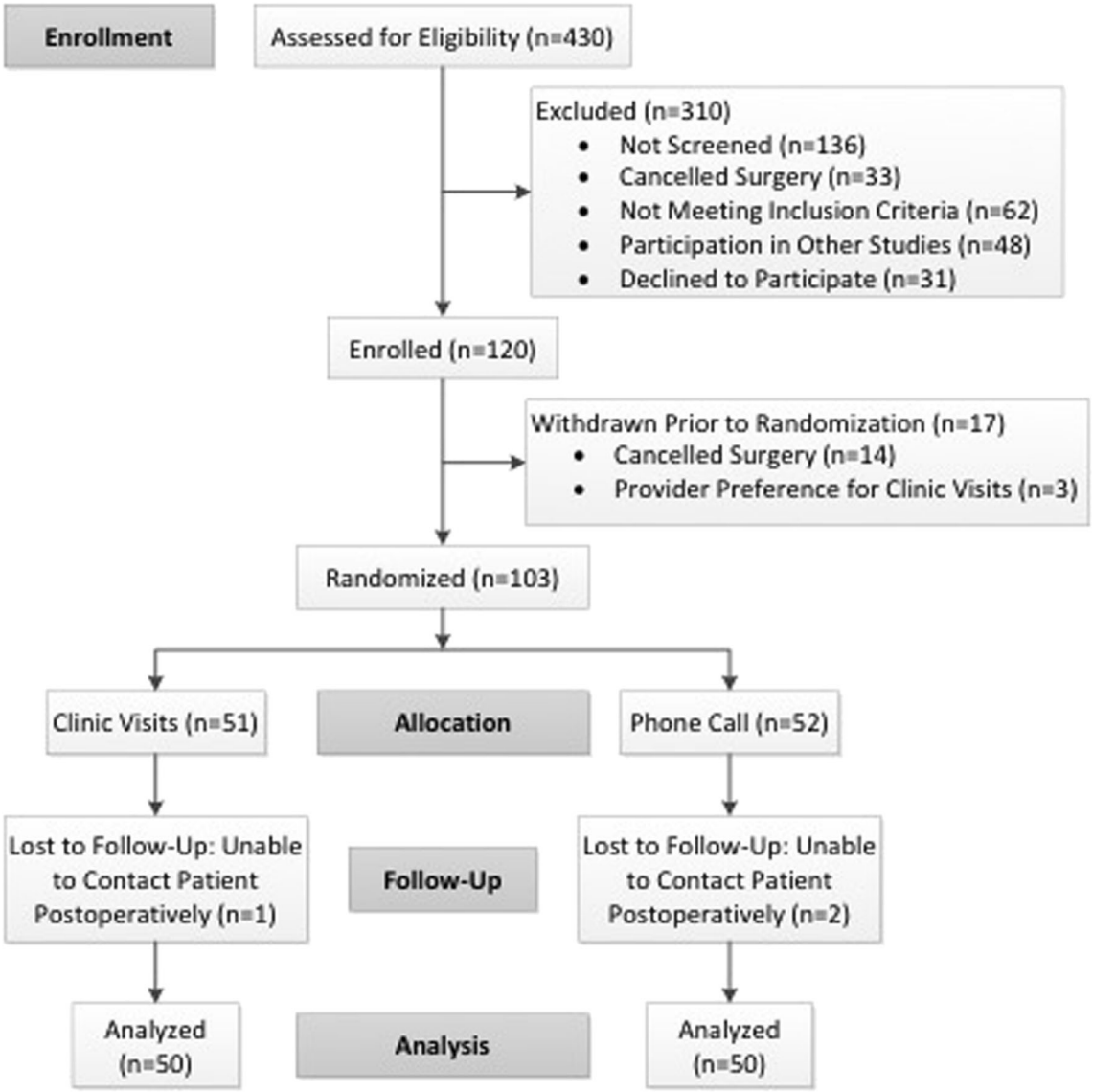

Fig. 1 Consolidated Standards of Reporting Trials (CONSORT) for enrollment, randomization, and individuals in the final analysis

10 at rest, with normal activity, with strenuous activity, and worst pain that day, with no differences between groups (Table 2).

