REVIEW

Sperm retrieval from terminally ill or recently deceased patients—a review

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Objective: *Requests for sperm extraction in terminally ill or recently deceased patients have been increasing with the gained acceptance and success of assisted reproductive techniques such as in vitro fertilization and intracytoplasmic sperm injection. This review aims to outline the many challenges associated with these requests.*
Materials and methods: *The medical literature surrounding ethical and legal issues of posthumous sperm extraction was examined.*
Results: *Several issues within the field of sperm extraction in the terminally ill patient and the postmortem patient still arouse a significant amount of debate and controversy. One controversial factor surrounds the issue of consent for the tissue extraction and determining when family consent is valid. Other discussions have involved ethical issues, logistics (including cost), and legal issues.*
Conclusions: *A medical center protocol governing sperm extraction from terminally ill or recently deceased patients would be beneficial, and would likely alleviate stress among the patients' families and healthcare providers. To overcome some of the difficulties surrounding the issue of consent, it might also be valuable for men about to get married or enter into a similar relationship to document their wishes for sperm retrieval should a tragic situation arise. This could be done in the same way that they would prepare a living will.*

Key Words: consent, sperm extraction, postmortem, posthumous

Introduction

Testicular sperm extraction from either terminally ill or recently deceased patients has been performed since 1978.[1] At the University of Maryland Medical Center Shock Trauma Center, where thousands of young patients are treated annually, several requests for this procedure are made each year. When patients sustain severe and sometimes life threatening injuries, their families can find themselves suddenly thrust into a state of panic and confusion.[2] This confusion may be compounded when the issue of possible sperm preservation arises. Most medical centers generally lack both the formal pathways to handle testicular sperm extraction in dying or recently deceased patients, as well as the resources to manage the manifold ethical considerations surrounding this procedure.[3]

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Because so many different scenarios can lead to the desire for posthumous conception from cryopreserved sperm, it has proved difficult to produce a comprehensive protocol for sperm retrieval from terminally ill patients or deceased patients. Currently, much of the decision making is left to treating physicians who are forced to consider the many complicating factors surrounding the procedure. Issues of consent and ethics must be examined when counseling families who might be considering or requesting sperm retrieval after a family member enters an irreversible vegetative state or dies. Stakeholders must confront the immediate logistical and procedural features of sperm extraction, as well as more distant issues of the future child's welfare and potential inheritance.[4] Lastly, when facing this dilemma, the patient's family and healthcare providers must weigh the legal ramifications of this procedure.

Issues in sperm retrieval

Consent

Perhaps due to the relatively recent — within the past 20 years or so — introduction of sophisticated assisted reproductive techniques (ARTs) such as intra-cytoplasmic sperm injection (ICSI), there is not yet any standard for what constitutes "consent" for gamete extraction from dead or comatose patients.[5] In a 2006 article, Strong, presents six scenarios spanning six different levels of implied or obtained consent for sperm retrieval.[1] Clearly, the quality of documented intent on the part of the patient from whom the family wishes to obtain sperm covers a broad spectrum.

In the first scenario, which describes the most explicit form of consent, there has been a direct conversation between a patient and the physician performing the gamete extraction.[1] After this conversation, the patient's consent was recorded in writing. The patient in this scenario may have had some foresight about a medical condition—for example, he might be about to receive a potentially lethal treatment for cancer—and has planned ahead. This would not be possible in the case of a life threatening trauma, where written consent for sperm retrieval prior to the trauma would be highly unlikely.[6]

In the second scenario, which is slightly more ambiguous, a man gave direct, voluntary consent for sperm extraction to a physician, but not to the physician who would ultimately perform the sperm extraction. The third scenario is even further removed from an ideal form of consent. In this case, there is written and notarized documentation of the man's wishes, but this is presented to the physician after the man is already dead or comatose. In the fourth scenario, multiple reports by several family members are presented to the physician who may perform the sperm extraction, and while these reports corroborate each other, there was no written consent from the patient. In the fifth scenario, which has less convincing evidence, the patient's wife (or partner) reports that her husband had stated that he would have wanted postmortem sperm retrieval, but there are no supporting statements from other family members. The sixth scenario entails the most nebulous form of consent. In this case, the man's wife states that the issue of postmortem sperm retrieval was never discussed, but she is certain that her partner would have consented to it.

