Keeping it in the family: reproduction beyond genetic parenthood

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Received 17 December 2023
Accepted 9 February 2024

ABSTRACT

Recent decades have seen the facilitation of unconventional or even extraordinary reproductive endeavours. Sperm has been harvested from dying or deceased men at the request of their wives; reproductive tissue has been surgically removed from children at the request of their parents; deceased adults' frozen embryos have been claimed by their parents, in order to create grandchildren; wombs have been transplanted from mothers to their daughters. What is needed for requests to be honoured by healthcare staff is that they align with widely shared expectations about what people's reproductive potential ought to be, what marital relationships ought to result in, and which kinds of ties are desirable between parents and children. Costly and invasive technologies are not considered excessive when they are used to support the building of appropriate families. However, deviations from dominant reproductive norms, even if technologically simple and convenient to the participants, are unlikely to receive support. In this paper, we offer examples of such deviations and explore their implications. If reproduction is important as a way of creating genetic relationships, should reproductive material in storage be offered to genetic relatives other than the people from whom it originated? And if parents are allowed to have reproductive material collected from their offspring, or even to use it to create babies, should offspring likewise be allowed to use their parents' reproductive material? We tackle these questions and suggest ways in which interests in genetic ties could be operationalised in a more coherent and less-invasive manner than they currently are.

INTRODUCTION

Becoming a parent is a sought-after milestone in the Western world and beyond. And for many, it is vastly preferable that one's children are *one's own*, that is, one's genetic offspring. Other possibilities, such as gamete donation or adoption, tend to be sought only as a last resort.[1] Even when one's family member is not capable of participating in reproductive decisions, there may be a default assumption that they would wish to have children. It has been claimed that when a man dies and his wife wishes to have reproductive material collected from him so as to create a child, the guiding principle should be one of 'inferred consent'.[2]

Parents are expected to care about their offspring reproducing. The parents of children who are at risk of losing their fertility are said to have an obligation to undertake fertility preservation measures.[3] Parents' wish to help their offspring to procreate may even transcend the death of those offspring—for example, in the case where four adults created their own grandchildren, 4 years after their own offspring—the grandchildren's genetic parents—died in a car crash.[4]

Some of these reproductive paths are more controversial than others. But they have been and continue to be allowed in some contexts. However, even as these innovations in human reproduction and parenthood create new possibilities, controversial as these may be, they tend to stay close to a nuclear family and parent–child framework. There may be many reasons for this: parents are seen as having responsibilities to act on their children's behalf that others—aunts, uncles, siblings—may not. Consent to marriage has long been equated with consent to sex and parenthood.[5] So some of these practices further entrench expectations that have already been in place for centuries: young people will have children, spouses become parents together, and parents become grandparents.

On the subject of genetic ties, in both reproductive and family ethics, there has been a focus on parent–child connections. In this paper, we highlight some of the inconsistencies involved when we choose to acknowledge the importance of genetic parenthood but not other kinds of genetic relatedness. We also show how, given that people have an interest in creating genetically related family members in ways that could be met through existing resources, some additional reproductive paths could be as viable as those that are currently pursued today. These possibilities would, in addition, allow a broader understanding of what it is that we appreciate in close genetic ties.

In this paper, we do not endorse the claim that genetic and social parenthood ought to coincide, nor that building family relationships on a foundation of close genetic relatedness is preferable, nor that close genetic relatives somehow have more of a claim to people's genetic material than do other members of society. All of these claims can be contested. Instead, we start from the status quo and ask whether, considering the kinds of practices that are being allowed—or encouraged—today, there may be reasons to extend their reach to include other close genetic relatives. We acknowledge that families can be created in other ways than by creating genetic bonds, and reproduction need not mean specifically genetic transmission. However, for the purpose of this paper, we focus on genetic bonds beyond those between genetic parents and offspring (and offspring's offspring).[i]

[i]We thank an anonymous reviewer for pointing out that this framing – and our agnosticism for the purposes of the paper on the question of the value of genetic ties – was not clear enough in a previous version of the manuscript.

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To cite: Cutas D, Smajdor A. *J Med Ethics* Epub ahead of print: [please include Day Month Year]. doi:10.1136/jme-2023-109814

J Med Ethics: first published as 10.1136/jme-2023-109814 on 1 March 2024. Downloaded from http://jme.bmj.com/ on April 11, 2024 at Rice University. Protected by copyright.