Discussion

Telephone calls for postoperative follow-up after surgical management of pelvic floor disorders result in noninferior patient satisfaction without sacrificing safety or clinical outcomes. These findings, assessing an innovative approach to postoperative care, shifts the focus to quality of care. While others have reported outcomes from observational studies, no randomized trials compare in-person with telephone visits for postoperative care. Quality is an essential component in the healthcare value equation [1] that relies on patient satisfaction, safety, and clinical outcomes. Our results highlight the patient-perceived quality of telephone follow-up for postoperative care. Improving postoperative care is one small piece toward improving the quality of the US healthcare system.

Demographics of participants in this study, including age, race, and ethnicity, reflect the urogynecology patient population common to rural southwestern United States communities [18]. In our practice, patients travel a significant distance to receive subspecialty care. We previously reported that patients travel 42.4 miles on average [standard deviation (SD) ± 91.5 miles] one way for their appointments to address pelvic floor disorders in our clinic [18]. Patients in our study traveled on average 76.1 miles one way for their appointments. This difference may reflect that patients who live farther from clinical care were more interested in receiving telephone follow-up and participating in this trial, since it would be more

Table 1 Demographics

Demographics	Clinic group			Telephone group			*P* value
Total	50	(50%)		50	50%		1.000
Age mean (95% CI)	59.0	(55.6–62.4)		57.9	(54.4–61.4)		0.65
Miles from surgical facility mean (95% CI)	73.2	(48.1–98.3)		78.97	(53.9–104.1)		0.74
Charlson comorbidity index mean (95% CI)	1.2	(0.8–1.5)		1.5	(1.1–1.9)		0.26
	n	%[a]	(95% CI)	*n*	%[a]	(95% CI)	
Race							0.17
American Indian or Alaska Native	3	6.0	(0–12.7)	10	20.0	(8.7–31.3)	
Hispanic	13	26.0	(13.6–38.4)	8	16.0	(5.7–26.3)	
White	31	62.0	(48.3–75.7)	29	58.0	(44.1–71.9)	
Unknown/Not reported	3	6.0	(0.0–12.7)	3	6.0	(0.0–12.7)	
Ethnicity							0.18
Hispanic or Latino	27	54.0	(39.9–68.1)	21	42.0	(28.1–55.9)	
Not Hispanic or Latino	22	44.0	(30.0–58.0)	24	48.0	(33.9–62.1)	
Unknown/Not reported	1	2.0	(0.0–6.0)	5	10.0	(1.5–18.5)	
Language							0.57
English	42	84.0	(73.7–94.3)	44	88.0	(78.8–97.2)	
Spanish	8	16.0	(5.7–26.3)	6	12.0	(2.8–21.2)	
Marital status							0.05
Single	13	26.0	(13.6–38.4)	3	6.0	(0.0–12.7)	
Married/Partner	23	46.0	(31.9–60.1)	30	60.0	(46.2–73.8)	
Divorced/Separated	6	12.0	(2.8–21.2)	9	18.0	(7.2–28.8)	
Widowed	8	16.0	(5.7–26.3)	8	16.0	(5.7–26.3)	
Education							0.79
Less than high school	7	14.0	(4.2–23.8)	8	16.0	(5.7–26.3)	
High school/GED	14	28.0	(15.3–40.7)	20	40.0	(26.2–53.8)	
Associate college degree	17	34.0	(20.6–47.4)	12	24.0	(12.0–36.0)	
4-year college degree	6	12.0	(2.8–21.2)	4	8.0	(0.4–15.7)	
Graduate degree	5	10.0	(1.5–18.5)	5	10.0	(1.5–18.5)	
Unknown/Not reported	1	2.0	(0.0–6.0)	1	2.0	(0.0–6.0)	
Annual income							0.47
< $25,000	22	44.0	(30.0–58.0)	23	46.0	(31.9–60.1)	
$25,000–49,000	10	20.0	(8.7–31.3)	13	26.0	(13.6–38.4)	
$50,000–74,999	5	10.0	(1.5–18.5)	7	14.0	(4.2–23.8)	
$75,000–99,999	5	10.0	(1.5–18.5)	1	2.0	(0.0–6.0)	
> $100,000	7	14.0	(4.2–23.8)	4	8.0	(0.4–15.7)	
Unknown	1	2.0	(0.0–6.0)	2	4.0	(0.0–9.5)	
Living arrangements							0.34
Alone	12	24.0	(12.0–36.0)	8	16.0	(5.7–26.3)	
Spouse or other	25	50.0	(35.9–64.1)	33	66.0	(52.6–79.4)	
Children	8	16.0	(5.7–26.3)	4	8.0	(0.4–15.7)	
Other family member	5	10.0	(1.5–18.5)	4	8.0	(0.4–15.7)	
Other	0	0.0	(0.0–0.0)	1	2.0	(0.0–6.0)	
Outpatient surgery ($n = 39$)[b]	21	53.9	(37.4–69.6)	18	46.2	(30.4–62.6)	0.63
Outpatient surgery							0.25
Midurethral sling	8	38.1	(18.9–61.3)	8	44.4	(22.4–68.7)	
Sacral neuromodulation	2	9.5	(1.7–31.8)	4	22.2	(7.4–48.1)	
Mesh excision	4	19.1	(6.3–42.6)	6	33.3	(14.4–58.9)	
Cystoscopy	2	9.5	(1.7–31.8)	0	0.0	(0.0–21.9)	
Colporrhaphy	1	4.8	(0.3–25.9)	0	0.0	(0.0–21.9)	
Laparoscopic burch	2	9.5	(1.7–31.8)	0	0.0	(0.0–21.9)	
Levator Ani Botox injections	2	9.5	(1.7–31.8)	0	0.0	(0.0–21.9)	
Inpatient surgery ($n = 61$)[b]	29	47.5	(34.8–60.6)	32	52.5	(39.4–65.2)	0.70
Inpatient surgery							0.63
Native iissue ± hyst.	15	51.7	(32.9–70.1)	15	46.9	(29.5–65.0)	
Sacrocolpopexy ± hyst	3	10.3	(2.7–28.5)	5	15.6	(5.9–33.6)	
Colpocleisis ± hyst	8	27.6	(13.5–47.5)	7	21.9	(9.9–40.4)	
Hysterectomy	2	6.9	(1.2–24.2)	1	3.1	(0.2–18.0)	
Fascial sling	1	3.5	(0.2–19.6)	4	12.5	(4.1–29.9)	

