THE DIAGNOSTIC AND THERAPEUTIC POTENTIAL OF THE POSTCOITAL TEST


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An analysis was made of postcoital tests carried out on 423 couples attending the Rotunda and St. James Hospitals in Dublin. Initially 66.6% of tests were abnormal, but 21.3% of these were invalid because of the presence of seminal or cervical abnormalities, leaving 57.7% of couples with initially valid negative tests. Retesting showed 30.3% of couples to have persistently negative tests, 24.5% of whom achieved pregnancy. Three per cent of abnormalities were immunologic in origin. The most common cause why a subsequently positive test was initially negative was failure to observe correct clinical procedures, but unadmitted psychosexual problems were present in 17.6% of cases. Of the best postcoital tests, 78.5% correlated well with semen analyses and 90.9% with basal body temperature charts. In total, 6.2% of all pregnancies achieved in the clinics followed postcoital testing.


The postcoital test has been a subject of controversy since it was first advocated by Sims in 1866. Objections were at first moralistic and, although these are no longer tenable, opinions are still divided as to the value of the test in infertility investigations.

Protagonists find the postcoital test a useful monitor of sexual function, an indicator of sperm action, a barometer of periovular hormonal status, and a possible basic screen for the detection of the cervical factor. The postcoital test has also been used to evaluate the efficacy of artificial insemination techniques and contraceptives. However, there can be daily individual variation in cervical function, and its use may precipitate coital difficulties. Antagonists feel its prognostic significance to be almost valueless, as little correlation with fertility potential has been noted. Indeed, in a previous study a large percentage of infertile patients achieved pregnancy despite persistently negative postcoital tests.

This study was undertaken to examine critically the many diagnostic and therapeutic potentialities provided to the physician by the postcoital test in an effort to determine its true role and value in infertility investigations and treatment.

MATERIALS AND METHODS

Patients

All patients were attending the author's infertility clinics either at the Rotunda Hospital, Dublin, from August 1, 1976, to December 31, 1979, or St. James Hospital, Dublin, from November 18, 1977, to December 31, 1979. Postcoital tests were an integral part of the routine investigation and establishment of the couple's fertility profile. In most cases it was the first test performed.

Postcoital Tests

Timing. The test was performed wherever possible during the periovulatory phase of the menstrual cycle as judged by daily symptothermic charts. There was a coital interval of approximately 8 hours. Full instructions were given verbally and in writing.

The Test. With the patient in the lithotomy position, specimens were removed from the cervical canal using a Dejardin's forceps (Downs;
Mitcham, Surrey, England) under direct vision through a Cuscos speculum. The mucus sample was mounted immediately on a glass slide and viewed by light microscopy (objective lenses ×10 and ×40). Cervical and mucus parameters were noted and judged according to the criteria suggested by Insler et al. Spermatozoa present were counted and a percentage estimation was made of those motile and progressing purposefully per high-power field.

*Interpretation.* The World Health Organization defines a normal postcoital test as one in which the sample reveals at least seven motile spermatozoa progressing purposefully through a thin, translucent, ductile mucus. This was the chief criterion used, but the actual number of spermatozoa present was not considered definitive. Results were considered negative only when there were either no spermatozoa or only immotile spermatozoa present.

*Repeat Testing.* Repeat tests were arranged without further investigation only when the result was negative but both semen and mucus factors were normal (i.e., a valid test). If negative results persisted, exogenous causes were ruled out, semen and mucus were examined further, and when necessary extra investigations toward a diagnosis of cervical factor were arranged. For clinical purposes the best results obtained were taken as being the norm for that particular couple. This paper considers results from only the first and the best postcoital test of each couple.

## RESULTS

### Incidence of Positive and Negative Tests

Table 1 shows that 66.6% of initial postcoital tests were negative. However, further investigation showed that 21.3% of couples had seminal or cervical problems invalidating these as truly negative postcoital tests. Of the remaining 333 tests, 57.7% were negative. Further testing eventually showed 3.0% to have a possible immunologic basis.

