Defining the Standard for Vasectomy Success

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Controversies Regarding Vasectomy Management

1. Is vasectomy a permanent form of birth control?
2. When do we obtain a post-vasectomy semen analysis?
3. What is the significance of motile and non-motile sperm in the post-vasectomy semen analysis?
4. Does azoospermia after vasectomy guarantee that sperm will not reappear?
5. Do we need to centrifuge azoospermic semen after vasectomy in order to detect occasional sperm?
1. Is vasectomy a permanent form of birth control?
Vasectomy is Not Guaranteed

Vasectomy pregnancy failure rate of 0.1%

- Early-unprotected intercourse prior to obtaining a negative semen analysis
- Late-recanalization of the vas deferens

Tubal ligation pregnancy failure rate of 1.85%

Trussell J et al, *Contraceptive Technology* 1998
Peterson HB et al, *NEJM* 1997
Weiske, *Andrologia* 2001
Schwingl and Guess, *Fert and Steril* 2000
2. When do we obtain a post-vasectomy semen analysis?
ANALYSIS OF SPERM CLEARANCE

Time to azoospermia

- 72% at 3 Months
- 85% at 6 Months
- 99% at 12 Months

References:
“Clinical aspects of vasectomies performed in the United States in 1995”

Most physicians requested the first semen analysis too soon!

- \( \leq 6 \) weeks - 59%
- 7-9 weeks - 29%
- > 9 weeks - 12%

Haws et al, *Urology* 1998

Only \( \frac{3}{4} \) of men are azoospermic at 3 months
Different methods of vasal occlusion have similar sperm clearance rates

- Fascial interposition does not reduce time to azoospermia
- No association between length of excised vas and time to azoospermia

Clenney. Amer Fam Phy. 1999  
Haws. Urology. 1998  
3. What is the significance of motile and non-motile sperm in the post vasectomy semen analysis?
Significance of Motile Sperm

- Motile sperm caused by:
  - Technical error
  - Recanalization between the two ends of the vas deferens

- Motile sperm 3-6 months after vasectomy is more likely to be associated with pregnancy

Significance of Non-motile Sperm

• Non-motile sperm caused by:
  ➢ release of nonviable residual sperm in the distal reproductive tract\(^1\)
  ➢ recanalization between the two ends of the vas deferens\(^2\)

• Risk of pregnancy from non-motile sperm is similar to the risk of pregnancy after two azoospermic semen analyses (0.05\%)\(^3\)

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\(^1\) De Knijff et al, *Fert Steril* 1997

\(^2\) Goldstein et al, *J Urology* 1996

4. Does azoospermia after vasectomy guarantee that sperm will never reappear in the future?
# Reappearance of Occasional Sperm After Azoospermia

<table>
<thead>
<tr>
<th>Study</th>
<th>Source</th>
<th>Percentage (Duration)</th>
</tr>
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<tbody>
<tr>
<td>O’Brien et al</td>
<td><em>BJU 1995</em></td>
<td>0.6% (1 year)</td>
</tr>
<tr>
<td>Labrecque et al</td>
<td><em>CAF 1998</em></td>
<td>2.2% (&lt; 1 year)</td>
</tr>
<tr>
<td>DeKnijff et al</td>
<td><em>Fert Steril 1997</em></td>
<td>8.0% (2 years)</td>
</tr>
<tr>
<td>Goldstein et al</td>
<td><em>J Urology 1996</em></td>
<td>9.7% (10 years)</td>
</tr>
<tr>
<td>Freund and Couture</td>
<td><em>J Androl 1982</em></td>
<td>100% (2-31 years) *</td>
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</tbody>
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* "Presence of a small number of spermatoza in vasectomized men is a normal and usual sequela of vasectomy"
5. Do we need to centrifuge a post-vasectomy azoospermic semen specimen in order to detect rare sperm?
Centrifugation of azoospermic semen

- Recommended by laboratory guidelines WHO and ASCP
- It is not the current clinical standard of care for vasectomy
Conclusion

• Sterility post-vasectomy is not guaranteed

• Post-vasectomy semen analysis recommended at 3 to 6 months

• Post-vasectomy semen analysis should demonstrate azoospermia or non-motile sperm before contraception is discontinued

• Sperm may reappear despite initial azoospermia

• Centrifugation of azoospermic semen in order to detect rare sperm is not the clinical standard of care