Parenthood outside the parent–child dyad

Historically, it was not uncommon for people to raise children who were not their own offspring. Children were abandoned, orphaned, adopted or raised by relatives as their own. Parents of young girls who became pregnant out-of-wedlock would often raise the babies as their own: mother and child were raised as siblings. Widespread direct-to-consumer genetic testing has meant that many such arrangements are now coming to light.[6]

Further technological and legal developments broaden the scope for new permutations of genetic ties and family relationships. In 2022, the UK increased the time limit for storing frozen embryos from 10 to 55 years.[7] This introduces the possibility that viable embryos will still be around half a century after the original prospective parents initially created them. It is already established that healthy babies can be born from embryos stored for decades: the 'oldest' embryos on record to have resulted in live babies, so far as we know, were in storage for almost 30 years.[8]

It is important that we reflect on the way these possibilities affect family relationships, because they are likely to occur with increasing frequency in the future as more people rely on reproductive technology.[9] If many 'spare' embryos exist in storage and are no longer wanted or needed by their original progenitors, perhaps we should expand our understanding of those who should be able to use them for reproduction. The donation of 'leftover' embryos to other prospective parents makes sense from many perspectives. Prospective parents would not need to subject themselves to the costs and risks of multiple egg stimulation cycles and fertilisation rounds. Some people are not able to provide reproductive material themselves. For some, embryo donation is the preferred—or preferable—course of action in their circumstances. With declining fertility rates, embryos held in storage offer opportunities to those who cannot have their 'own' genetic offspring at all, or who could only do so at great cost to themselves.

But how should we think about who should have access to surplus embryos? In some sense, and in line with the assumption that genetic relatedness has value for family relationships, family members of the people whose genetic material was used in the conception might seem to have a stronger claim than unrelated adults. In this scenario, the children would grow up in or close to their biological family. Many people care about knowing their genetic kin,[10] and the formation of genetically related families is already a key component of reproductive technology.

Considering the increasing prevalence of infertility in combination with a scarcity of donated gametes, someone might, for example, choose to use their aunt's and uncle's embryos. Or they could wish to have their sibling's leftover embryos. If people's preference to have genetically related offspring is important in fertility services, then does it matter what the exact genetic relationship is? In the following, we will ask just this question by using an example of someone wishing to transfer their embryonic genetic siblings to their own uterus.

Creating siblings to parent

When an adult uses her deceased offspring's gametes to produce and raise her own genetic grandchildren, or a person carries a baby in the uterus that was donated to her by her own mother, the direction of genetic transmission is preserved but, in the first case, skips a generation, and in the second, includes the biological contribution of a previous one. However, there have also been cases in which, for example, sisters shared eggs[11] or ovarian tissue.[12] In a recent case, discussed on social media, a woman, herself created via in vitro fertilisation (IVF), was pondering the transfer of one of the remaining IVF siblings into her own uterus.[13] She referred to the embryos—and her younger sister, created from the same batch of embryos—as her twins. 'Twins' is a term that usually refers either to monozygotic (identical) siblings or siblings who were conceived at the same time and share a uterus—also at the same time. Embryos created at the same time but neither from the same egg nor sharing a uterine environment are not twins in either of these senses.

They are, however, still genetic siblings. If the woman were to become pregnant with one of these embryos, she would also then be her sibling's birth mother and therefore their legal mother (since jurisdictions tend to regard the woman who gives birth as the default legal mother). Such an arrangement would maintain a close genetic tie between the mother and her child—though not the usual parent–child genetic tie. Would this be less optimal than if the embryo were created from the woman's own gametes?

In some ways, the former scenario could be preferable to the latter. First, because the embryos are already created: she does not need to go through ovarian stimulation in order to have eggs collected and fertilised. Second, parent–child relationships are fraught with tensions, some of which come from a long tradition of not fully recognising children's moral status and seeing them as a part of their parents in a near proprietary manner.[14–16] Parents' making of their children from their own bodies may contribute to the perpetuation of such a perspective. ('I made you, I kill you!' is a common parental threat in some cultures.)

Siblinghood, however, is not a hierarchical relationship in the same way (even though there may be hierarchy in age or ability or other differences between siblings). As a horizontal relation, it is arguably more equal and democratic than the parent–child tie and in that sense is *less* problematic than the latter. The possibility of gestating, birthing and raising one's genetic sibling offers us the opportunity of considering whether the inequality involved in the parent/child relationship is a function of genetic ties (the genes of the parents make the child) or of the practical components of time and development. A woman who gives birth to her genetic sibling may not be responsible for their creation in genetic terms, but she *is* responsible for their coming into being; for bringing about the transition from embryo to fetus to baby. And as with any other unequal power relationship, this is fraught with risk and vulnerability. This position of power is so extreme that it is striking to contemplate the ease with which we facilitate it in cases where the role of 'parent' falls in with our biological and social norms. Someone giving birth to and raising their genetic siblings would then create a relationship that has both some of the hierarchical components of parenthood (minus genetic transmission), and the more 'democratic' ones of siblinghood (minus social siblinghood).

