



Survey article

Reproductive counseling, contraception, and unplanned pregnancy in fertile women treated by gynecologic oncologists

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ABSTRACT

We sought to identify how gynecologic oncologists approach reproductive counseling for their fertile, reproductive age patients, and their experience with unplanned pregnancies.

Members of the Society of Gynecologic Oncology (SGO) were surveyed electronically regarding consistency of counseling patterns of contraception and fertility concerns, most and least common contraceptive methods utilized, referral patterns, and incidence of unplanned pregnancy. Of the 1424 SGO members identified, 261 participated in the questionnaire, yielding a response rate of 18%. Eighty-two percent of respondents agreed unplanned pregnancy is a potential problem, but only 57% believed their patients understood unplanned pregnancy is possible during treatment. Half of respondents report “always” in terms of frequency that contraception is addressed among their high-risk patients. After adjustment for gender, we found that the odds of reporting providing fertility counseling were nearly three times higher among attendings as compared to fellows [AOR = 2.72; 95% CI = (1.44, 5.12)], three times higher in women as compared to men [AOR = 2.80; 95% CI = (1.46, 5.38)], as well as in individuals 50+ years as compared to those <40 years old [AOR = 4.91; 95% CI = (2.05, 11.74)]. Ninety-six percent reported <5 unplanned pregnancies, to their knowledge, in the previous five years of clinical practice. Most providers acknowledge that unplanned pregnancy is a potential risk in fertile gynecologic oncology patients, but only half believe their patients understand an unplanned pregnancy is possible. An opportunity exists to provide more directed counseling regarding fertility during and after cancer therapy, and to educate patients and providers regarding more reliable, long acting contraceptive methods.

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1. Introduction

In 2012, an estimated 790,000 women in the United States were diagnosed with cancer, of whom 10% were of reproductive age (American Cancer Society, 2012; Schover, 2005). Improvements in screening have increased the proportion of fertile women diagnosed with cancer. [NIH surveillance] (National Institute of Health, 2010; Society of Family Planning, 2012) Addressing the possibility of future pregnancy is an important aspect of survivorship and quality of life for patients undergoing cancer treatment, and several ways to preserve fertility during cancer therapy have been developed and studied (Letourneau et al., 2012; McLaren and Bates, 2012). As background, 49% of pregnancies in the United States are unintended and unplanned (The Alan Guttmacher Institute (AGI), 2013). Patients with medical co-morbidities, including those undergoing cancer treatment and/or surveillance, are among

this group. It is estimated the incidence of malignancy and pregnancy is approximately 1:1000 (Pavlidis, 2002; Smith et al., 2003). Although rare, pregnancy in the setting of cancer treatment may create clinical and ethical dilemmas, with potential increased risks for both the patient and gestation. These dilemmas are further compounded when a pregnancy in this setting is unplanned.

Among women who have undergone or are currently undergoing cancer treatment, there is limited data regarding the rate of unintended pregnancy or patients' impression of fertility. It has been previously reported that childhood cancer survivors between 15 and 30 years old were more likely to terminate a pregnancy compared to age-matched controls (Green et al., 2002). A survey of female cancer patients revealed that 55% believed that they could not become pregnant after cancer treatment, and 45% of the same group denied using any contraception method (Patel et al., 2009). Both of the aforementioned studies support the notion that we could improve counseling in this patient population regarding fertility potential and contraception planning. In gynecologic cancer patients, women with early stage cancers may be eligible for fertility sparing treatment, and therefore may be at risk for unplanned pregnancy after therapy if contraception is not addressed as well

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Table 1
Survey Demographics.

