Gonorrhoea and chlamydial infection are currently out of control in many parts of Africa. There is an urgent need for innovative approaches to control sexually transmitted diseases, which could include screening programmes for men and women with cheap, simple, and effective new diagnostic tests when these become available, improved case finding strategies, or, as suggested by Arya *et al* in 1973, selective mass treatment.¹⁰ Considerable investment will be needed, and the impact and cost of these various approaches should be carefully evaluated. But the implementation of improved services for people with sexually transmitted diseases should not await the outcome of such studies since, as the world development report of 1993 has emphasised, the treatment of bacterial sexually transmitted diseases is one of the most cost effective health interventions available in developing countries.²³

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Randomised trial comparing hysterectomy with endometrial ablation for dysfunctional uterine bleeding: psychiatric and psychosocial aspects

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Abstract

Objective—To compare in psychiatric and psychosocial terms the outcome of hysterectomy and endometrial ablation for the treatment of dysfunctional uterine bleeding.

Design—Prospective randomised controlled trial.

Setting—Obstetrics and gynaecology department of a large teaching hospital.

Subjects—204 women with dysfunctional bleeding for whom hysterectomy would have been the preferred treatment were recruited over 24 months and randomly allocated to hysterectomy (99 women) or to hysteroscopic surgery (transcervical resection (52 women) or laser ablation (53 women)).

Main outcome measures—Mental state, marital relationship, psychosocial and sexual adjustment in assessments conducted before the operation and one month, six months, and 12 months later.

Results—Both treatments significantly reduced the anxiety and depression present before the operation, and there were no differences in mental

health between the groups at 12 months. Hysterectomy did not lead to postoperative psychiatric illness. Sexual interest after the operation did not vary with treatment. Overall, 46 out of 185 (25%) women reported a loss of sexual interest and 50 out of 185 (27%) reported increased sexual interest. Marital relationships were unaffected by surgery. Personality and duration of dysfunctional uterine bleeding played no significant part in determining outcome.

Conclusions—Hysteroscopic surgery and hysterectomy have a similar effect on psychiatric and psychosocial outcomes. There is no evidence that hysterectomy leads to postoperative psychiatric illness.

Introduction

Dysfunctional uterine bleeding is an uncomfortable and inconvenient complaint that may not be relieved by drug treatment in the long term. In such circumstances, hysterectomy has been regarded as the best

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treatment, but its extensive use when there is no evidence of microscopic or macroscopic disease has also provoked criticism.¹ Although hysterectomy is a comparatively safe procedure,² it is associated with clinically significant surgical morbidity³ and it has been alleged to lead to impaired sexual functioning⁴ and significant psychiatric illness.⁵ Although the earlier reports of adverse reactions after hysterectomy have been challenged,^{6,7} some of these concerns are rooted in the history of psychiatry and the fascination with the symbolic value of the (peripatetic) uterus.⁸

The debate has been intensified by the development of less invasive hysteroscopic procedures—namely, transcervical resection of the endometrium and endometrial laser ablation. Although preliminary studies have compared these treatments,⁹ a carefully conducted comparative trial is needed to assess their psychiatric and psychosocial impact. We conducted a prospective randomised trial at Aberdeen Royal Infirmary to compare hysterectomy with hysteroscopic surgery. In an earlier paper we reported outcome in gynaecological terms, describing the specific surgical procedures, complications, and clinical outcomes.¹⁰ Although the women who had had a hysterectomy were more satisfied than those who had had hysteroscopic surgery, the less invasive surgery caused fewer complications at operation and patients recovered more quickly. In this paper we report psychiatric and psychosocial outcome.

Patients and methods

SUBJECTS

The power calculations for this study were based on the difference in satisfaction rates after hysterectomy or conservative surgery and not on the principal outcome measures reported in this paper. We needed to recruit at least 160 women to have 80% power in detecting a 20% difference—for example, from 65% to 85%—in satisfaction rates at the 5% significance level. In accordance with the inclusion criteria described,¹⁰ 204 women over a period of 20 months gave their written consent to be randomly allocated primarily to hysterectomy or conservative surgery. Those allocated to conservative surgery were further randomly assigned endometrial laser ablation or transcervical endometrial resection. Women were thus randomly allocated hysterectomy, laser ablation, or endometrial resection in the ratio of 2:1:1. As comparison between the two groups receiving conservative treatment would have only 50% power in detecting a 20% difference we combined the results for the two hysteroscopic procedures.

