Saliva ferning test and the fertile period

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Ovulation detection

IMPORTANT

• those who would like to conceive

• those who would like to avoid a pregnancy
Self-monitoring of ovulation

• economical
• simple to do
• allows greater autonomy for the couple
• may improve user’s compliance
• may improve method efficacy

(Fereira-Poblete, et al. Adv in Contracep, 1997)
Fertility Markers

Direct Methods:
• Transvaginal Ultrasound- ovum detection, follicle size, corpus luteum, fluid in the cul de sac
• Hormonal: **urinary LH peak**, estrogens, progesterone estrogen conjugates, etc.
• Enzymes: B-glucoronidase, alkaline phosphatase, etc.

Clinical Markers:
• BBT, Cervical mucus changes or Billing’s method, saliva electrical resistance, *saliva ferning/crystallisation*
Saliva ferning

Hypothesis: Ovulation

- increased 17-beta estradiol leads to increase in NaCl in saliva
- crystallisation
• 1- Cover  
  2- Optics  
  2.1- Focus Adjustment  
  2.2- Glass Surface*- Place your saliva sample on this portion of the optical lens  
  3- Housing  
  4- Light Source  
  4.1- Light Button  
  4.2- Batteries- **15 year battery included**.
Objectives:

- to review the studies made on the saliva ferning method in the determination of the fertile period,

- to evaluate the cost-effectiveness of the mini-microscopes marketed for ovulation detection
Materials & Methods:

Database Search:

- saliva+fertile period+family planning+contraception+monitoring
Analysis:

WHO User’s guide to medical literature for the evaluation of diagnostic tests

Jaeschke R et al JAMA Mar 1994;271(9):703-707
Daya S. Seminars in Reproductive Endocrinology,1996;14(2):101-109
# Description of studies made on saliva ferning

<table>
<thead>
<tr>
<th>Study</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td># of subjects</td>
<td>58</td>
<td>12</td>
<td>32</td>
<td>40</td>
<td>36</td>
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<tr>
<td>mean age</td>
<td>30.5</td>
<td>34.6</td>
<td>31.5</td>
<td>28.4</td>
<td>30.2</td>
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<tr>
<td></td>
<td>(18-43)</td>
<td>(30-44)</td>
<td>(19-42)</td>
<td>(21-42)</td>
<td>(20-42)</td>
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<tr>
<td># of cycles tested /subject</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
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<tr>
<td>study origin</td>
<td>Csek</td>
<td>Italy</td>
<td>USA</td>
<td>Italy</td>
<td>New Zealand</td>
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</table>
I. Rotta et al (1992)

mini-microscope vs.
ultrasound, estradiol, progesterone, LH, prolactin, BBT, FSH

N=58; total of 120 cycles, 5 months
drop-outs: 11 cycles due to flu epidemic

Results:

78.5\% - ferning noted in the peri-ovulatory period
84\% - no ferning during the infertile period

*special thanks to Dr. Magdalena Kholik for the translation*
II. Barbato et al. (1993)

mini-microscope vs. cervical mucus appearance, BBT

N=32, 2 menstrual cycles; no drop-outs

Results:

• (+) ferning in 28 (87%)
• ferning began 1-2 days before cervical mucus appearance
• lasted for a mean of 6.2 days
• occurred 7.2 days before the temperature shift
• no pattern noted in 4 cycles
III. Fehring et al. (1998)

- mini-microscope vs. urinary LH and cervico-vaginal mucus appearance, BBT
- N=12; number of cycle/women= 2

Results:
- ferning lasted a mean of 6.2 days
- began 1-2 days before the appearance of cervico-vaginal mucus
- occurred 7.2 days before the first day of temperature shift
- strong correlation with LH peak (r=0.99, p <=0.001)
- strong correlation with cervical mucus ferning (r=0.98, p <=0.001)
• no discernible beginning or end of the fertile period with either saliva or cervical mucus ferning
• ferning was demonstrated all throughout the cycle in one subject
• saliva ferning was noted in a MALE!

- minimicroscope vs. ultrasound, urinary LH, cervical mucus, BBT, saliva beta-glucuronidase
- N=40, 4 cycles/subject
- 100% correlation between US and urine LH
- saliva ferning (+) in only 36.8%,
- but 58.7%: uninterpretable (?)
con’t. Guida et al. (1999)

- ferning was given a scoring system (0-3)
- interpretation of the results were left to the subjects themselves
- no control measures that may affect NaCl concentration in saliva was employed
V. Didi et al (1998)

mini-microscope vs.

• I-urinary LH (17)
• II-BBT (13)
• N= 30; 2 menstrual cycles/subject
<table>
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<tr>
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<th>I</th>
<th>II</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(with LH measures)</td>
<td>(with BBT measures)</td>
</tr>
<tr>
<td>sensitivity</td>
<td>53%</td>
<td>86%</td>
</tr>
<tr>
<td>specificity</td>
<td>72%</td>
<td>14%</td>
</tr>
<tr>
<td>likelihood ratio for a negative test</td>
<td>0.7</td>
<td>1.0</td>
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<tr>
<td>likelihood ratio for a positive test</td>
<td>1.9</td>
<td>1.0</td>
</tr>
</tbody>
</table>
con’t. Didi et al. (1998)

• they could not find a correlation between saliva ferning and saliva estradiol levels
• (+) in 8 out of 10 postmenopausal women did not take HRT
• positive in 10 out of 10 MEN tested.
Recommendations:

- standardisation of tests
- randomised trials with bigger sample size
- control factors that may affect NaCl in saliva prior to testing
- test under different environmental conditions
Conclusions:

- The saliva ferning test is a non-specific phenomenon, with a bad correlation with the fertile period as compared with sonography, urinary LH and clinical parameters of cervico-vaginal mucus appearance and the BBT, and

- we strongly discourage the use and promotion of the mini-microscopes for ovulation detection for the purpose of family planning, unless further studies are made to support this claim.
Thank you...

See you again!