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ASSISTED REPRODUCTIVE TECHNOLOGIES: UTILIZATION AND REPRODUCTIVE CHOICES BY LESBIAN COUPLES.

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BACKGROUND: Lesbian couples have been utilizing ART for years, but utilization information and reproductive goals have not been reported.

OBJECTIVE: This IRB approved study aimed to describe intentions and outcomes of lesbian couples accessing ART and report the mean number of cycles needed to achieve a live birth.

MATERIALS AND METHODS: For this retrospective chart review, an EMR query identified lesbian couples who presented for reproductive assistance at one center between 2004- 2015. Descriptive statistics were utilized to report our findings.

RESULT(S): Our query identified 306 lesbian couples. The mean age at presentation was 33.7 ±2.3 years. In 2005, 100% of couples were not in civil unions or married, but by 2014, 84.4% of couples were married or engaged.

TABLE 1. Pre-conception Plans.

Pre Conception Plans (N=233)		
	SPC	DPC
	178 (76.4%)	55 (23.6%)
No SC	157 (88.2%)	55 (100%)
With SC	21 (11.8%)	0

SC= Shared Conception; SPC= Single Partner Conception; DPC= Dual Partner Conception.

Pre-conception plans were available for 233 couples (Table 1). Of 306 couples, 20.9% did not pursue treatment. Of those who pursued treatment, 71.1% conceived and 22.3% did not conceive (Table 2). Both pre-conception data and treatment data was available for 195 couples. Interestingly, 12.3% of couples ultimately proceeded with SPC or DPC when their pre-conception goals had been the opposite.

Of those who conceived with IUI, the mean number of cycles completed was 3 ±1.1. Of those who conceived with IVF, a mean of 6 ±1.4 IUI and 1.7 ±0.39 IVF cycles were completed. The 22.3% of couples who did not conceive underwent a mean of 4.2 ±1.4 IUI and 3.3 ±1.8 IVF cycles.

CONCLUSION(S): This study provides numbers, demographics, and goals of lesbian couples seeking reproductive assistance. Couples who conceived with IUI did so after a mean of 3 cycles, suggesting that conception attempts with IUI should not proceed for 12 cycles, as some insurance companies require. The number of couples who presented for care each year did not change; however, a shift was seen in relationship status, suggesting lesbian couples are also interested in legal recognition and relationship stability prior to starting a family. Further study is needed to understand why one fifth of patients did not pursue treatment.

SUPPORT: The Center for Advanced Reproductive Services.

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MICROFLUIDIC SPERM SORTING DEVICE FOR SELECTION OF FUNCTIONAL HUMAN SPERM FOR IUI APPLICATION.

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BACKGROUND: According to the American Society for Reproductive Medicine, infertility affects about 5.3 million American couples of reproductive age (9%), among which male infertility accounts for 40-50% of cases [1]. The leading cause of male infertility is low sperm count, which is usually associated with low sperm motility, abnormality and impaired sperm function, thus resulting in the inability to fertilize an oocyte naturally [2]. Assisted reproductive technologies (ARTs) have offered an alternative to address challenges associated with male infertility [3]. A major clinical challenge is, however, the selection of highly motile and morphologically viable sperm to optimize the effectiveness of the procedures.

OBJECTIVE: The objective of the present study is to develop a microfluidic chip for sorting a highly motile and morphologically normal sperm for IUI application.

MATERIALS AND METHODS: A microfluidic sperm sorting device has two-chamber (top and bottom) separated by a polycarbonate filter of various pore diameters, 8, 14, and 20 μm (Figure. 1). Unprocessed semen sample was injected into the inlet of the device. Followed by the injection, top chamber was filled with human tubal fluid containing 4% human serum albumin, and then device was incubated at 37°C for 30 minutes. Finally, sorted motile sperm were collected from the top chamber and analyzed using CASA system for percentage of motile sperm. Sorted sperm morphology was also assessed based on Strict Kruger (S K) defined by WHO. Similarly, unprocessed semen sample was subjected to traditional swim-up method to compare the sperm sorting efficiency.

RESULTS: All the sperm functional parameters such as motility and morphology were analyzed and compared with sperm sorted in swim-up approach and unprocessed semen sample. The results showed that the sperm sorted using 8, 14 and 20 μm pore membrane filtered microfluidic device have higher motility as compared to sperm sorted in swim-up approach and unprocessed semen (Figure 2 A). Similarly, higher percentage of morphologically normal sperm was observed in sperm sorted using microfluidic sperm sorting device as compared to swim-up and unprocessed semen (Figure 2 B). The higher motility and morphology in sorted sperm is due to the presence of micropores between the two chambers that selectively allow the most motile and morphologically viable sperm to swim.