Age	Numerical value
Gender	Female Male
Region of the country	Northeast Southeast Midwest West Southwest
Level of practice	Fellow Attending Retired
Medical specialty	Gynecologic oncology Medical oncology Radiation oncology General gynecology Other
Description of practice	Private Academic Community N/A
Years in practice caring for gynecologic oncology patients	1–5 6–9 10–15 16–20 21 +
Reproductive practices	
How often do you address fertility concerns with patients prior to treatment?	Always Sometimes Rarely Never
How often do you address contraception with patients that maintain fertility potential?	Always Sometimes Rarely Never
Do you prescribe or administer contraception?	Yes No
If you address contraception with patients that maintain fertility potential, please check all that apply	Oral contraceptive pills Injection – DMPA Implant Intrauterine device
If you prescribe or administer contraception for patients that maintain fertility potential, please check all that apply	Oral contraceptive pills Injection – DMPA Implant Intrauterine device
Do you make referrals to: benign gynecologist, family planning specialist, or pediatrician specifically for contraception planning?	Yes No
Do you routinely follow up on the referral for contraception planning to ensure a plan is established?	Yes No
Do you routinely offer referral to Reproductive Endocrinology and Infertility (REI) or Maternal-Fetal Medicine (MFM) for preconception, pretreatment counseling?	Yes No
Do you agree unplanned pregnancy is a potential problem among your patients who maintain fertility potential?	Yes No
Do you feel your patients understand unplanned pregnancy is possible, even in the setting of oncology treatment or surveillance?	Yes No
In the previous year, how many of your patients have experienced an unplanned pregnancy either during or after oncology treatment?	0–5 6–10 11–15 16–20
In the previous five years, how many of your patients have experienced an unplanned pregnancy either during or after oncology treatment?	0–5 6–10 11–15 16–20

(McLaren and Bates, 2012). For this reason, we conducted a survey of current members of the Society of Gynecologic Oncology (SGO) regarding reproductive counseling, practices, and experience with unplanned pregnancy in this population.

2. Methods

After obtaining approval from our institutional review board, a list of member email addresses was obtained from the SGO. An email statement of confidentiality with the questionnaire link was emailed to all listed members. Following the initial e-mail, members received two additional follow-up e-mails, two and four weeks respectively, after the initial contact. The survey remained open for responses for two weeks following the third, and final, reminder. Survey Monkey™ was utilized to create and administer a nineteen question survey regarding demographics, contraception counseling and use practices, referral patterns, and incidence of unplanned pregnancy. Respondents were permitted to refuse to answer questions at their discretion.

Demographic data queried were age, gender, region of country of current residence, medical specialty, level of training, description of clinical practice, and number of years caring for gynecologic oncology patients. Questions regarding consistency to which the provider addresses contraception and fertility concerns were answered using a Likert-type scale (i.e., Always, Sometimes, Rare, Never, Not Applicable). The remaining questions were answered using a Yes/No or a multiple-choice format. The multiple-choice questions specifically addressed the frequency of contraception methods counseling and administration, and number of patients experiencing unplanned pregnancy. A copy of the survey is provided in Table 1. Participants were asked to check all contraceptive methods that they counseled and administered/prescribed. Contraceptive methods specifically included were the oral contraception pill (OCP), injectable, intrauterine device (IUD), or subdermal levonorgestrel implant. Prevalence of unplanned pregnancy was evaluated by asking practitioners to estimate prevalence of unplanned pregnancy among their patients (during or after treatment) in the previous one and five years respectively.

Data were examined for missing or extreme values. We excluded the responses of anyone who reported that he/she was retired or did not provide information on their reproductive counseling patterns. Chi-squared tests were used to examine differences in descriptive variables. Logistic regression analysis was used to model separately the odds of “always” or “sometimes” offering fertility and/or contraceptive counseling. Variables were chosen based on examination of a directed acyclic graph. All analyses were conducted using Stata 13.0 (StataCorp, College Station, Texas).

3. Results

The SGO contact list entailed 1443 members with 1424 having valid email addresses. Questionnaires were completed by 261 respondents, yielding a response rate of 18%. Among the respondents 21 (8%) reported that they were retired and/or did not provide information regarding their reproductive counseling patterns and thus were excluded from the analysis.