CI confidence interval, *Hyst* hysterectomy

[a] Column percent

[b] Row percent

convenient for them and their families. In addition, most patients reported an annual household income of <$25,000. This suggests that patients with more limited incomes may accrue the greatest benefit from this type of innovative postoperative care. This study highlights the need to consider implementation of innovative care to reduce financial burdens and provide more convenient care for our patients.

Telephone follow-up for postoperative care has been effective for various medical specialties since the 1990s. Pediatric studies evaluating patient satisfaction used a nonvalidated global assessment to determine whether patients or their parents/guardians were satisfied with their care and/or desired a clinic visit [3, 4, 7, 19]. These satisfaction scores were high, with ~10% of patients requiring a clinic visit [3, 4, 7, 19]. In the urogynecology literature, one study from the United Kingdom evaluated a telephone follow-up protocol for MUS. Again, patients reported high satisfaction with a low rate of required clinic follow-up [19]. Overall, the existing literature regarding telephone follow-up used very specific surgeries, including adenotonsillectomies, and uncomplicated and minimally invasive general surgery procedures in a single outpatient urogynecology procedure. However, these studies lack a prospective comparison study design as well as validated measures of satisfaction. Our study adds to this body of literature because of its randomized controlled design and inclusion of a variety of outpatient and more complicated inpatient surgeries and evaluated adult patients utilizing validated satisfaction scores with the S-CAHPS questionnaire.

Safety and clinical outcomes are two other important components that should be considered when evaluating healthcare quality. The safety profile of our study is similar to other pelvic floor disorder studies. The incidence of serious AEs from other trials range from 11.6 to 16.7% [20, 21]. The rate of serious AEs from our trial was 6%. The most common AE in our study was UTI, occurring at the relatively low rate of 15%. The rate of UTI after MUS procedures and prolapse repairs in other studies ranges from 31 to 33.6% [20, 22]. In our study, UTIs contributed to 58% of AEs ($n = 26$), with no difference between groups.