Even if the benchmark for consent is "explicit prior consent," this term could mean different things to different stakeholders. For example, a patient's wife is often the one relaying implied consent, which often means that she is providing information about conversations with her husband, with no written confirmation. If she is also the person appealing to have the sperm extracted, this puts her in a position of conflict of interest, meaning that her evidence—supporting statements and conversations—might be biased.

Physicians do have leverage to impose their own sense of what they feel is appropriate consent for this procedure. In 1997, the American Society for Reproductive Medicine (ASRM) stated that a spouse's request for sperm harvest from a terminally ill or deceased person "need not be honored" if the "consent is unclear."[7] This allowed discretion on the part of healthcare providers to determine what constitutes consent.

Ethical issues

The most heavily debated issues surrounding sperm extraction from terminally ill or deceased patients include ethical considerations.[8,9] For example, it may become clear that a particular man did in fact want children, and steps may have even been taken that illustrate that desire; for example, his wife may have stopped taking birth control pills or may have visited fertility doctors. What may be less clear is whether this man would have still wanted a child if he would not live to serve as a father of this child. While many couples desire children, very few people contemplate and even fewer discuss whether they would still desire biological children if they were not alive to raise them.[10]

Another ethical consideration strikes at the very meaning of parenthood. A woman may feel that her terminally ill spouse had always wanted to be a parent, and sperm extraction offers the last hope for him to achieve that goal. In this context, parenthood is the biological propagation of genetic material from parent to offspring.

A different viewpoint suggests that parenthood is less about passing down genetic material and more about raising the child and playing a significant role in that child's upbringing. Congruent with this argument, parents of adopted children are every bit as much the parents of the adopted children as parents raising biological children. To the parents of adopted children, parenthood is an experience of raising and nurturing children.

It should be determined from the spouse inquiring about sperm extraction what definition of parenthood she feels matches the patient's wishes. Does she feel that the nidus of her deceased partner's wishes would rest in his desire to pass down his genetic material, or would he have primarily wanted the experience of raising children? Unquestionably, both aspects of parenthood play a role in why couples choose to raise children. This ethical consideration involves extrapolating what a person's wishes might be, which is often a difficult task. What a man may have wanted when he was alive, and what he may have wanted should he die could often be quite different.

The concept of ARTs must be introduced to the family very early in the process of deciding whether or not to proceed with sperm tissue extraction. Sperm extracted from the testicle must be used in conjunction with in vitro fertilization (IVF) or ICSI.[11] Some families may mistakenly believe that natural conception or intrauterine insemination could still be an option, and they will need to be dispelled of this notion. Given that ICSI will be a reality for the surviving spouse, the moral and ethical considerations surrounding ARTs need to be explored.[12]

Some people oppose IVF or ICSI for ethical or religious reasons. Modern Jewish law has favored posthumous sperm extraction, while Catholicism has historically not condoned ARTs.[13] Protestant churches, however, have not eschewed ARTs.[10,14] While the Islamic faith encourages families to seek treatment if the woman is unable to conceive, this responsibility to reproduce applies only to living, married couples.[15,16]

Others may oppose these ARTs because of accounts in the literature reporting an increased risk of birth defects in babies born after IVF or ICSI. Some studies have reported up to twice the risk of major birth defects in babies born through an ART compared to babies conceived naturally.[17] Multiple gestation, hypospadias, and Beckwith-Wiedemann syndrome are a few conditions that are linked to ARTs in some studies.[18,19] A psychological burden could be placed on a mother if she felt she helped create a baby through a means that has both documented and theoretical risks of birth defects. In deciding whether sperm extraction is an appropriate next step, the surviving spouse must understand the ethical concerns and be agreeable to IVF and ICSI, knowing that natural conception is not possible with extracted sperm.

Logistical issues

Prior to proceeding with sperm retrieval and subsequent IVF or ICSI, the issue of how the family will pay for the costs must be addressed. The often unanticipated costs involve sperm extraction, tissue processing, sperm storage, and most significantly, the cost of IVF or ICSI. In the United States, most likely none of these costs are covered by medical insurance.[21,22] If the cost of IVF is prohibitive to the family requesting sperm extraction, this should be known well before scheduling the sperm extraction surgery.

