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Medical Cosmopolitanism in Global Dubai: A Twenty-first-century Transnational Intracytoplasmic Sperm Injection (ICSI) Depot

Dubai—one of the seven United Arab Emirates and the Middle East’s only “global city”—is gaining a reputation as a transnational medical tourism hub. Characterized by its “medical cosmopolitanism,” Dubai is now attracting medical travelers from around the world, some of whom are seeking assisted conception. Dubai is fast becoming known as a new transnational “reprohub” for intracytoplasmic sperm injection (ICSI), the variant of in vitro fertilization designed to overcome male infertility. Based on ethnographic research conducted in one of the country’s most cosmopolitan clinics, this article explores the ICSI treatment quests of infertile men coming to Dubai from scores of other nations. The case of an infertile British-Moroccan man is highlighted to demonstrate why ICSI is a particularly compelling “masculine hope technology” for infertile Muslim men. Thus, Muslim men who face barriers to ICSI access in their home countries may become “reprotravelers” to Dubai, an emergent ICSI depot. [intracytoplasmic sperm injection, male infertility, assisted reproduction, medical cosmopolitanism, Dubai]

depot (n.):

a The action or an act of depositing. b A deposit, a collection, a store. Now spec. a localized accumulation of a substance in the body. (The New Shorter Oxford English Dictionary 1993)

Introduction

Dubai, one of the seven United Arab Emirates (UAE), has obtained growing global recognition as a hub of real estate investment, tourism, and shopping. Sporting the world’s largest malls and tallest buildings, Dubai attracts 38 million travelers each year (Aw 2010), a number that is steadily increasing. But Dubai has loftier aspirations: to become a major global hub of medical tourism. Over the past decade, Dubai has been attracting medical travelers from many other countries and regions,

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particularly Africa, Asia, Europe, and other parts of the Middle East. Some of these travelers are infertile men, who have been unable to obtain effective diagnostic and treatment services elsewhere. Men's reproductive sojourns to Dubai represent concerted efforts to overcome male infertility through the use of intracytoplasmic sperm injection (ICSI), the variant of in vitro fertilization (IVF) designed especially for this purpose.

This article highlights the role of Dubai as an emerging global "reprohub"—a transnational site of assisted reproductive technologies and conceptions (Inhorn 2015). As a global reprohub, Dubai now serves as a kind of ICSI depot for infertile men. Per the definition above, a depot is a place designated for the deposit and storage of various substances. In this regard, Dubai is becoming a depot for the deposit and storage of semen—which is ejaculated by infertile men into plastic cups in the hope that viable sperm can be extracted for the ICSI procedure. As will be shown in this article, traveling infertile husbands from around the world are making their way to Dubai in a "depository mode." Dubai is thus becoming an international ICSI depot unlike any other in the Middle East in the 21st century.

This article provides an ethnographic entrée into the world of ICSI in what has become one of the world's major sites of "medical cosmopolitanism"—namely, a place where medical care is delivered and received across numerous national, ethnic, linguistic, religious, and cultural boundaries. In the first half of this article, I define and describe medical cosmopolitanism—a variant of a term initially described by physician-anthropologist Frederick L. Dunn (1976). I argue that medical cosmopolitanism is an important 21st-century analytic for describing a world marked by increasing global movements of medical travelers across regional, national, and international borders. Such medical cosmopolitanism is particularly manifest in global cities such as Dubai, where a particular form of statecraft known as "cultural cosmopolitanism" is also at play.

Dubai, I will argue, provides an example par excellence of medical cosmopolitanism, given that it is the only Middle Eastern city to make the top-10 list of medical tourism destinations. It is also the only Middle Eastern city to qualify as a truly global city—i.e., a city where "the global materializes" through cross-border dynamics that include a wide range of persons (e.g., migrants, medical travelers, tourists, executives, and other business travelers), as well as a broad range of political, economic, social, and cultural forces (Sassen 2001, 2005).

The second half of this article provides an ethnographic foray into a cosmopolitan clinic in Dubai called Conceive, which practices a kind of "global gynecology." There, infertile couples from around the world gather, seeking ICSI services as a route to parenthood. Just as IVF has performed an important role as a "hope technology" for the world's infertile (Franklin 1997), ICSI has gained a particular role as a "masculine hope technology." Indeed, ICSI is especially hopeful for infertile Muslim men, who are otherwise forbidden from pursuing alternative pathways to parenthood. In the final section, the story of Nourredine,¹ a young, British Muslim man of Moroccan descent is told. Having been given no hope by British National Health Service (NHS) physicians, Nourredine and his wife travel to Conceive, where Nourredine places his only hope in ICSI's technological salvation.

Medical Cosmopolitanism in Global Dubai

As I have suggested above, Dubai is a place of medical cosmopolitanism. As I use it, medical cosmopolitanism has two distinct but related meanings. First, it entails the notion of “cosmopolitan medicine,” a term initially used in early medical anthropology to signify the production of Western-based biomedicine and its rapid global spread. Second, medical cosmopolitanism is related to the concept of “cultural cosmopolitanism,” or the coming together of people from many different nations at the point of medical consumption—i.e., the actual delivery of clinical care. Medical cosmopolitanism signifies this double entendre—of the global production and consumption of Western, technoscientific medicine in places where the outlook of both practitioners and patient consumers is self-consciously cosmopolitan in nature.