CONCLUSION: The developed microfluidic device shows higher sperm sorting efficiency as compared to conventional method and it can be an alternative approach for routine sperm sorting to improve clinical outcomes and further validated by clinical trail.

TABLE 2. Outcomes.

Outcomes (306 Patients)					
Did Not Pursue Treatment	Pursued Treatment				
64 (20.9%)	N= 242 (79.1%)				
	Attempted		SPC	DPC	Total
			206 (85.1%)	36 (14.9%)	242 Patients
		No SC	200 (97.1%)	32 (88.9%)	
		With SC	6 (2.9%)	4 (11.1%)	
	Conception	Conceived	140 (68%)	32 (88.9%)	172 (71.1%)
		Both Conceived	0	19 (52.8%)	
		One Conceived	140 (68.0%)	13 (36.1%)	
		Did Not Conceive	50 (24.3%)	4 (11.1%)	54 (22.3%)
		Still Attempting*	16 (7.8%)	0	

SC= Shared Conception; SPC= Single Partner Conception; DPC= Dual Partner Conception.
*still attempting conception as of 10/1/15.

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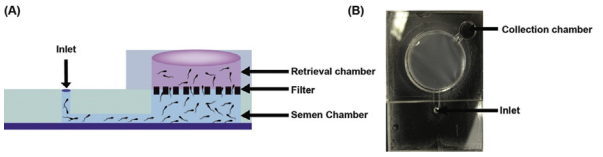

Figure. 1. (A) Schematic representation of microfluidic sperm-sorting device. The microfluidic sperm-sorting device consists of one inlet for the injection of unprocessed semen sample and two chambers separated by nuclepore track-etched membrane filter. The highly motile and morphologically normal sperm swim through the filter leaving unhealthy and dead sperm in the bottom chamber. (B) The photo of the microfluidic sperm sorting device showing inlet, filter, and retrieval chambers.

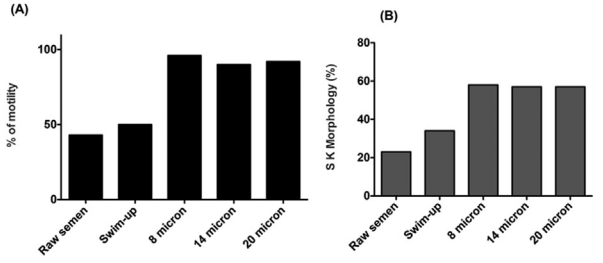

Figure. 2. (A) % motility and (B) morphology of human sperm sorted using different pore diameter filters 8 μm, 14 μm, and 20 μm at 30 minutes of incubation. Percentage of motility and morphology of sperm sorted using microfluidic sperm sorting device was significantly higher than the sperm sorting in swim-up and unprocessed semen sample.

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FERTILITY PRESERVATION FOR FEMALES RECEIVING GONADOTOXIC TREATMENT: UTILIZATION AND DISPOSITION CHOICES FOR CRYOPRESERVED SAMPLES. F. S. Chuong, L. Kolp, J. Garcia, Y. Zhao, M. S. Christianson. Johns Hopkins University School of Medicine, Lutherville, MD.

BACKGROUND: Fertility preservation treatment is an important component to comprehensive cancer care.

OBJECTIVE: To identify characteristics of females who undergo fertility preservation treatment (FPT), predictive factors associated with pregnancy and disposition choices for cryopreserved embryos, oocytes and ovarian tissue.

DESIGN: Retrospective analysis.

MATERIALS AND METHODS: We performed an analysis of females seen at an academic center for fertility preservation prior to gonadotoxic treatment over a 12 year period. Multivariate logistic regression models were constructed to identify factors associated with pregnancy and disposition choices; odds ratios (OR) with 95% confidence interval (CI) were calculated.