The possibility of sibling parenthood gives us a chance to consider how far the privileges of parenthood are connected with something unique to 'normal' reproduction. Where parenthood follows from heterosexual intercourse, there tends to be little additional scrutiny of the claims that people might have to be allowed to raise the children they have created. But there are many people for whom parenthood does not simply follow in due course as a result of their sexual activities.[17] In some such cases, they are deemed to have a need for treatment to enable them to become parents. In others, their wish to have a child to raise is regarded as something they must simply suffer through: medicine cannot or should not help them.[18]

But perhaps some of the same considerations that motivate healthcare services to help people have 'their own' children could apply to someone who wants to gestate and raise a genetic

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sibling or an aunt or uncle. Insofar as people appreciate having others around with whom they share close genetic ties, aside from their genetic parents, they may also appreciate having (more) genetic relatives. And while parenting is not the usual form of sibling relationship, the case related above involves both parenting and siblinghood nevertheless. Ordinarily, people are not in a position to create their own siblings. But this need not indicate that we should dismiss it when there *is* a possibility of taking such a path: such as when there are already sibling embryos in storage who could be born.

However, perhaps there is a significance in the terms we use to define these relationships. If someone gestates a genetic sibling, does this make them a mother, or something else—and does it matter? An adult who wishes to have a sibling might not plan to raise the child herself, but be motivated primarily by the wish to have a sibling. She could, for example, agree with her parents that she will gestate the sibling, who will then be raised by her and the embryo's genetic parents. The adult sibling would then become the child's birth mother, as well as a genetic and social sibling. In the end, there may be a relatively simple answer. What makes someone a parent, or a sibling, is not mere genes or mere biology. Whatever the biological or genetic ties between people, the way to determine who is whose parent or sibling is to look at who has taken on which responsibilities and what the relationships between them are.

Directions of travel of reproductive material

In the current status quo, eligibility for fertility treatment is somewhat like chess. Only certain trajectories are allowed within reproductive medicine; only some genetic ties are valid, and only some requests are treated as medical needs. Vertical downward trajectories one square at a time are unproblematic, especially if they follow a nuclear family pattern. Skipping a square on that downward trajectory is more contentious (in cases of adults who use their deceased offspring's gametes to create grandchildren) but has been permitted in a number of cases.[4 19] But could a person have their mother's or grandfather's genetic sibling? One would then effectively become the parent of one's own genetic (great) aunt or uncle.

One concern that could be raised here is that children may suffer from being the genetic siblings of elderly people and the genetic offspring of even more elderly—or perhaps long deceased—parents. Similar worries have been raised in relation to the practice of postmortem reproduction, where the offspring's social closeness to the deceased parent is much more immediate. While postmortem reproduction remains a source of ethical concern, it is increasingly common.[20 21] Perhaps this is because, as we show above, it facilitates the downward reproductive trajectory that is more widely accepted. If anything, the match between genetic and 'social' parenthood in the case of postmortem reproduction with one's spouse has more potential to cause feelings of loss and grief than the knowledge that one's closest genetic—but not social—relatives are long gone.

People who are already committed to the paradigm of 'natural' reproduction within the nuclear family form tend to appeal to the risks to children's psychological well-being in cases where reproduction does not follow the 'natural' path. However, the data that we have does not support the idea that children suffer as a result of unorthodox family structures. Instead, it appears that what matters for children's welfare is primarily the quality of the relationships within the family.[22]

One other possible objection is that children born to family members other than their genetic parents would be distressed by the unusual circumstances of their conception and birth. Someday, someone may be the first ever child to be born to her great niece. Again, while this would be unusual the first time it happens, such concerns have not prevented other reproductive innovations. Children have been born to deceased or brain-dead parents. Others, such as the world's first IVF baby, have been conceived as a result of an uncontrolled experiment. Others have been the first to have shared a uterine environment with their own birth mother (following uterus transfer from mother to daughter). If we deem that the reproduction of family members is an acceptable and even commendable endeavour, the unusualness of it should be no less a deterrent than it was for Steptoe and Edwards when they created a baby in a petri dish, or for Mats Brännström when he brought about a pregnancy in a uterus transplanted from mother to daughter.