Cosmopolitan Medicine

Physician–anthropologist Frederick Dunn—one of the founding members of the medical anthropology program at UCSF/UC-Berkeley—coined the term cosmopolitan medicine in 1976, to refer to what was then being called modern, scientific, or Western medicine (Dunn 1976). Dunn believed that those terms—often used in juxtaposition to indigenous, local, or traditional medicine—created an implicitly biased dualism. As he pointed out, traditional medical systems, such as Ayurvedic, Unani, or Chinese medicine, often included scientific elements. Similarly, Western medicine was as much art as science. Thus, claiming the mantle of science for one system but not the other was an error, according to Dunn.

In addition, Dunn favored the term “cosmopolitan” for its associated meaning of “cosmopolitanism.” Dunn noted: “A dictionary definition of ‘cosmopolitan’ conveys the ideas of ‘worldwide rather than limited or provincial in scope or bearing; involving persons in all or many parts of the world’” (1976:135). What interested Dunn most was the way that cosmopolitan medicine had achieved global ascendancy, even though the system was developed in the West and was then transplanted to other parts of the world. The rapid globalization of this system of medicine was clearly tied to capitalist expansion in the 20th century.

Yet, Dunn worried that a particular model of health care delivery—developed in the capitalist West, primarily for urban areas, with a strong focus on high-tech, curative medicine—was probably not adaptive in many other cultural settings. Although he noted that the cosmopolitan medical system was not globally homogeneous, manifesting significant local and regional variation, its transfer to other parts of the world might quickly lead to the subordination, even the demise, of local and regional forms. Dunn described cosmopolitan medicine as “global, largely urban,” with an inherent appeal to scientifically educated “secondary elites.” Furthermore, cosmopolitan medicine involved processes of professionalization and specialization, which could ultimately usurp the authority of local healers. Dunn cautioned that the cosmopolitan medical system might have a profound impact in non-Western settings, responding with biologically based solutions (such as vaccines and antibiotics) when the health care problems of the poor were, at their root, political and economic in nature.

Over time, and under the influence of the theories of Michel Foucault (1994), cosmopolitan medicine gave way to the term “biomedicine”—a reflection of the centrality of Foucauldian “biopolitics” in Western thought, as well as the increasing importance of the “bio” in the life sciences and biotechnology industries (Clarke et al. 2010). Today, biomedicine is used almost exclusively by medical anthropologists to signify Western, biotechnologically based medicine. However, I would argue that Dunn’s earlier notion of cosmopolitan medicine signals the global in a way that the Foucauldian term biomedicine does not. What concerned Dunn—much more than Foucault—was the globalization and eventual hegemony of Western medicine around the world, concerns that were truly prescient. Four decades later, Western-invented, high-tech, urban-based curative medicine—Dunn’s definition of cosmopolitan medicine—has, in fact, spread far and wide, including to the Middle East.

To give just a few examples, Egypt, the site of my earliest research (Inhorn 1994, 1996), now boasts 20 Western-style medical schools and almost as many schools of dentistry. Saudi Arabia, a relative latecomer to the world of Western biomedicine, now surpasses Egypt in the total number of medical colleges (with 21). Even the tiny UAE—with a population of about nine million—now boasts four medical schools spread across the country, including one devoted exclusively to the training of female physicians.

Furthermore, the Middle East now boasts one of the strongest IVF industries in the world (Inhorn and Gurtin 2012; Inhorn and Patrizio 2015; Inhorn and Tremayne 2012; Jones et al. 2010). Egypt, for example, has more than 50 IVF clinics, including five that are partially subsidized by the state. Iran has more than 70 IVF clinics, and Turkey more than 100, including many government clinics that are entirely publically funded. Thus, IVF and ICSI are now performed in most major Middle Eastern cities, from Casablanca to Cairo and Beirut to Tehran (Inhorn 2012).²

Cultural Cosmopolitanism

However, of all of the Middle Eastern cities performing IVF, Dubai is the only to have developed a reputation as a medical tourism hub. Dubai’s attempt to signal its medical cosmopolitanism is part and parcel of larger state-sponsored efforts in the UAE to showcase a particular brand of statecraft called “cultural cosmopolitanism.” According to contemporary social theorists (Beck and Sznaider 2006; Skrbis et al. 2004), cultural cosmopolitanism signals a new moral and ethical way of living in an increasingly interconnected and heterogeneous world, characterized by geographic deterritorialization, cultural pluralism, and hybridity. Cultural cosmopolitanism has been characterized as a style of living in transnational spaces such as Dubai—a willingness to engage in the world with cultural others. Described by some as a kind of “globalization from *within*,” as opposed to globalization taking place “out there,” cultural cosmopolitanism has been called a way of “being” in the 21st century, particularly in global cities such as Dubai (Beck and Sznaider 2006:9).