RESULTS: From 2002-2014, 406 females, ages 6-42, were seen for fertility preservation with 33.9% (n=138) pursuing FPT. FPT patient diagnoses included: breast 31.1%, hematologic 23.2%, ovarian 10.8%, endometrial 7.2%, colorectal 5.0%, sarcoma 4.3%, neurologic 2.9%, and other cancers/medical conditions 15.5%. FPT included embryo cryopreservation (n63, 45.6%), oocyte cryopreservation (n=35, 25.4%), ovarian tissue cryopreservation (n=33, 23.9%), combination modalities (n=4, 2.9%) and ovarian transposition (n=3, 2.1%). Of 19 patients who received prior chemotherapy, 31.6% (n=6) had cancelled cycles. Of FPT patients, 7.2% (n=10) were deceased and 10.3% (n=14) pursued pregnancy with 8.7% (n=12) achieving pregnancy. After adjustment, the only factor associated with increased pregnancy was embryo cryopreservation (OR=13.0, 95% CI 1.6-101.2). Age, race, education, partner status and parity were not statistically associated with pregnancy. Patients chose the following disposition options for unused cryopreserved samples: 40% undecided, 35.8% research, 2.5% family donation, and 1.6% shipped to another facility. Ovarian tissue cryopreservation was associated with an increased odds of research as a disposition choice (OR=215.6, 95% CI 14.2-3278), Patients with cryopreserved embryos were less likely to donate to research (OR=0.09, 95% CI 0.03-0.3) while those with cryopreserved oocytes were more likely to be undecided (OR=4.8, 95% CI 1.6-14.7).

CONCLUSIONS: Fertility preservation is an integral part of comprehensive cancer care. Most FPT patients survived and continue to store cryopreserved samples. Embryo cryopreservation is associated with a higher pregnancy rate and lower likelihood to donate to research in contrast to ovarian tissue cryopreservation. However, because a large percentage of patients remain undecided, further attention to counseling may be beneficial.

FINANCIAL SUPPORT: None.

References: Not applicable.

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FERTILITY PRESERVATION TREATMENT FOR WOMEN WITH GYNECOLOGIC MALIGNANCIES: PREDICTIVE FACTORS FOR TREATMENT. C. N. Cordeiro,[a] C. I. Washington,[d] M. Gornet,[b] M. M. Yates,[c] J. E. Garcia,[d] A. N. Fader,[e] L. A. Kolp,[d] M. S. Christianson.[d] [a]Gynecology & Obstetrics, Johns Hopkins University School of Medicine, Baltimore, MD; [b]Johns Hopkins University School of Medicine, Baltimore, MD; [c]Advanced Reproductive Specialists of Orlando, Winter Park, FL; [d]Reproductive Endocrinology & Infertility, Johns Hopkins University School of Medicine, Baltimore, MD; [e]Gynecologic Oncology, Johns Hopkins University School of Medicine, Baltimore, MD.

BACKGROUND: Women of reproductive age are increasingly diagnosed with cancer prior to the completion of childbearing due to improved treatments and older age at first pregnancy.[1] Little is known regarding the decision to undergo fertility preservation in this population.

OBJECTIVE: To identify predictive factors for seeking fertility preservation treatment in reproductive-age women with gynecologic malignancies.

DESIGN: Retrospective analysis.

MATERIALS AND METHODS: We performed a retrospective analysis of women with gynecologic malignancies, ages 14-42 years old, seen for fertility preservation consultation at an academic fertility center prior to cancer treatment from 2002-2014. Multivariate logistic regression analysis was performed to identify factors associated with fertility preservation treatment; adjusted odds ratios (OR) with 95% confidence intervals (CI) were calculated.

RESULTS: Over the 12-year period, 96 women were seen for fertility preservation consultation with a mean age of 31.5 years. Diagnoses included: ovarian (n=44, 45.8%), uterine (n=44, 45.8%) and cervical (n=8, 8.3%) cancer. Of those seen, 35.4% (n=34) pursued fertility preservation treatment. Treatments included embryo cryopreservation (64.7%, n=22), oocyte cryopreservation (20.5%, n=7) and ovarian tissue cryopreservation (14.7%, n=5). After adjustment, having at least one child was associated with a decreased odds of receiving fertility preservation treatment (OR=0.10, 95% CI 0.01-0.97). Factors associated with an increased odds of receiving fertility preservation included age 35 years or younger (OR=2.1, 95% CI 1.2-7.9) and having ovarian cancer (OR=2.77, 95% CI 1.03-7.49). Race, education and partner status were not associated with odds of fertility preservation treatment.

CONCLUSIONS: In the past decade, fertility preservation has emerged as an integral part of a comprehensive cancer treatment plan. Women of reproductive age with gynecologic malignancies are more likely to seek fertility preservation treatment if they are younger than 36 or if they have no living children. Interestingly, women with ovarian cancer are more likely to seek fertility preservation than other gynecologic malignancies. Further research focused upon identifying barriers to fertility preservation and improved provider and patient education may increase fertility preservation utilization in these patients.

FINANCIAL SUPPORT: None.

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