Embryo Donation: Where We Are and Where We Need to Go

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I am a physician researcher with a keen interest in embryo donation, a topic of great bioethical importance both for families and for public policy.

I am privileged to have the opportunity to research, speak and write about embryo donation, on contract with the National Embryo Donation Center, Knoxville, TN.

You have been kind to invite me to ETSU for today's presentation.

Why is infertility such a big deal?
Why are there so many frozen embryos?
- It is an expensive ordeal to harvest eggs
- Freezing of oocytes is not quite there yet
- You cannot predict how many embryos you will need to achieve a live birth
- Freezing embryos gives you a chance to try again, even years later

What to do with the remaining embryos?
- Keep, in hopes of using them yourselves
- Dispose of them
- Donate them to stem cell research
- Donate them to an adopting couple

CDC national data 2004-06
- 170 programs
- 2224 donated embryo transfers
- 41.4% pregnancy rate
- 33.9% live-birth delivery rate
- 19.6% implantation rate
- 28.0% multiple-birth rate

Comparison to Other Infertility Treatments (2006)
- Embryo donation delivery rate (34.7%)
- Fresh cycle autologous IVF (32.4%)
- Frozen cycle autologous IVF (28.9%)
- Fresh cycle oocyte donation (54.1%)
- Frozen cycle oocyte donation (32.1%)

Source: National ART Surveillance System (CDC and SART)
ED is More Cost-effective Than Oocyte Donation

- **ED**
  - Average cost: $7,806
  - Delivery rate: 35.5%
  - Single-cycle CER: $12,000
  - CER up to 3 cycles: $13,500

- **Egg donation**
  - Average cost: $22,127
  - Delivery rate: 52.1%
  - Single-cycle CER: $40,600
  - CER up to 3 cycles: $31,349

Challenges Facing Embryo Adoption

- ***There are enough “cribs”, but…***
  - Concerns about medical complications
  - Concerns about how the children will turn out in the long term
  - Concerns about “my kids’ sibs out there somewhere”
  - Getting the word out

Immunology of Pregnancy

- Pregnancy is a prolonged homograft
- The mother’s immune system does recognize the foreign antigens
- A complex series of protection mechanisms prevents the mother’s immune system from damaging the baby
- One leading theory on the cause of preeclampsia is that the immune protection mechanism does not function properly

Immunology of Pregnancy

- In egg donation and embryo donation, not only the father’s antigen’s are foreign, but also the mother’s
- We have discussed the possibility of a study to follow a multicenter cohort of IVF, OD, and ED patients for pregnancy outcomes including preeclampsia
- The study would measure both genetic and immune markers to see if any are predictors of poor outcomes
- Ultimately, could “better genetic matches” be made … or is a form of prophylaxis possible?
Recent Studies on Couples’ Embryo Disposition Preferences

- Lyerly et al., Duke University
  - 9 infertility centers, 1020 patients
  - couples held wide variety of viewpoints
  - authors emphasized making all options available

- McMahon et al., Australia
  - a minority chose ED, but “conditional donation” helped

- Lanzendorf et al., WUSTL
  - 59% of disposing couples chose research, 3% ED

Two Brand New Studies

- Questionnaire study in Switzerland
  - 50% said embryo had same right to life as a human being
  - And yet, 70% approved of donation of embryos to research
  - 52% approved of donation of embryos to other couples, though it is currently illegal in Switzerland

- Pilot interview study in New Zealand
  - Legal mechanism for ED in place in NZ since 2005
  - 13 potential recipients interviewed felt strongly that genetic lineage of child was important, especially that children should have access to their genetic info

Our Center’s Questionnaire Study

- We sent questionnaires to couples who had inquired with NEDC about embryo donation
- We studied commitment to donation, reasons for wanting to donate, and couples’ metaphors
- Most of our patients held a strict pro-life stance
- Three fourths of our respondents were committed to donate, and about 20 percent already had
- Committed donors rejected embryo destruction but some were ambivalent about donation to research
- About half saw donation as “relinquishment” but many wrote in “gift of potential child”

A Possible Solution

What do you think of the idea of a modified extended-family relationship concept?
Results of Two Awareness Polls

- Percent of public very/somewhat familiar with term “embryo adoption”
  2007: 31.6%  2009: 27.7%

- Percent of public very/somewhat familiar with term “embryo donation”
  2007: 48.5%  2009: 48.6%

What questions do you have?