However, Dubai’s cultural cosmopolitanism, or the bringing together of diverse constituencies from around the world, has a much longer history. Formerly part of the Trucial States—a loose confederation of seven neighboring emirates—Dubai was known as a cosmopolitan trading hub and a place of Arab, Persian, and Indian hybridity (Davidson 2005, 2008). During its colonial

period as a British protectorate—which began in 1892 and ended in 1971—the coastal town of Dubai was the most thriving, trade-friendly, free port of the lower Arab Gulf. As a result of this early openness, large populations of South Asians and Iranians settled in Dubai, many of them middle-class and wealthy merchants.

With the founding of the Emirati nation-state on December 2, 1971, the influx of foreigners into the country was heightened by a period of hyper-development—particularly in Dubai, but also in Abu Dhabi, the largest and most petroleum-rich emirate and the nation’s new capital. Since then, the UAE has become known as one of the largest migrant-receiving countries in the world (Mahdavi 2011; Vora 2013), in which Indians and Pakistanis in particular have found work as day laborers in the booming construction industry. Today, the nation of seven confederated emirates is decidedly multinational and multicultural. Of the more than nine million people living in the country in 2014 (United Nations 2014), only about 13% are Emirati. The largest single group is South Asians, who, at approximately 58% of the total population, are nearly equally divided between Indians and Pakistanis. Other Asians and Arabs from many nations—primarily Lebanon, Syria, Palestine, Egypt, and Sudan—make up about 17% of the country’s population. The remaining 8.5% are primarily Western expatriates as well as a growing number of migrants from various parts of Africa. The only continent not well represented in the UAE today is South America.

Dubai is the UAE’s largest city, with a population of nearly two million and more than 70 nationalities represented. According to most commentators, Dubai is now the Middle East’s only cosmopolitan metropolis (Kanna 2011; Mahdavi 2011). No longer dependent on the petroleum industry, Dubai’s economy has significantly diversified, with main revenues coming from three interrelated sources: the global financial services industry, a luxury real estate sector, and the international tourism industry.

The tourism industry bears special mention here. Not only is tourism the main engine of Dubai’s economy—thereby distinguishing Dubai from the other emirates—but it is also what undergirds the lure of Dubai for medical travelers, who can gain easy access to hotel accommodations and can generally receive month-long visitors’ visas, extendable for up to three months, before they are required to leave the country. Given the well-developed tourist infrastructure and the relatively lax criteria for getting a visa, it is not surprising that Dubai was the eighth most-visited city in the world in 2012 (displacing Rome), and at the top of the top-10 destination cities in the Middle East and Africa, according to a *Forbes* survey (2012).

Indeed, of all the cities in the Middle East, Dubai is the only one to have cultivated its cosmopolitan reputation as a high-tech, global hub for medical treatment and consumption. And it is now considered one of eight destinations for medical tourism within Asia.³ In the Middle East as a whole, Dubai is home to the region’s only “medi-city.” Called Dubai Healthcare City, this medi-city is registered as one of several tax-exempt free zones in the UAE, and was initially developed with oversight by a Harvard University team called Partners Harvard Medical International. Dubai Healthcare City is said to include more than 100 medical facilities and more than 3,000 health care professionals. Despite some major setbacks associated with the economic downturn of 2008–2009 in Dubai

as a whole, the medi-city has nonetheless become a destination point for medical travelers from around the world (Ismail 2012).

Dubai's medical tourism is part of a much larger state-sponsored attempt to create the Middle East's first global "techno-hub" (Ong 2005), attracting the biotechnology industry and other high-tech industries to this part of the world. For example, beginning in 2012, Dubai began hosting an annual Biotechnology World Congress, with the stated mission of bringing "modern biotechnological research" to the Middle East (<http://dubaiconf02.com/bwc>). Dubai's desire to be a global techno-hub is also visible in the city's hosting of numerous techno-themed conferences and exhibitions. These include, among others, the Forensic Science and Law Middle East Congress, using innovations in modern forensic science to improve criminal justice; the Dubai Airshow, one of the world's largest aerospace events and the major marketplace for commercial and military aircraft sales in the region; and the Dubai International Film Festival, a global media extravaganza, featuring many films that would be censored in most other Middle Eastern countries. Furthermore, in December 2013, Dubai was awarded the World Expo 2020, thereby becoming the first Middle Eastern city to host the world's most important global tech-and-culture exhibition.⁴

To accommodate the World Expo, as well as many other international events, Dubai has announced construction of the world's largest airport, "so big it will be its own city."⁵ Named after Dubai's ruling family, the Al Maktoum International Airport will be able to convey 160 million passengers and 12 million tons of cargo each year, quadrupling the capacity of the already impressive Dubai International Airport. To accommodate these new travelers, Dubai has also announced construction of the world's biggest, climate-controlled, hotel-mall complex—with 100 hotels, 20,000 hotel rooms, four miles of streets and promenades, eight million square feet of stores and retail outlets, a theater district, the world's largest theme park, and, of particular relevance to medical travelers, a wellness center, offering various surgical options, including cosmetic procedures (Forgione 2014).