Overall, the respondents had a mean age of 47 years with a slight predominance of females (52%), which is consistent with SGO demographics (mean age of male members 50 years old, mean age of female members 45 years old). Our survey had a higher proportion of fellow respondents (24%) than SGO as a whole (9%) [Gynecologic Oncology 2015: State of the Subspecialty] Selected characteristics of respondents are presented by reproductive counseling status in Table 2. Among respondents, 34.6% reported sometimes or always providing counseling on fertility and contraception, 19.2% reported providing fertility counseling only, 15.8% reported providing contraception counseling only, while 30.4% reported not routinely providing counseling on either topic. In general, providers who reported providing reproductive counseling on neither topic were more likely to be male and/or a fellow. They also tended to be <40 years of age, though this difference was not statistically significant. Physicians who reported not routinely counseling on either topic were less likely to report prescribing or

administering contraception and/or were less likely to report referring to reproductive endocrinology.

In contrast, those who reported providing counseling on both fertility and contraception were more likely to be female and/or an attending. They also were more likely to be older; although that difference was not statistically significant. Providers who reported sometimes or always providing counseling on both reproductive topics were also more likely to report providing or administering contraception and/or to refer to reproductive endocrinology. There were no notable differences in reproductive counseling status by U.S. region, type of practice, or number of years in practice.

Next, we examined what factors were associated with an increased odds of reporting providing fertility counseling sometimes or always (Table 3). After adjustment for gender, we found that the odds of reporting providing fertility counseling were nearly three times higher among attending physicians as compared to fellows [AOR = 2.72; 95%

CI = (1.44, 5.12)]. In examining contraceptive counseling (Table 4), we found that the odds of reporting providing contraceptive counseling was 2.8 times higher in women as compared to men and was 4.91 times higher in individuals age 50+ compared to those <40 after adjustment for level of practice.

Overall, 81.7% of providers reported counseling, prescribing, or administering contraception to their patients. Among these individuals, the most frequently cited contraceptive that providers reported addressing with their patients included: oral contraceptive pills (81%), intrauterine devices (73%), depot medroxyprogesterone acetate (DPMA) injections (56%), and contraceptive implants (21%). The most frequently cited contraceptives that providers reported prescribing or administering included: oral contraceptive pills (80%), intrauterine devices (62%), DPMA injections (48%), and contraceptive implants (9%). The reported prevalence of unplanned pregnancy among the surveyed providers' patients was relatively rare, perhaps because it is not routinely addressed.

Table 2
Selected characteristics by reproductive counseling status.