Despite retesting (Table 2) and checking all parameters, 30.3% of couples had tests that remained negative, and of these 24.5% achieved pregnancy. There were a few couples (1.5%) whose in vivo tests remained negative yet whose in vitro tests were normal. In 71.6% of couples (Table 3), doctor/patient failure (iatrogenic) was identified as the reason why a subsequent valid positive test had initially been negative. Previously unadmitted psychosexual problems were present in 17.6% and a mucus defect in 10.8%.

### Correlation with Other Fertility Profile Parameters

#### Semen Analysis

The semen specimens used for comparison were collected directly into sterile containers and examined within 2 hours. A volume above 1 ml and a density over $20 \times 10^6$ spermatozoa/ml, of which at least 70% were morphologically normal and progressing purposefully, were considered the minimal normal limits.

Table 4 shows that the number and motility of spermatozoa found in 78.5% of postcoital tests were in line with those anticipated from the results of semen analysis. However, sperm action in postcoital tests was better in 4.7% of cases and worse in 16.8%. Some tests in this latter group were possibly attributable to poor total semen volume.

#### Basal Body Temperatures (Table 5)

Of the patients who had postcoital tests and who also recorded basal body temperature, 90.9% had good correlation between qualities of cervical appearance, cervical mucus, and basal body temperature charts (best postcoital test). However, midcycle, plentiful, good-quality mucus was noted in 6.3% of patients without biphasic basal body temperatures and was absent in 2.8% of women who had normal thermal readings.

### Therapeutic Value

Several pregnancies were conceived during the month in which a postcoital test had been performed and no other medication had been given. These pregnancies accounted for 6.2% (nine followed postcoital test of the 145 pregnancies in the series) of all pregnancies achieved by infertile patients who had been so tested.

### DISCUSSION

Efforts have been made to quantify results of postcoital tests for comparison using scoring...
The fractional postcoital test\textsuperscript{13, 15} is thought to give greater accuracy, although recent evaluation suggests that this more laborious method of collection is not warranted.\textsuperscript{17} The capillary postcoital test\textsuperscript{18} is perhaps more physiologic and enables sperm migration rates to be calculated. However, there is no real standardization of techniques and it is therefore not surprising that there is much controversy as to the diagnostic potential of postcoital tests.

This study suggests that the postcoital test, as performed in these clinics, may not be a very good indicator of fertility potential. Although the percentage is less than that reported in a previous study of a different population,\textsuperscript{10} 30.3% of couples had persistently negative postcoital tests and yet 24.5% of these achieved pregnancy. This figure is likely to be accurate, as it was only arrived at after multiple tests with attempts at proper validation. Dejardin's forceps allow easy access to uncontaminated specimens and a proper study of the criteria. A coital interval of 8 hours is logistically convenient for the couple and less stressful. It guards against false positive results obtained when testing too soon after coitus when the motile life of the spermatozoon is short, and also allows the chance for immunologic factors to come into play.

The necessity for multiple testing is clearly shown in the study. Initially negative valid postcoital tests were found in 57.7% of all patients but, when all parameters were rechecked and the 3.0% found to have possible immunologic problems were excluded, it was possible to cut this incidence to 30.3%. A large number of these initially negative tests were due to faulty technique despite assiduous instruction, and, although careful histories were taken, a number of previously unadmitted psychosexual difficulties were also discovered. Patients with dysmucorrhea, caused by overvigorous cautery of the cervix, made up the remainder of those whose initially valid negative tests eventually became positive. Repeated in vitro testing has shown\textsuperscript{7} that the majority of subjects will eventually demonstrate normal sperm-cervical mucus interaction, and it is possible that the final figure of 30.3% could have been reduced still further if it had been considered realistic or even ethical to continue testing ad infinitum.