Conceive—A Cosmopolitan Clinic for Male Reprotravelers

Although the future of Dubai's medical tourism sector has yet to unfold amid growing regional political uncertainties, it is clear that Dubai is already drawing thousands of medical travelers each year. Many of these medical travelers are seeking assisted reproduction, including ICSI to overcome male infertility problems. In 1991—the very year that ICSI was being "birthed" in Belgium as a variant of IVF designed to overcome male infertility—the UAE opened its first IVF clinic in a Dubai government hospital. Since then, the UAE's assisted reproduction sector has flourished, with more than a dozen IVF clinics, most of them private facilities, opening in the country over the past 25 years.

One of these private IVF centers is called Conceive,⁶ where I undertook a six-month study of what I came to think of as "reprotravel" to Dubai.⁷ At Conceive, I was able to conduct in-depth, semi-structured, ethnographic interviews with 219 ICSI- and IVF-seeking men and women coming from 50 different countries of origin.⁸ They hailed from an equal number of Middle Eastern (15) and European nation-states (15), followed by an almost equal number of Asian (nine) and African (eight) countries. The United States, Canada, and Australia were also represented,

with Latin America being the only part of the world entirely absent from this otherwise global study population. Ninety-four interviews were undertaken with infertile couples together, since marriage—as shown by a valid marriage license—is a strict requirement for assisted conception mandated by the UAE Ministry of Health. However, I also interviewed 31 men and women alone, either because they had traveled by themselves that day or they were waiting for their spouses to complete various medical procedures in the clinic. Interviews ranged anywhere from one to three hours, were mostly conducted in English (the lingua franca of Dubai),⁹ and focused on the often tortuous IVF and ICSI journeys of the 125 patient-couples in the study.¹⁰

Most of these couples had reached Conceive through circuitous global routes of referral, sometimes from friends or family members, but often through referrals from physicians in other countries. Furthermore, most of the couples in my study felt “lured” to Dubai because of its cultural cosmopolitanism—namely, they wanted to receive IVF services in a global location, where clinical care could be effectively delivered across national, ethnic, religious, linguistic, and cultural lines. In this regard, it is fair to say that Conceive had developed a global reputation for its cosmopolitanism. With more than 20 staff members hailing from the Middle East, Africa, South and Southeast Asia, and Western Europe, Conceive could be seen as practicing a kind of “global gynecology,” making infertile patients from abroad feel comfortable with its high-quality, patient-centered, gynecology services, delivered multiculturally by co-nationals in Arabic, Hindi, Urdu, and several other regional languages. Like Dubai itself, Conceive was a place of “cosmopolitan conceptions”—a clinic where self-consciously crafted medical cosmopolitanism had worked to create a vibrant, international clientele.

Within the Middle East as a whole, cosmopolitan clinics such as Conceive are highly unusual. Generally, IVF clinics in other Arab nations are staffed by local Arab physicians who treat mostly Arab IVF patients.¹¹ Conceive, by contrast, provided a veritable object lesson in globalization. Although many reprotravelers to Conceive were Arab Muslims (including substantial numbers of Emiratis from other parts of the country), most of the patients coming to Conceive were not. Indeed, over the course of my research, I tracked the comings and goings of a diverse group of international medical travelers from five continents and 50 different countries. Many of these reprotravelers were infertile men. According to Dr. Pankaj Shrivastav, Conceive’s clinical director,¹² about 40% of the couples presenting to the clinic faced a diagnosis of male infertility. This was true in my own study as well. Fifty-three of the 125 husbands, or 42%, were infertile. Ten of these men were azoospermic, showing no signs of sperm in their ejaculate. Of these 10 men, two had banked their sperm at Conceive prior to cancer treatment, becoming azoospermic after chemotherapy and returning to Conceive for ICSI. The rest of the infertile men in my study suffered from a variety of sperm defects, including oligozoospermia (poor sperm count), asthenozoospermia (poor sperm motility, or movement), and teratozoospermia (poor sperm morphology, or shape). In most of these cases, men knew that they were infertile before traveling to Conceive, but in a few cases, male infertility was diagnosed once couples arrived there.

The infertile men in my study came from 21 countries. As shown in Table 1, most of the infertile men came from a variety of Middle Eastern and European nations.

Table 1. 53 Infertile Male Reprotravelers to Conceive from 21 Countries

Africa	Asia	Euro-America	Middle East
Djibouti (1)	India (16)	France (1)	Bahrain (1)
Somalia (1)	Pakistan (2)	Germany (1)	Egypt (1)
South Africa (2)	Philippines (2)	Hungary (1)	Iran (2)
Sudan (3)		Netherlands (1)	Lebanon (4)
		Sweden (2)	Palestine (3)
		United Kingdom (3)	Syria (3)
		United States (1)	UAE (other emirates) 2
<i>N</i> = 7	<i>N</i> = 20	<i>N</i> = 10	<i>N</i> = 16

But African and Asian men were also traveling to Conceive. This was particularly true of Indian men, who comprised the single largest group, or nearly one-third of the total sample.