Currently, there are no guidelines to direct scheduling of postoperative appointments following urogynecologic surgeries. While most serious complications occur before a 2-week postoperative appointment, other foreign-body complications, such as mesh erosion, may take longer [23]. Addressing common symptoms over the telephone was just as effective as clinic visits to identify complications in our study.

Patient-centered clinical outcomes are especially important for elective surgery. The PFDI-20 is a validated questionnaire evaluating pelvic floor symptom severity [16]. The improvement of severity scores from preoperatively to 3 months postoperatively was significantly better in both groups. However, this change in improvement did not differ between patients who received postoperative care in the outpatient clinic or over the phone. Contrary to prestudy assumptions, postoperative evaluation by a provider does not influence symptom improvement after surgical management of pelvic floor disorders.

Some limitations of this study are inherent to the S-CAHPS questionnaire and its ceiling effect: 88 and 92% of patients in the telephone and clinic groups, respectively, rated their surgeon 9–10 out of 10, with a high proportion of respondents marking the top box. Therefore, we cannot stratify any meaningful range of data utilizing this instrument. This same rightward skew was observed among other surgical satisfaction evaluations using the S-CAHPS questionnaire [14]. We chose the S-CAHPS because of its patient-centered, validated measure of surgical satisfaction, but we were not powered—nor would it be possible to power—to evaluate other important parts of postoperative experience, such as delayed ureteral injury. Thus, we cannot determine whether telephone visits would delay or hinder care for uncommon postoperative events. Another study limitation may have been due to selection bias. For patients to enroll in this study, they needed to be willing to accept both forms of postoperative follow-up. If patients were not willing to have all postoperative follow-ups over the phone, they presumably declined study enrollment and proceeded with traditional outpatient clinic visits. Similarly, physicians needed to agree that both forms of care were appropriate for the patient. Therefore, outcomes in satisfaction scores may not be generalizable to all patients undergoing surgery for pelvic floor disorders but, rather, to those willing and able to participate in telephone follow-up. Also, patients may have had demographic factors that differ from the general population: a large Hispanic population in the southwest USA, patients living further from the hospital, and patients who find the economic consequences of clinic visits untenable. A strength of this study is its novel approach to postoperative care and its thorough assessment of healthcare quality in the postoperative setting. Telephone calls addressed postoperative needs and provided attention to patients' questions and concerns. From a clinical standpoint, this study provides strategies to improve patient flow through a subspecialty clinic. The significant reduction in outpatient visits allows clinic time to be dedicated to other follow-up visits and new patient visits. This format has the potential to provide adequate service and high satisfaction for postoperative patients who live far away, are unable to take time off work, cannot rely on family members or friends for transportation, or any other barriers to returning to clinic for postoperative follow-up. Meanwhile, new-patient and follow-up visits can be scheduled earlier and more easily, allowing improved clinical productivity. Furthermore, this form of postoperative follow-up may be generalizable to other surgical specialties as well as routine gynecologic surgery.

Healthcare delivery in the United States is undergoing significant changes because of mounting expenses,

Table 2 Primary Outcome is patient satisfaction defined by the S-CAHPS questionnaire. Secondary outcomes are adverse events, PFDI-20 scores, and pain scales