Factor	Reproductive counseling status			
	Neither (n = 73)	Fertility only (n = 46)	Contraception only (n = 38)	Both (n = 83)
Age (years)				
< 40	56.9% (41)	55.6% (25)	39.5% (15)	35.4% (28)
40–49	25.0% (18)	26.7% (12)	21.1% (8)	27.9% (22)
50–59	8.3% (6)	11.1% (5)	29.0% (11)	21.5% (17)
60+	9.7% (7)	6.7% (3)	10.5% (4)	15.2% (12)
Gender [†]				
Male	54.2% (39)	40.0% (18)	24.3% (9)	48.8% (40)
Female	45.8% (33)	60.0% (27)	75.7% (28)	51.2% (42)
Region				
Northeast	30.0% (21)	41.3% (19)	29.0% (11)	33.7% (28)
Southeast	22.5% (16)	17.4% (8)	18.4% (7)	22.9% (19)
Midwest	21.1% (15)	13.0% (6)	31.6% (12)	15.7% (13)
West	8.5% (6)	21.7% (10)	15.8% (6)	15.7% (13)
Southwest	18.3% (13)	6.5% (3)	5.3% (2)	12.1% (10)
Level of practice [†]				
Fellow	41.7% (30)	19.6% (9)	23.7% (9)	14.5% (12)
Attending	58.3% (42)	80.4% (37)	76.3% (29)	85.5% (71)
Medical specialty [*]				
Gyn Onc	100% (73)	100% (46)	97.4% (37)	95.2% (79)
Med Onc	0% (0)	0% (0)	2.6% (1)	2.4% (2)
General GYN	0% (0)	0% (0)	0% (0)	2.4% (2)
Type of practice				
Private	7.4% (5)	13.0% (6)	13.5% (5)	11.0% (9)
Academic	78.0% (53)	67.4% (31)	64.9% (24)	61.0% (50)
Community	14.7% (10)	19.6% (9)	21.6% (8)	28.0% (23)
Years in practice				
1–5	53.4% (39)	54.4% (25)	36.9% (14)	36.6% (30)
6–9	12.3% (9)	17.4% (8)	15.8% (6)	8.5% (7)
10–15	15.1% (11)	13.0% (6)	5.3% (2)	13.4% (11)
16–20	6.9% (5)	4.4% (2)	10.5% (4)	11.0% (9)
21+	12.3% (9)	10.9% (5)	31.6% (12)	30.5% (25)
Prescribe/administer contraception? [†]				
Yes	74.0% (54)	71.7% (33)	86.8% (33)	91.6% (76)
No	26.0% (19)	28.3% (13)	13.2% (5)	8.4% (7)
Refer to GYN or family planning?				
Yes	64.4% (47)	69.6% (32)	57.9% (22)	54.9% (45)
No	35.6% (26)	30.4% (14)	42.1% (16)	45.1% (47)
Refer to REI? ^{* †}				
Yes	74.0% (54)	89.1% (41)	89.5% (34)	92.8% (77)
No	26.0% (19)	10.9% (5)	10.5% (4)	7.2% (6)
Do you feel patients recognize unplanned pregnancy risk?				
Yes	44.4% (32)	58.7% (27)	60.5% (23)	62.7% (52)
No	8.3% (6)	6.5% (3)	5.3% (2)	1.2% (1)
Sometimes	47.2% (34)	34.8% (16)	34.2% (13)	36.1% (30)
Do you think unplanned pregnancy is a problem in this population?				
Yes	81.9% (59)	78.3% (36)	73.7% (28)	87.8% (72)
No	18.1% (13)	21.7% (10)	26.3% (1)	12.2% (10)

* GynOnc denotes gynecologic oncology, MedOnc denotes medical oncology, general GYN denotes general gynecology, and REI denotes reproductive endocrinology and infertility.

† p < 0.05.

Table 3

Unadjusted and adjusted odds of reporting providing fertility counseling sometimes or always.

	Unadjusted OR (95% CI)	Adjusted* OR (95% CI)
Gender		
Male	1.0 (-)	1.0 (-)
Female	0.94 (0.56, 1.57)	1.12 (0.65, 1.94)
Level of practice		
Fellow	1.0 (-)	1.0 (-)
Attending	2.83 (1.54, 5.19)	2.72 (1.44, 5.12)

OR denotes odds ratio; 95% CI denote 95% confidence interval.

* Multivariable model including gender and level of practice.

Most providers (95%) reported 0–5 unplanned pregnancies among their patients in the last 5 years, with only 3 providers (1%) reporting more than ten unplanned pregnancies.

4. Discussion

Unplanned pregnancy in the setting of cancer treatment or surveillance is a complicated issue, and may create clinical and ethical dilemmas for the patient, partner, family, and treatment team. The majority of survey respondents appropriately acknowledged the risk of unplanned pregnancy among gynecologic cancer patients maintaining fertility potential. However, only half reported addressing contraception planning in this population on a consistent basis (52% “always” addressing contraception, versus 35% “sometimes”). Regarding the consistency with which contraception is addressed, these findings are consistent with a retrospective chart review completed at our institution where 45% of initial consultations documented a contraception plan in fertile patients of reproductive age, and 32% of follow-up visits for those that maintained fertility potential after cancer treatment (Crafton et al., 2016).

Depending on individual circumstances, contraception planning may be more important than fertility sparing treatment options. Patient's reproductive goals should be determined in order to tailor fertility-sparing treatment, when possible, versus contraception planning. Unfortunately, only half of respondents reported always addressing fertility concerns with patients in this population. This is consistent with the fact 59% of those surveyed routinely offer referral for preconception counseling for those patients considering fertility preservation options or planned pregnancy. Referral specifically for contraception counseling was reported less frequently, and even fewer reported follow up for plan establishment. Our study was unable to determine which patients or providers relied on the patient's primary care physician or gynecologist for the establishment of a contraception plan.