Why had these men traveled to Dubai to obtain male infertility treatment? In most cases, they had been unable to access effective ICSI services in their home countries due to several major “arenas of constraint” (Inhorn 2003). For men coming from Africa, resource constraints were most prominent, particularly the total absence of IVF clinics in most sub-Saharan African countries.¹³ At the time of my study, infertile men from the Horn of Africa—countries such as Djibouti, Somalia, and Sudan—were heading to Conceive because ICSI services were literally unavailable to them back home.

European men faced a different arena of resource constraint. Many came from countries where IVF and ICSI cycles were available but rationed by the state. The United Kingdom and its NHS stood out in this regard (Hudson and Culley 2011). At Conceive, I met a group of reprotravelers who I came to think of as the “NHS refugees.” These NHS refugees were British couples who were seeking refuge in Dubai after being deemed ineligible for publicly funded IVF and ICSI cycles or had been put on long NHS waiting lists, sometimes for years. Some of these couples had been disqualified from IVF and ICSI altogether simply by living in the wrong postal code, where local NHS authorities refused to fund assisted reproduction at taxpayers’ expense. Others had reached NHS clinics, only to receive ineffective, low-quality care from overextended IVF clinicians.

In addition, some of the European men in my study could be considered “reproductive outlaws,” by virtue of the fact that they were attempting to evade their countries’ assisted reproduction laws. These kinds of legal constraints were especially difficult for azoospermic men coming from a number of European countries where ICSI cannot be performed if sperm must be aspirated directly from the testes (because of concerns about genetic defects being passed to an ICSI child) (Pennings 2010). Other countries forbid IVF or ICSI services if a man or woman carries an infectious disease such as hepatitis. Because Europe has the highest number of these kinds of assisted reproduction laws (Jones et al. 2010), it also has the highest number of law evaders (Pennings 2002, 2004, 2009). Consequently, some of these European reproductive outlaws were making their way to Dubai for ICSI services. This was

especially true for those needing percutaneous epididymal sperm aspiration (PESA), a form of testicular aspiration in which sperm are extracted directly from the epididymis, one of the sperm transport vessels. PESA was first invented at Conceive, making PESA a specialty service at this clinic.

Finally, quality of care was one of the main drivers of reprotravel among the men and women in my study. This was especially true for couples coming from South Asia and Eastern Europe. In many cases, reprotravelers spoke of IVF clinics in their home countries that were crowded well beyond capacity, delivering low-quality, ineffective, and even harmful treatment. Iatrogenesis, or physician-induced harm, was a major theme of many of the medical horror stories I heard at Conceive, stories filled with disenchantment and sometimes life-threatening malpractice. By the end of my study, it was clear to me that infertile couples' desires for high-quality IVF and ICSI services were a major driver of their transnational reprotravel. Indeed, the search for patient-centered care may be one of the most underappreciated aspects of global reproductive mobilities in the new millennium (Dancet et al. 2011).

ICSI—A Masculine Hope Technology?

Having said all this, for the infertile Muslim men in my study, reprotravel to Dubai was often motivated by an additional important factor. Namely, for infertile Muslim men living in home countries where ICSI is not available or accessible, they are left with few other avenues to fatherhood. This is because sperm donation—the only other solution for male infertility (Becker 2002)—is widely prohibited across the Muslim world, from Morocco to Malaysia (Inhorn and Tremayne 2012).¹⁴ Sperm donation is equated with genealogical confusion, mistaken paternity, and illicit sexuality, and is thus widely refused by Muslim men, who argue that a donor-sperm child “won’t be my son” (Inhorn 2006). Similarly, legal adoption as practiced in the West—where a child takes the adoptive father’s surname, can legally inherit from him, and is treated as if he or she is a biological child—is also prohibited for reasons of genealogical confusion and patrilineal impurity (Inhorn 1994, 1996, 2003, 2012).¹⁵

Given these Muslim prohibitions against both sperm donation and legal adoption, the 1991 introduction of ICSI—a technology that overcomes male infertility by using a man’s own sperm—was considered a watershed event in the Muslim world. As a variant of IVF, ICSI solves the problem of male infertility in a way that IVF cannot. With standard IVF, spermatozoa are removed from a man’s body through masturbatory ejaculation, and oocytes (eggs) are surgically removed from a woman’s ovaries following hormonal stimulation. Once these male and female gametes are retrieved, they are introduced to each other in a petri dish in an IVF laboratory, in the hopes of fertilization. However, “weak” sperm (i.e., low numbers, poor movement, misshapen) are poor fertilizers. Through micromanipulation of otherwise infertile sperm under a high-powered microscope, ICSI allows for the direct injection of spermatozoa into human oocytes, effectively aiding fertilization. As long as one viable spermatozoon can be extracted from an infertile man’s body, it can be ICSI-injected into an oocyte, leading to the potential creation of a human embryo. With ICSI, then, otherwise sterile men can father biogenetic offspring.

This includes azoospermic men, who produce no sperm in their ejaculate and must therefore have their testicles painfully aspirated or biopsied in the search for sperm.