Outcomes		Clinic			Telephone			Noninferiority limit	*P* value
Primary outcomes S-CAHPS[a]		*n*	%[b]	(95% CI)	*n*	%[b]	(95% CI)		
M1: Information to help you prepare for surgery (2 items)		43	50.6	(39.8–61.4)	42	49.4	(38.6–60.2)	35.6	0.0039
M2: How well surgeon communicates with patients before surgery (4 items)		43	48.9	(38.2–59.5)	45	51.1	(40.5–61.8)	33.9	0.0003
M3: Surgeon's attentiveness on day of surgery (2 items)		40	47.6	(36.8–58.5)	44	52.4	(41.5–63.3)	32.6	<0.001
M4: Information to help you recover from surgery (4 items)		37	48.7	(37.3–60.1)	39	51.3	(39.9–62.8)	33.7	0.0006
M5: How well surgeon communicates with patients after surgery (4 items)		38	71.7	(59.2–84.2)	15	28.3	(15.8–40.8)	56.7	1.000
M6: Helpful, courteous, and respectful staff at surgeon's office (2 items)		46	50.0	(39.6–60.4)	46	50.0	(39.6–60.4)	35.0	0.0013
M7: Rating of surgeon (1 item)		46	51.1	(40.6–61.6)	44	48.9	(38.4–59.4)	36.1	0.0058
Secondary outcomes		*n*	%	(95% CI)	*n*	%	(95% CI)		
Adverse events ($n = 26$)[c]		15	30.0	(18.3–44.8)	11	22.0	(12.0–36.3)		0. 36
Adverse events[c]									0.36
UTI		8	53.3	(27.4–77.7)	7	63.6	(31.6–87.6)		
Readmission		2	13.3	(2.3–41.6)	2	18.2	(3.2–52.3)		
Reoperation within 3 months		1	6.7	(0.4–34.0)	1	9.1	(0.5–42.9)		
Intraoperative complications		0	0.0	(0.0–25.4)	0	0.0	(0.0–32.2)		
Other adverse events		4	26.7	(8.9–55.2)	1	9.1	(0.5–42.9)		
		Mean		(95% CI)	Mean		(95% CI)		
PFDI-20 total score	T0	110.7		(94.5–126.9)	112.3		(96.1–128.5)		0.45
	T3	39.2		(26.3–52.2)	49.4		(36.5–62.4)		
POPDI (1–6)	T0	36.5		(29.5–43.5)	38.4		(31.4–45.4)		0.89
	T3	11.2		(7.3–15.1)	12.5		(8.6–16.4)		
CRADI (7–14)	T0	23.4		(17.6–29.1)	21.2		(15.4–27.0)		0.08
	T3	10.4		(6.0–14.9)	14.3		(9.8–18.7)		
UDI (15–20)	T0	50.8		(43.2–58.5)	52.7		(45.0–60.3)		0.60
	T3	17.6		(11.0–24.2)	22.7		(16.1–29.2)		
Pain: at rest	T0	1.7		(1.0–2.5)	2.4		(1.6–3.1)		0.30
	T3	1.4		(0.7–2.1)	1.5		(0.8–2.2)		
Pain: normal activity	T0	2.8		(1.9–3.8)	3.5		(2.6–4.5)		0.47
	T3	1.6		(0.8–2.3)	1.8		(1.0–2.5)		
Pain: exercise, strenuous work	T0	2.6		(1.4–3.8)	3.7		(2.4–5.0)		0.30
	T3	1.6		(0.8–2.5)	1.8		(0.9–2.8)		
Pain: worst pain today	T0	3.1		(2.08–4.16)	3.8		(2.8–4.8)		0.47
	T3	1.9		(1.02–2.86)	2.0		(1.1–2.9)		

S-CHAPS consumer assessment of healthcare providers and systems surgical care survey, *UTI* urinary tract infection, *PFDI-20* pelvic floor distress industry-20, *POPDI* pelvic organ prolpse distress inventory, *CRADI* colorectal-anal distress inventory, *UDI* urogenital distress inventory, *T0* preoperatively, *T3* 3 months postoperatively, *CI* confidence interval

[a] Rw percent

[b] Percentage of respondents giving a top-box answer to the S-CAHPS questionnaires

[c] Column percent

inefficiencies, and poor outcomes—all of which seem insurmountable. Evaluating bureaucratic mandates is necessary to direct healthcare that actually meet patients' needs. The system is in desperate need of new, innovative ways to deliver high-quality care. Since this study, the urogynecology department at the University of New Mexico is working toward system changes to allow for more accessible quality care. Efforts toward evaluating the efficacy and quality of routine postoperative patient care can help move our system toward these ends. Telephone follow-up for postoperative care

provides high patient satisfaction without sacrificing safety and clinical outcomes. This patient-centered delivery of postoperative care provides an efficient and effective model for our healthcare system that shifts the focus to improving quality of care.

Compliance with ethical standards

Sources None.

Conflicts of interest This project was supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences of the National Institutes of Health through Grant Number UL1TR001449. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

This project was funded by the University of New Mexico's ObGyn department Seligman Fund and the Clinical & Translational Science Center (CTSC) Pilot Grant.

J.C. Thompson, S.B. Cichowski, F. Qeadan, J. Zambrano, C. Wenzl, P.C. Jeppson report no conflict of interest.

G.C. Dunivan receives research support from Pelvalon, Inc. unrelated to the submitted work.