The incidence of unplanned pregnancy in this population is reportedly rare, with 96% of responding physicians experiencing <5

unplanned pregnancies in the previous five years. This may be under-reported, as oncologists may be unaware of pregnancies, especially during disease surveillance. Despite the rarity, eleven providers report experiencing an estimated 6–20 unplanned pregnancies during that time same. The opportunity to avoid even a fraction of those merits further acknowledgement of this topic.

It is reassuring that the large majority of providers reportedly counsel for and administer contraception methods, including 89% reportedly counseling for the IUD and 77% employing its use. However, it was not specified in this survey if the indication for oral contraceptive pills (OCPs) or an IUD was for contraception planning or cancer therapeutic purposes. Of reported methods, OCPs were the most frequent contraception method both counseled for and administered. When compared to implantable methods, both the IUD and subdermal implant, both actual and ideal use of OCPs have a higher failure rate, and therefore more reliable methods should be considered first, barring contraindications (Centers for Disease Control and Prevention, 2010).

Given our findings that the attending cohort was more likely to provide contraception and/or fertility counseling sometimes or always compared to the fellow respondents (Tables 2, 3), there seems to be an opportunity to improve education for fellows regarding fertility preservation options for these patients.

As seen in other survey-based studies, the primary limitation of the study is the modest response rate, despite multiple recruitment attempts and limiting the length of the survey (Cunningham et al., 2015). Given the response rate, the potential for selection and survey content bias (i.e., only those who were interested in the topic responded) is present thus the results may have limited external validity. However, as aforementioned, our respondent cohort is comparable to the data published in the 2015 Society of Gynecologic Oncology: State of the subspecialty. Inclusion of both fellows in training and retired members also limits the external validity of the survey regarding current members, but we felt inclusions of these populations were interesting and important in order to compare potential generational differences. Many gynecologic cancer diagnoses are made in peri-menopausal or postmenopausal women; therefore assessing what portion of a provider's practice is of reproductive age could aid discussion and interpretation of results. Likewise, as the type of cancer and respective treatment options may change the potential for or etiology of infertility, assessing providers' experience with specific disease processes, such as gestational trophoblastic neoplasia, also could aid discussion, and intervention.

We acknowledge that a contraception plan may not appropriate for all patients undergoing cancer care, especially for who decline fertility sparing treatment, have been previously sterilized, or are actively attempting conception/currently pregnant. However, routine recognition of reproductive goals should be addressed by providers to alleviate potential biases or assumptions regarding patients' reproductive goals or sexual activity. Previous literature has reported providers' lack of counseling and patients' misunderstanding of reproductive potential after cancer treatment, and therefore a patient survey would be as valuable as the provider's impression we report (Patel et al., 2009; Karaoz et al., 2010). As life expectancy following cancer treatment diagnosis and treatment improves, and quality of life of survivors is emphasized, helping women meet their reproductive goals should remain an important focus. Comprehensive reproductive counseling should be emphasized, including both fertility sparing options and contraception planning, with the ultimate goal of decreasing unplanned pregnancy.

Conflict of Interest Statement

The authors of this manuscript have no conflicts of interests to disclose.

Table 4

Unadjusted and adjusted odds of reporting providing contraceptive counseling sometimes or always.

	Unadjusted OR (95% CI)	Adjusted* OR (95% CI)
Gender		
Male	1.0 (-)	1.0 (-)
Female	1.36 (0.81, 2.27)	2.80 (1.46, 5.38)
Level of practice		
Fellow	1.0 (-)	1.0 (-)
Attending	2.35 (1.28, 4.31)	1.49 (0.69, 3.24)
Age		
< 40 years	1.0 (-)	1.0 (-)
40–49 years	1.53 (0.81, 2.90)	1.91 (0.86, 4.25)
50+ years	3.22 (1.69, 6.14)	4.91 (2.05, 11.74)

OR denotes odds ratio; 95% CI denote 95% confidence interval.

* Multivariable model including gender, level of practice, and age.

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