Because ICSI gives even the most infertile men a chance of producing a test-tube baby, it has acquired special meaning for infertile Muslim men as a masculine hope technology. Since being introduced in Egypt in 1994, ICSI has led to a virtual “coming out” of male infertility across the Muslim Middle East, as men acknowledge their infertility and seek the ICSI solution (Inhorn 2003, 2012). The coming of this new masculine hope technology in the Middle East is also leading to the eventual replacement of ICSI’s technological predecessor, IVF. Whereas IVF leaves fertilization up to chance in a laboratory petri dish, the direct ICSI-injection of sperm into eggs provides a more guaranteed way of creating “the elusive embryo” (Becker 2000).

ICSI may be a revolutionary masculine hope technology for the world’s infertile men. But as Sarah Franklin (1997) has rightly pointed out, hope does not always translate into a take-home baby. Indeed, ICSI entails many challenges for infertile men and their wives.

For one, the precisely timed collection of semen can produce deep anxiety and even impotence, but is imperative for all ICSI procedures (Inhorn 2012). Some men may produce no spermatozoa whatsoever, even within their testicles, eliminating ICSI as an option. Furthermore, ICSI may not succeed, leading to endless rounds of fruitless repetition among some couples. ICSI is also highly dependent on the complicated hormonal stimulation and extraction of healthy oocytes from women’s bodies. Whereas the fecundity of older men can often be enhanced through ICSI, women’s fertility is highly age sensitive, with oocyte quality declining at later stages of the reproductive life cycle. In short, older women may “age out” of ICSI, causing highly gendered, life-course disruptions surrounding women’s biological clocks (Inhorn 2003, 2012). In addition, men may arrive at ICSI after years of other failed treatment options. ICSI is expensive, usually costing \$2,000–\$6,000 USD per cycle in the Middle East, with the prices in the UAE reflecting the high end of that financial spectrum. Thus, ICSI is often deemed a last resort, especially for men without adequate financial resources. Finally, when it does succeed, ICSI may perpetuate genetic defects into future generations, through the sperm defects and other inherited disorders that may be passed by infertile men via ICSI to their male offspring. The ethics of passing genetic mutations to children has been a significant cause for concern (Bittles and Matson 2000; Spar 2006).

Despite these challenges, nearly five million “miracle babies” have now been born around the world via assisted conception (Franklin 2012), more than half a million of whom are the result of ICSI. To reiterate an earlier point, ICSI may be the only hope for most infertile Muslim men, especially those with serious infertility problems. The emergence of ICSI in the Middle Eastern region has led to a boom in demand for this technology—a demand that has never waned. ICSI is by far the most common assisted reproductive technology now undertaken in the Middle East today. IVF clinics such as Conceive are filled with ICSI-seeking men and their wives. Indeed, without a doubt, Dubai has become a major transnational ICSI depot—where infertile men from around the globe are depositing their sperm, in the hope of ICSI conceptions. To demonstrate the lure of Dubai as an emerging global reprohub for infertile men, I offer in the next section the reprotravel story of Nourredine, a 22-year-old British man of Moroccan heritage. Because of his deep

frustration with visits to the British NHS, Nourreddine became a reprotraveler to Dubai, depositing his sperm in this global ICSI depot.

A Reprotravel Story—Nourreddine and His Hidden Sperm

Nourreddine was the British-born eldest son of working-class Moroccan immigrants. Expected to be independent by the age of 18, Nourreddine opened a small mobile phone shop in the outskirts of London. The shop was so successful that Nourreddine was able to afford marriage within the first year of his store's opening. He chose Fadwa as his bride. Also a Moroccan immigrant to Britain, Fadwa was 17 at the time of her marriage. Pale-skinned with an East London cockney accent, Fadwa seemed more British than North African. But her long *djellaba* (a floor-length, long-sleeved dress worn in Morocco) and modest headscarf signaled that she, like Nourreddine, was a pious Muslim.

As teen newlyweds, Nourreddine and Fadwa were very much in love and hoped to become young parents: "I've always said to myself that I wanted to have my children by the time I was 30," Nourreddine explained to me.

I want to be running with my children in the park, being close to their age. Having a child at an old, old age doesn't appeal to me. I'd rather be done when I'm young. I did want a child at an even younger age, but God didn't want it. I would have had a four-and-a-half-year-old child by now if things had gone my way.

Nourreddine continued. "I never really took it seriously, because you come across a lot of people who are trying, trying, trying. I can certainly say that we did try! But, obviously, nothing happened. Really, over the years, nothing happened. Nothing happened at all."

Two years of marriage without any form of contraception led the couple on a trip to the local NHS IVF clinic. "I did all the blood tests, and I had ultrasounds, and a [diagnostic] laparoscopy," Fadwa explained. "And they said at the end of the day that everything is fine, everything is fine." When Fadwa's tests all came back normal, Nourreddine was asked to undergo semen analysis, which he repeated several times. The South African Muslim physician working in the NHS clinic delivered the bad news to Nourreddine in this way:

Look. You have no sperm. You've only got, basically, a couple of options. Either use donor sperm, or try to do ICSI. But the probability of ICSI succeeding is not very high. We would have to do an operation on you—to take out some tissue from your testicles, and see if we can find any sperm.