R.G. Rogers is DSMB chair for the TRANSFORM trial sponsored by American Medical Systems and receives royalties for scientific writings from UptoDate. She receives travel and stipend from IUGA for editor in chief services for IUJ and from ABOG for work for the board.

Y.M. Komesu reports grants from NIH (grant #PA11-260), nonfinancial support from National Center for Research Resources and the National Center for Advancing Translational Sciences of the National Institutes of Health through grant no. 8UL1TR000041, The University of New Mexico Clinical and Translational Science Center, grants from NIH: U grant funding the Pelvic Floor Support Disorders Network via the Eunice Kennedy Shriver NICHD institute.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

1. Cortese DA, Korsmo JO. Putting U.S. health care on the right track. N Engl J Med. 2009;361(14):1326–7.
2. Porter ME. What is value in health care? N Engl J Med. 2010;363(26):2477–81.
3. Fischer K, et al. Efficacy and utility of phone call follow-up after pediatric general surgery versus traditional clinic follow-up. Perm J. 2015;19(1):11–4.
4. Rosbe KW, et al. Efficacy of postoperative follow-up telephone calls for patients who underwent adenotonsillectomy. Arch Otolaryngol Head Neck Surg. 2000;126(6):718–21 discussion 722.
5. Kimman ML, et al. Economic evaluation of four follow-up strategies after curative treatment for breast cancer: results of an RCT. Eur J Cancer. 2011;47(8):1175–85.
6. Uppal S, et al. A cost-effectiveness analysis of conventional and nurse-led telephone follow-up after nasal septal surgery. Ann R Coll Surg Engl. 2004;86(4):243–6.
7. Gray RT, et al. Postoperative telephone review is cost-effective and acceptable to patients. Ulster Med J. 2010;79(2):76–9.
8. Hwa K, Wren SM. Telehealth follow-up in lieu of postoperative clinic visit for ambulatory surgery: results of a pilot program. JAMA Surg. 2013;148(9):823–7.
9. Fallaize RC, et al. Telephone follow-up following office anorectal surgery. Ann R Coll Surg Engl. 2008;90(6):464–6.
10. Wu JM, et al. Lifetime risk of stress urinary incontinence or pelvic organ prolapse surgery. Obstet Gynecol. 2014;123(6):1201–6.
11. Barber MD, Maher C. Epidemiology and outcome assessment of pelvic organ prolapse. Int Urogynecol J. 2013;24(11):1783–90.
12. Subak LL, et al. Cost of pelvic organ prolapse surgery in the United States. Obstet Gynecol. 2001;98(4):646–51.
13. Sage J. Using S-CAHPS. Bull Am Coll Surg. 2013;98(8):53–6.
14. Schmocker RK, et al. Understanding the determinants of patient satisfaction with surgical care using the consumer assessment of healthcare providers and systems surgical care survey (S-CAHPS). Surgery. 2015;158(6):1724–33.
15. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. Ann Surg. 2004;240(2):205–13.
16. Barber MD, Walters MD, Bump RC. Short forms of two condition-specific quality-of-life questionnaires for women with pelvic floor disorders (PFDI-20 and PFIQ-7). Am J Obstet Gynecol. 2005;193(1):103–13.
17. Charlson ME, et al. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis. 1987;40(5):373–83.
18. Dunivan GC, et al. The association between distances traveled for care and treatment choices for pelvic floor disorders in a rural southwestern population. J Health Dispar Res Pract. 2014;7(4):23–32.
19. Jefferis H, et al. Telephone follow-up after day case tension-free vaginal tape insertion. Int Urogynecol J. 2016;27(5):787–90.
20. Wei JT, et al. A midurethral sling to reduce incontinence after vaginal prolapse repair. N Engl J Med. 2012;366(25):2358–67.
21. Barber MD, et al. Comparison of 2 transvaginal surgical approaches and perioperative behavioral therapy for apical vaginal prolapse: the OPTIMAL randomized trial. JAMA. 2014;311(10):1023–34.
22. Ellington DR, Erekson EA, Richter HE. Outcomes of surgery for stress urinary incontinence in the older woman. Clin Geriatr Med. 2015;31(4):487–505.
23. Mueller MG, et al. Postoperative appointments: which ones count? Int Urogynecol J. 2016;27(12):1873–7.