Other complicating logistical factors for both the physician and the afflicted family are the issues of how the sperm tissue sample will be obtained and what will be done with the tissue after it is extracted. The physician obtaining the sample must find a fertility center that agrees to process a sample that has been obtained from a terminally ill or recently deceased patient. The healthcare providers at the fertility center often have the same concerns about patient consent that were discussed earlier. Once they are assured that proper consent has been obtained, a surgeon, often a urologist, has to perform the operation. Finding a urologist who is trained to perform sperm extraction is relatively easy, but many urologists will oppose performing the procedure based on their personal convictions.

The procedure itself is fairly straightforward, but it still must be orchestrated efficiently. The procedure may be done either at the bedside or in the operating room.[20] Typically, a small scrotal incision is made, the tunica albuginea of one testicle is exposed, and the seminiferous tubules are extracted. These tubules are blotted to remove some of the blood, and then they are placed into a yolk-buffer solution. Then the tissue is either immediately shipped to the fertility center, or the family or a courier transports the tissue to the center that will process the specimen. Multi layer closure of the wound is performed.

Legal issues

There are sparse legal statutes to guide practitioners faced with sperm extraction from terminally ill or deceased patients. Because of the different stakeholders involved and their competing interests, a legal guideline for performing the procedure would be welcomed. Legal issues include inheritance for children born

from posthumously obtained sperm, but to date, no clear legal precedent has been set for this. In 1984, in California, survivor benefits were granted in two cases to posthumously conceived children.[23] In both cases, Social Security survivor's benefits were given to children born of posthumous conception. In 2002, the Massachusetts Supreme Court, however, argued that Social Security survivor benefits should not be granted to a child of posthumous conception, favoring the interests of the other heirs.[24,25] This challenged the previous precedent, in that the courts decided in favor of the other heirs as opposed to the posthumously conceived child, unlike the earlier cases in California. In these three different cases, sperm were used posthumously, but were extracted while the donors were alive and healthy. In no case has the legal system yet explored the rights of offspring from sperm obtained from a deceased donor, but legal issues in such cases will undoubtedly be challenging and controversial.

Discussion

Posthumous sperm procurement will continue to be explored by families and practitioners and to be challenged in our legal system. Over the past 10 years especially, the opportunities introduced from ARTs, have been tremendous, but new challenges have been introduced as well.

In this author's experience at the University of Maryland Shock Trauma Center, in the past 4 years, 13 requests have been made by families and spouses for sperm harvest from critically ill patients. Largely due to the complexities outlined in this review, only four of these requests concluded in the sperm harvest being completed. In many cases, families found that the procedure of obtaining and storing the sperm, and then the subsequent IVF procedure was too costly. In cases of critically ill patients who faced a long and uncertain convalescence, spouses and other family members often had a change of heart about sperm retrieval. While there was tremendous momentum towards getting the sperm extraction done expeditiously in the initial period after the traumatic event, enthusiasm tended to fade the longer the critically ill patient remained alive. Perhaps the initial shock of the accident elicits a reaction to do something definitive and dramatic, but over time, this response decreases. Even in the case of recently deceased patients, frequently the sperm extraction was ultimately not done, often due to legal and logistical issues.

To date, I am not aware of any pregnancies that resulted after harvest of sperm from a terminally ill patient at the University of Maryland Shock Trauma Center. The terminally ill patients' consent in most cases generally consisted of a private conversation between a husband and wife that was never documented. Once a patient was either discharged to a rehabilitation facility or ultimately died, the families were not contacted later to find out whether IVF was done.

The ASRM Ethics Committee upholds the physician's right to refuse to perform sperm extraction when consent is unclear. At busy trauma centers, protocols should be established whereby a team can be quickly assembled to explain the ethical and logistical considerations of posthumous sperm extraction.[10] Given that a short window of time exists in which to make these monumental decisions, forethought should be given to what will constitute valid consent. An experienced team of practitioners will aid the patient's family and spouse in making sound decisions, rather than emotional ones based on impulse. Future cases of posthumous sperm extraction will likely flood our legal and medical institutions, and with that, we should gain a better understanding of how to counsel patients and families.