As pious Sunni Muslims, Nourreddine and Fadwa were horrified by the first option of sperm donation. "Because of our religion, for us, it wasn't an option at all," Nourreddine told me.

But over there, they do it! The guy who recommended donor sperm to us, he is a Muslim! And he kept saying: "Why not? You should do it! You should

do it!” He was trying to convince us to do it, even though he’s Muslim. I don’t think he was a very religious person himself. So we spoke to my parents about this, and my father spoke to some imams in London. And, oh no! They did *not* recommend that we do that.

Having rejected sperm donation altogether, Nourreddine was willing to accept the second recommendation of testicular biopsy. This would determine whether Nourreddine was suffering from a simple blockage in sperm transport, or a more serious form of non-obstructive azoospermia, in which sperm were simply not produced in his testicles. “This is not a part of the body that you like to be operated on—not for a man!” Nourreddine exclaimed.

And I would not like to do this again. But really, I had no choice. In other cases with no sperm, he was telling [those men] to go to Spain, because there they have fertility units, where his clients from the NHS can get donor sperm. But for me, this was basically out of the question. So instead, they took three samples of specimens from my testicles. And they found nothing, nothing, nothing.

In early 2007, Nourreddine and Fadwa decided to travel to Dubai, where they met with Dr. Pankaj at Conceive. As Nourreddine explained to me:

When we got here, we saw this Dr. Pankaj, who consulted our files. Once he saw these results, he said, “Look, we’re going to do your sperm test again.” I done it here [*sic*], and then we waited. And within half an hour, he came back to me and said, “We found sperm. We found maybe 5 percent sperm.” We didn’t believe him! We thought it was somebody else’s. So many years in England, we were told, “Absolutely nothing. Not at all!” Here, they showed me under the microscope. Just for me—I got “special treatment.” They said, “We spun it. We spun it in the machine.” I’m sure they did this in the UK, or at least I reckon they did. But maybe they didn’t. So Dr. Pankaj suggested to freeze it, and I didn’t want to because I didn’t know this clinic. And you never know what goes on inside clinics these days! Leaving your sperm and it’s live sperm! But I have a bit of confidence because a) You see the pictures [of babies] here on the walls, and b) he knew our South African doctor back in London. So we froze it, and we came back three days later to give some more sperm. We left two samples. You see, the more you have, the better, because some of the sperm can die. I was, I was honestly thinking that I’d have to do another [testicular] biopsy. So as soon as they found sperm [i.e., in the normal ejaculate], I couldn’t believe it! Because when I walked in here, the first thing I said is, “I’ve got no sperm.” I brought my test results from England, and all the reports said zero, zero, zero. But Dr. Pankaj said, “Throw it in the bin!” He didn’t want to look at the reports. He said, “I found sperm. I don’t need to see that.”

As it turned out, Nourreddine had a classic case of cryptospermia, or “hidden sperm” in his ejaculate. The Palestinian Muslim laboratory director at Conceive

had taken special care to centrifuge Nourreddine's semen sample, creating a "pellet sample" in which even the smallest number of spermatozoa could be detected. Although Nourreddine was seriously infertile—with fewer than 1,000 sperm found, when a fertile man would have at least 15 million sperm per milliliter under the microscope—Nourreddine nonetheless produced enough viable spermatozoa to be a candidate for ICSI.

In a happy state of shock over the recovery of his hidden sperm, Nourreddine was eager to get on with the ICSI procedure. However, Dr. Pankaj was very honest with Nourreddine and Fadwa that their chances of success with an ICSI cycle were no higher than 38%. As practicing Muslims, the couple took this in stride. "God will give me a child if he wants to," Nourreddine calmly told me.

Fortunately for Nourreddine and Fadwa, Conceive was their *nasib*, or "destiny." Nourreddine's once hidden sperm were effective in producing several viable ICSI embryos, three of which were transferred into Fadwa's waiting womb. On the day of the pregnancy test, I was at the clinic eagerly awaiting the news, along with the couple and several Conceive staff members. Fadwa was seated on a red couch in the clinic administrator's office, while Nourreddine stood beside her. When the Palestinian lab director came in to deliver the news, the happy smile on her face presaged the results of a clearly positive pregnancy test. Everyone cheered and hugged, with several other staff members coming by to congratulate the young couple.

Nourreddine and Fadwa remained in Dubai for the next six weeks, determined that Dr. Pankaj himself would undertake the initial pregnancy ultrasound. The ultrasound showed that two of the couple's three embryos had not implanted in Fadwa's womb. However, Fadwa was definitely pregnant with a single fetus—the product of her eggs and Nourreddine's hidden sperm, which, although lost in the British NHS labyrinth, had been "found" in a cosmopolitan clinic in Dubai.