Additional considerations

If access to family members' gametes or embryos became a reality, how might this work? We suggest that it could be offered as an option before gamete or embryo donation and possibly before ovarian stimulation or sperm collection. Fertility patients undergoing treatment could be informed about the possibility of sharing their gametes or embryos with relatives once they complete their reproductive journey and be given the option to express their preferences. This information could be included in wills and be seen as a new kind of family inheritance.

We do not here suggest that gametes or embryos should only be made available to relatives. Following the bequest analogy, people might leave their gametes or embryos to those beyond the family. One problem that may arise in this context is the idea that eggs, sperm and embryos (and other reproductive tissues, such as ovarian or testicular tissue) become commodified. Those things that we leave to our beneficiaries are *goods*. Can we treat our reproductive material in the same way as our financial assets, to be divided among those we please? These are problems that require consideration beyond what we can accomplish here. However, it is worth noting that gametes are already bought and sold between fertility clinics, and that embryos are created, destroyed, dissected and redistributed in our current systems. Moreover, the ability to bequeath gametes or embryos does not entail that we treat them as mere things; we may inherit and bequeath responsibility for things that cannot be freely bought or sold, and perhaps gametes and embryos might reasonably fall within this category. People are commonly advised to nominate guardians for their existing children in their wills; this is not taken to imply that the children are goods or commodities.

Although for the purposes of this paper we consider close genetic ties other than genetic parenthood, there may be equally good or better reasons to allow someone other than the intended prospective parents' genetic relatives access to reproductive material. This could include a close friend or someone else. Furthermore, rising infertility rates might eventually see reproductive material already collected as a precious resource and its destruction as a cost. This might eventually lead to the development of a scheme similar to those in place for other bodily materials that can be used for transplant. It might raise questions about the legitimacy of claiming control over the identity of—and one's genetic or other relation with—recipients of reproductive material.

We should also note here that our suggestion concerns reproductive material (such as eggs, sperm or embryos) that has already been collected in connection with the provider's own reproductive plans and is in storage. We do not suggest that parents, grandparents, other family or society members ought to provide reproductive material, nor that offspring or others

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are entitled to such materials. Some current practices rely explicitly on the facilitation of some family members' access to others' bodies for reproductive purposes. Wives have had sperm collected from their comatose or deceased husbands,[23] adult daughters may expect their mothers to donate their uterus to them,[24] and mothers may feel they need to provide eggs for their daughters to be able to use in the future.[25] These cases are complicated by a number of ethical factors that go beyond what we are discussing here.

Other problems may include disputes over access to embryos. Conflicts have arisen in recent decades when two people who have created embryos together no longer agree on whether they should be destroyed or used for reproduction.[26] To expand the pool of potential recipients of gametes or embryos might exacerbate such conflicts. If A has a claim to have her grandmother's sibling embryos transferred into her uterus, does A's sister, B, have a claim that the embryos are *not* thus transferred? Or that they are transferred to her uterus, instead? Does someone else have a claim to them? Who should be able to determine the fate of embryos when relevant parties disagree? We note here these possible complications. However, these are practical questions that could be settled at the time of collection or in the way in which access to other bodily materials is.

CONCLUSION

In this paper, we explore the question of whether access to gametes and embryos in storage ought to be extended to those other than their genetic parents (or their parents' parents). We note that reproductive interventions, such as harvesting sperm from dead men or invasive experimental fertility preserving surgery on small children, are increasingly being undertaken while other measures that may be more straightforward and less costly are disallowed. The idea that genetic family connections are valuable has been important in justifying and facilitating access to reproductive technologies. Yet there is a bias towards only some genetic relationships, and only some trajectories of genetic transmission. We suggest that family members more broadly may have some of the same—or equally valid—interests as prospective genetic parents do and may therefore benefit from access to gametes, embryos and other reproductive tissues of their genetic relatives. (Other people may also have a claim, but in this paper we have stayed within the confines of the assumption that genetic relatedness is valuable and only questioned the type of close genetic relatedness.) In a world where infertility rates are rising, and the social, medical and health costs of fertility treatment are steep, we suggest that there are grounds for expanding our perspectives on who ought to have access to reproductive materials in storage.

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Acknowledgements We thank Kristien Hens and the anonymous reviewers for insightful comments.

Contributors DC initiated the paper. DC and AS contributed substantially to the paper and approved the final version and both take responsibility for the content.

Funding This study was funded by Marcus och Amalia Wallenbergs minnesfond (MAW2020.0074).

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement No data are available. Not applicable.

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