Social Freezing – the modern family planning

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Social Freezing?

57 million hits
Social Freezing?

Let's stop rushing to find husbands and start rushing to freeze our eggs.
Social Freezing
Social Freezing

- 38y old woman
- no partner
- asks for a recommendation – should she perform „egg-freezing“?
Social Freezing

• What is social freezing? How does it work?
• How are the chances for success: the „Baby take home rate“?
• Why should you recommend it or not?
Social Freezing

• Idea:
  • Preserve Fertility and move family planning into another decade
    – No suitable partner
    – Career reasons?

• Medical reason:
  – The quality of eggs decline with age
  – The risk of miscarriage and malformation rises
What about age?

Average age of a German woman giving birth to her first child

30.8 years
BW: 31.3 years

Japan
2015: 30.7 years
What about age?

Female 35,1 y

Male 38,5 y

Average age presenting in a fertility center
Pregnancy rates

Without „help“

- ♀ 25j. → 23%
- ♀ 35j. → 16%

Abb. 3
Spontankonzeptionswahrscheinlichkeit im nächsten Zyklus (Ordinate) in Abhängigkeit von der Zahl bisher erfolgloser Zyklen (Abszisse) und dem Alter der Frau. (Mod. nach [7])

Gnoth C. Bundesgesundheitsbl 2013 (56) 1633-1641
Pregnancy rates

![Chart showing pregnancy rates across different age groups.

- The x-axis represents age groups in years, from <=24 to >=44.
- The y-axis represents the percentage of Klin. SS/ET (orange line) and Abort/Klin. SS (gray bars).
- The chart indicates a general increase in pregnancy rates with age, peaking around the age group of 35.

Source: Universitätsklinikum Ulm Frauenklinik]
What about age?

- Ovarian reserve declines with age
- Quality of the oocytes decline with age
- Aneuploidie-Rate rises with age

<table>
<thead>
<tr>
<th>Alter</th>
<th>Trisomie 21</th>
<th>Alle</th>
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</thead>
<tbody>
<tr>
<td>≤ 32</td>
<td>≤ 1,5</td>
<td>≤ 3</td>
</tr>
<tr>
<td>33 – 37</td>
<td>1.4 – 6.4</td>
<td>3.5 – 8.1</td>
</tr>
<tr>
<td>38 – 42</td>
<td>5.2 – 23.4</td>
<td>9.5 – 25.5</td>
</tr>
<tr>
<td>43 – 45</td>
<td>17.6 – 52.3</td>
<td>32.6 – 53.7</td>
</tr>
<tr>
<td>&gt;45</td>
<td>&gt;46.6</td>
<td>&gt;53.7</td>
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</tbody>
</table>
All about age!

>40% at about 40y
14% > 45y
54% are wrong!!!
Social Freezing
Social Freezing

Like a „normal“ artificial reproduction (ART/IVF)

- **Stimulation with FSH**
- **GnRH-antagonist**
- **Induktion of ovulation**

<table>
<thead>
<tr>
<th>Days of the menstrual cycle</th>
<th>2 – 10 (-13)</th>
<th>11 – 14</th>
<th>13 – 16</th>
</tr>
</thead>
</table>

**Oocyte retrieval**
Stimulation
Oocyte retrieval
Oocyte retrieval

- Number of oocytes depending on age

![Graph showing the number of oocytes retrieved based on age from 2010-2014 DIR yearbook.]

9 oocytes?

38 year old woman

≤ 29 30 - 34 35 - 39 40 41 42 43 44 ≥45
Cryopreservation

Vorteile

Eizellen:
- zusätzliche Schwangerschaftschance ohne aufwendige Hormonstimulation und Follikelpunktion

Spermien:
- Spermienverfügbarkeit bei z.B. beruflicher Abwesenheit des Mannes oder Krankheit (z.B. Hodentumor)

Hodengewebe:
- Verfügbarkeit von Spermien aus Hodengewebe zum Zeitpunkt der Follikelpunktion
Social Freezing

- Preserve until
- Desire for a child/children
  - Thawing the oocytes
  - Fertilizing with sperms by the partner
  - Transfer of the embryo
- But what about the “BABY TAKE HOME RATE”
Social Freezing

Results by the donor egg publications:

2015 FertilSteril Cobo et al.:

3467 Zyklen (37.000 EZ)

– Oocyte survival rate: 90.4%
– Pregnancy rate: 48.4%, „ongoing“ PR 39.9%
– „Oocyte-to-baby“ – rate: 6.8%
# Social Freezing

<table>
<thead>
<tr>
<th>No. of oocytes consumed</th>
<th>CLBR (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6.1</td>
<td>5.3–7.0</td>
</tr>
<tr>
<td>10</td>
<td>39.4</td>
<td>37.5–41.3</td>
</tr>
<tr>
<td>15</td>
<td>67.5</td>
<td>65.4–69.8</td>
</tr>
<tr>
<td>20</td>
<td>80.5</td>
<td>78.3–82.7</td>
</tr>
<tr>
<td>25</td>
<td>85.4</td>
<td>83.2–87.6</td>
</tr>
<tr>
<td>30</td>
<td>89.9</td>
<td>87.6–92.1</td>
</tr>
<tr>
<td>35</td>
<td>94.8</td>
<td>92.3–97.2</td>
</tr>
<tr>
<td>40</td>
<td>95.5</td>
<td>93.0–97.9</td>
</tr>
<tr>
<td>43</td>
<td>97.3</td>
<td>94.9–99.7</td>
</tr>
</tbody>
</table>

Note: The increase in CLBR was of approximately 3.9% per additional oocyte from 5–10 oocytes; 5.6% from 10–15 oocytes; 2.6% from 15–20 oocytes; 1.0% from 20–25 oocytes; 0.9% from 25–35 oocytes; 0.2% from 35–40 oocytes, and 0.1% when >40 oocytes were consumed.


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Oocytes to have a realistic chance for a baby!
Social Freezing

• What about the risk for malformations of the thawed oocytes?
  – Same rate of malformations with vitrified oocytes vs. conventional IVF vs. spontaneous conception (2.5%)
  – But there is no „long-term-follow-up“

• No data to
  – Long term data to the children
  – Long term data to the women
Social Freezing

- Questionnaire of 183 women after the procedure of social freezing
  - 88% didn’t have a partner
  - 84% were older than 35 years
    - 79% wished to use social freezing earlier in life
    - 83% believed public information is wrong
  - 53% used as insurance for later

2013 Hodes-Wertz et al
Social Freezing

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Age – about 9 eggs?
Ovarian reserve??
Ovarian Reserve

Sonography:

• Antral-Follicle-Count (AFC)

• AFC > 12 (6/Seite) means reasonable ovarian reserve

• Cave:
  – Dependent on person
  – Dependent on facility
  – Validity ↓
Ovarian Reserve

• Hormonal diagnostics
• FSH (Follikel-Stimulating-Hormone)
  – FSH rises while ovarian reserve declines
  – FSH <10 IU/l vs. 10-40 IU/l vs. >40 IU/l
• AMH (Anti-Muellerian-Hormone)

Navroth et al 2014
AMH

- Granulosacells of the antral follicles
AMH

• AMH >1.0 µg/l reasonable ovarian reserve
Social Freezing

- 38y old woman
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Age – about 9 eggs?

AMH ??

Realistic chance for a child – more than one round?
Social Freezing – Take home message

- There is a realistic pregnancy rate
  - About 50% pregnancy rate
  - A lot higher compared to 40y women using IVF
- The risk for malformations are low with young oocytes
- Social freezing is best before 35 years
- For more than one child, freeze more than 30 eggs
- No long term data for mother and child