In these clinics, the postcoital test is usually the first test performed. This accounts for the large number (21.3%) of initial tests that could not be considered truly valid (i.e., performed with normal-quality semen and good-quality mucus). However, it does confirm the good intercorrelation and interchange of information that is possible between semen, sex hormone action, and the postcoital test. In this study there was agreement between the postcoital test and semen analysis volume, density, motility, and morphology in 78.5% of cases, but the number of false-positive tests suggests that it may be misleading to rely on the test as the sole measure of male function. Unforeseen negative tests were found in 16.8% of couples. Not all of these were immunologic in origin or due to failure to elucidate a psychosexual problem, and there was a small group of couples (1.5%) whose postcoital tests revealed good in vitro sperm penetration of the cervical mucus and yet the tests remained persistently negative. This shows that the postcoital test has the potential to add another dimension to the examination of sperm action, namely, its performance in vivo where the cervix may be the point of selection of capable sperm.\textsuperscript{19} To this end, postcoital split ejaculate\textsuperscript{20} and cervical cup tests\textsuperscript{21} may be helpful.

Cervical mucus changes correlate well with variations in the menstrual cycle.\textsuperscript{22} This was confirmed in this study, where poor mucus was often the first indicator of an ovulation abnormality. Serial symptothermic charts, more often used for contraceptive purposes, might therefore be more 

### TABLE 3. Reasons Identified\textsuperscript{*} Why Subsequent Valid Postcoital Tests Were Initially Negative

<table>
<thead>
<tr>
<th>Psychosexual factor</th>
<th>Mucus factor</th>
<th>Iatrogenic factor</th>
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<tbody>
<tr>
<td>13/74 = 17.6%</td>
<td>8/74 = 10.8%</td>
<td>53/74 = 71.6%</td>
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\textsuperscript{*}Ten are still unknown.

### TABLE 4. Correlation of Best Postcoital Test Sperm Density and Motility with Semen Analysis Parameters

<table>
<thead>
<tr>
<th>Sperm Density and Motility</th>
<th>Postcoital test same</th>
<th>Postcoital test better</th>
<th>Postcoital test sperm worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postcoital test same</td>
<td>318/405 = 78.5%</td>
<td>19/405 = 4.7%</td>
<td>68/405 = 16.8%</td>
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<tr>
<td>Postcoital test better</td>
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<td>Postcoital test sperm worse</td>
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usefully employed as the initial monitor of ovulatory function than the often inaccurate basal body temperature charts, especially as the favorable mucus changes precede ovulation. However, in some cases discrepancies between the two parameters do occur. In this study, the cervical mucus was poor despite biphasic basal body temperature charts in 2.8% of women, but all had previously undergone cervical cauterity and in 6.3% mucus of good quality and volume occurred with monophasic thermal readings.

There were no problems reported of induction of sexual dysfunction during postcoital testing, and indeed the small group of pregnancies that appeared to follow suggests a mild therapeutic value. This figure is likely to be an underestimation, as there will inevitably be a number of couples whose postcoital tests are normal but who have yet another factor such as tubal blockage to prevent pregnancy. However, it was not possible to take into account such cases and to calculate the overall therapeutic potential of the postcoital test from these data. Indeed, in all pregnancy successes in infertile couples, a placebo effect must be considered. These results may well show the importance of correct timing when organizing the test, although there is no evidence for a coital orgasmic trigger of ovulation in humans, and studies have shown accurate coital timing to have little therapeutic value.

To devalue and to debunk the postcoital test would be easy but incorrect. Standardization is difficult, results vary from month to month, and pregnancies may be achieved with persistently negative tests. However, the results of this study show that the postcoital test can play an invaluable role in infertility investigations, since many facets of the fertility profile are involved. In addition to being an indicator of coital expertise and the means with which to detect the first sign of a cervical factor, the postcoital test provides further in vivo information about sperm action and menstrual cycle function. If its limitations are recognized, and if correct procedures are established and followed, the postcoital test, in combination with other investigations, may yield much essential invaluable information about a couple's infertility problem.

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REFERENCES