Conclusion

A medical center protocol governing sperm extraction from terminally ill or recently deceased patients would be beneficial, and would likely alleviate stress among the patients' families and healthcare providers. To overcome some of the difficulties surrounding the issue of consent, it might also be valuable for men about to get married or enter into a similar relationship to document their wishes for sperm retrieval should a tragic situation arise. This could be done in the same way that they would prepare a living will. □

References

1. Strong C. Gamete retrieval after death or irreversible unconsciousness: what counts as informed consent? *Cambridge Quarterly of Healthcare Ethics* 2006;15(2):161-171.
2. Mohta M, Sethi A, Tyagi A, Mohta A. Psychological care in trauma patients. *Injury* 2003(1);34:17-25.
3. Dyer C. Whose sperm is it anway? *BMJ* 1996;313(7061):837.
4. Strong C. Ethical and legal aspects of sperm retrieval after death or persistent vegetative state. *J Law Med Ethics* 1999;27(4): 347-358.
5. Kerr SM, Caplan A, Polin G, Smugar S, O'Neill K, Urwitz S. Postmorten sperm procurement. *J Urol* 1997;157(6):2154-2158.
6. Finnerty JJ, Karns LB, Thomas TS, West RW, Pinkerton JV. Gamete retrieval in terminal conditions: is it practical? What are the consequences? *Curr Womens Health Rep* 2002;2(3):174-178.

7. Ethical considerations of assisted reproductive technologies. The Ethics Committee of the American Society for Reproductive Medicine. *Fertil Steril* 199;67(5 Suppl 1):1S-9S.
8. Orr RD, Siegler M. Is posthumous semen retrieval ethically permissible? *J Med Ethics* 2002;28(5):299-302.
9. Strong C, Gingrich JR, Kutteh WH. Ethics of sperm retrieval after death or persistent vegetative state. *Hum Reprod* 2000;15(4): 739-745.
10. Batzer F, Hurwitz J, Caplan A. Postmortem parenthood and the need for a protocol with posthumous sperm procurement. *Fertil Steril* 2003;79(6):1263-1269.
11. Khorram O, Patrizio P, Wang C, Swerdloff R. Reproductive technologies for male infertility. *J Clin Endocrinol Metab* 2001;86(6):2373-2379.
12. Goldworth A. The ethics of in-vitro fertilization. *Pediatr Rev* 1999;20(8):E28-E31.
13. Haas J. Begotten not made: a catholic view of reproductive technology, United States Conference of Catholic Bishops. Retrieved from http://www.usccb.org/prolife/programs/rlp/98rlphaa.shtml on 3/16/2009.
14. Schenker JG. Women's reproductive health: monotheistic religious perspectives. *Int J Gynaecol Obstet* 2000;70(1):77-86.
15. Serour GI, Dickens BM. Assisted reproductive developments in the Islamic world. *Int J Gynecol Obstet* 2001;74(2):187-193.
16. Husain F. Reproductive issues from the Islamic perspective. *Hum Fertil (Camb)* 2000;3(2):124-128.
17. Hansen M, Kurinczuk J, Bower C, Webb S. The risk of major birth defects after intracytoplasmic sperm injection and in-vitro fertilization. *N Engl J Med* 2002;346(10):725-730.
18. Ericson A, Kaillen B. Congenital malformations in infants born after IVF: a population based study. *Hum Reprod* 2001;16(3): 504-509.
19. Halliday J, Oke K, Algar E, Amor D. Beckwith-Wiedemann syndrome and IVF: a case control study. *Am J Hum Genet* 2004;75(3):526-528.
20. Issa M, Hsaio K, Bassel Y, Bouet R, Young M, Petros J. Spermatic cord anesthesia block for scrotal procedures in outpatient care setting. *J Urol* 2004;172(6 Pt 1):2358-2361.
21. Neumann P, Gharib S, Weinstein M. The cost of a successful delivery with in-vitro fertilization. *N Engl J Med* 1994;331(4): 239-243.
22. Collins J. An international survey of the health economics of IVF and ICSI. *Hum Reprod Update* 2002;8(3):265-277.
23. Cal Super Ct, Los Angeles County, Nos. P680682 and P680683 (1984).
24. Woodward v Commissioner of Social Security 1302SJC.
25. Crockin SL. Legally speaking. *Amer Soc for Reprod Med News* 2002;Spring:36.