Conclusion

As shown in the preceding reprotravel story, new global mobilities are being enacted by infertile men such as Nourreddine, who are searching far and wide for technologically assisted reproduction and fatherhood. For infertile men—and especially infertile Muslim men—ICSI has provided a technological breakthrough for a male reproductive health problem that is highly prevalent yet often hidden and potentially emasculating. Furthermore, many of the world's infertile men live in areas of the world where access to ICSI is limited for a variety of reasons. As a result, increasing numbers of infertile men are becoming reprotravelers, searching for ICSI services in sites known to be effective in this regard. Belgium, where ICSI was initially invented, was the first to achieve global ICSI fame (De Sutter 2011). But Dubai, too, has become an ICSI reprohub. Infertile reprotravelers from Africa, Asia, Australia, Euro-America, and many parts of the Middle East are flocking there, in the hopes of fulfilling their parenthood dreams and aspirations.

Like Dubai itself, Conceive is a place of cosmopolitan conceptions—a clinic where self-consciously crafted medical cosmopolitanism has worked to create a vibrant, international clientele. Offering infertility care to incoming citizens from many different nations, Conceive has benefited from the dreams of infertile reprotravelers such as Nourreddine and Fadwa. It has also basked in the refracted

glory of Dubai's biotechnological aspirations to become one of the world's global medical tourism hubs.

In short, medical cosmopolitanism in clinics like *Conceive* is an emerging feature of the global landscape in the second decade of the new millennium. Medical anthropology has an important future role to play in exploring medical cosmopolitanism in the world's global cities—not only Dubai, but places like Bangkok, Shanghai, Singapore, Hong Kong, Tokyo, Rio De Janeiro, London, and New York. Indeed, medical anthropologists seem particularly well suited through ethnographic entrée in cosmopolitan clinics such as *Conceive* to chart the new global mobilities, the emerging medical infrastructures, and the aspirations and constraints entailed in medical travel to the world's emerging technohubs.

Notes

Acknowledgments. I dedicate this article to the memory of Frederick L. Dunn, a beloved mentor at the University of California–San Francisco, who passed away in May 2014. Dunn was the first to coin the term “cosmopolitan medicine,” which was subsequently employed by Charles Leslie (1976) in his classic volume on *Asian Medical Systems*. I am very grateful to my former Yale colleague, P. Sean Brotherton, who helped me to trace the genealogy of this term. I also wish to thank both the National Science Foundation's Cultural Anthropology Program and the U.S. Department of Education's Fulbright-Hays Faculty Research Abroad program for providing the funding for my medical anthropological research in the United Arab Emirates.

1. This name is a pseudonym.
2. Major cities in war-torn countries such as Syria and Iraq used to host IVF clinics. However, the medical infrastructure of cities such as Baghdad and Damascus has been badly damaged by the ongoing violence. In Iraq, only one IVF clinic exists in the city of Erbil, which is located in the relatively peaceful northern region of Iraqi Kurdistan.
3. The eight Asian medical tourism destinations most frequently identified in the literature and on the Internet are: China, India, Israel, Jordan, Singapore, Malaysia, Philippines, and the UAE (Horowitz and Rosensweig 2007). The increase of reproductive travelers to the UAE for fertility treatment has been reported in the local media (El Shammaa 2007; O'Driscoll 2012).
4. *Time* (2013).
5. As reported on NPR Morning Edition, “Dubai Plans Airport So Big It Will Be Its Own City,” October 29, 2013.
6. This is the clinic's real name.
7. The terms “reproductive tourism,” “fertility tourism,” “procreative tourism,” and “cross-border reproductive care,” which are used widely by both scholars and the media (Gürtin and Inhorn 2011; Hudson et al. 2011), are criticized by infertile travelers themselves, who prefer the more neutral descriptor, reproductive travel. However, because reproductive travel and reproductive travelers can become cumbersome if used repeatedly, I prefer to use reprotravel and reprotravelers as convenient contractions. In this regard, I am following a long legacy of medical

anthropological contractions, including, for example, biomedicine and reprogenetics.

8. The main study was conducted from January through June 2007. However, I also made follow-up research trips to Conceive in 2009, 2010, and 2013.

9. Arabic was used in some of my interviews with Arab couples.

10. By the end of my study, I had collected nearly 1,700 pages of interview transcripts.

11. For example, during my previous study in Beirut, I interviewed 220 IVF clinic patients (compared with 219 in the Emirates). But, in my Lebanese study, reprotravelers overwhelmingly hailed from two neighboring Arab countries of Syria and Palestine, and, to a much lesser extent, Egypt and the Arab Gulf (Inhorn 2012).

12. This is his real name and title.

13. Of 48 sub-Saharan African countries, only 15 had at least one IVF clinic as of a 2010 international surveillance project (Jones et al. 2010). Thirty-three nations, or more than two-thirds, lacked IVF facilities.

14. Iran and Lebanon are the only two Muslim-majority countries in which sperm donation is practiced, because of divergent Shia Muslim *fatwas* which have allowed the procedure. However, even in those countries, sperm donation is unpopular among infertile men, and is rejected by the majority of Muslim religious authorities as being *haram*, or sinful.

15. As with sperm donation, legal adoption is practiced in very few Muslim countries—only Iran, Tunisia, and Turkey within the Middle Eastern region.

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