MEASURES

Each patient completed four standardised questionnaires before the operation and at one month and six and 12 months afterwards (table 1).

Eysenck personality questionnaire provides an index of neuroticism, extraversion, "tough mindedness," and of the tendency to present oneself in an artificially favourable light (lie scale).¹¹

Hospital anxiety and depression scale is a self reported

measure of anxiety and depression and has high reliability and validity in medical and surgical settings.¹² To provide a check on the validity of the scale a random sample of 21 patients was interviewed by a registrar in psychiatry using the structured clinical interview,¹³ which enables psychiatric diagnoses to be made according to the *Diagnostic and Statistical Manual of Mental Disorders, third edition, revised* (DSM-III-R) of the American Psychiatric Association.¹⁴

Psychosocial adjustment to illness scale assesses patients' views of their adjustment to their clinical condition and treatment over the previous 30 days in relation to their home life, employment, sexual and family relationships, social and leisure activities, psychological distress, and attitudes to health care.¹⁵ The complete scale was administered before surgery and at 12 months after surgery. For the intervening assessments only selected sections were chosen—that is, those that were most relevant to the aims of the study. Similarly, certain items had to be rephrased to suit a Scottish sample and to ensure their relevance to this particular study. We acknowledge that these modifications mean that we cannot compare results for our patients with normal values for the general population.

Golombok Rust inventory of marital state assesses 28 items.¹⁶ Subjects are asked to agree or disagree with statements. From the original 28 items we selected seven positively and seven negatively phrased items that were relevant to the study to obtain a brief measure of the overall quality of the marital relationship as perceived by the patient. In this study marital refers to any close, enduring heterosexual relationship at home. We also offered the women the chance of responding that they neither agreed nor disagreed because we thought that this was more informative than a simple choice between agree and disagree. As a consequence, we could not compare our patients' results with the values for the general population.

STATISTICAL METHODS

Statistical analysis was conducted according to the principle of intention to treat. Parametric methods were used when the data were normally distributed (after transformation if necessary). Otherwise, non-parametric methods were used. The 5% level of probability was used as the criterion for significance.

Results

RECRUITMENT AND WITHDRAWALS

With their written consent, 204 women were randomly allocated to hysterectomy (99), laser ablation (53), and endometrial resection (52). Four women refused their allocated treatment and had the operation they wanted, and two women withdrew from the trial before treatment. This meant 99 women were treated by hysterectomy, 52 by endometrial resection, and 51 by laser ablation. One woman who had a hysterectomy was withdrawn from the study after having been found to have early endometrial carcinoma. A total of 185 (90%) women were available for psychometric assessment at the 12 month follow up examination.

PATIENT CHARACTERISTICS

Table 2 gives the baseline characteristics of the two groups in terms of age, duration of symptoms, marital status, and scores on the four subscales of the Eysenck personality questionnaire. Generally, their scores were consistent with normal values nationally¹¹ and locally.^{17,18} The only noteworthy trend was that our sample showed a modest increase in their scores for neuroticism compared with the two comparison populations. A correlation of less than -0.5 between scores for neuroticism and scores on the lie scale

Table 1—Schedule of assessments

	Before operation	After operation		
		At 1 month	At 6 months	At 12 months
Eysenck personality questionnaire	Yes	No	No	No
Hospital anxiety and depression scale	Yes	Yes	Yes	Yes
Psychosocial adjustment to illness scale	Yes	Yes	Yes	Yes
Golombok Rust inventory of marital state	Yes	No	Yes	Yes

suggests that respondents have presented themselves in an unrealistically favourable light.¹⁹ The correlation for the group treated by hysterectomy was -0.27 and for the group treated by conservative surgery 0.09.

MENTAL HEALTH

The cross validation between the hospital anxiety and depression scale and the structured clinical interview showed strong concordance. Sixteen of the 21 patients in the validation sample were classed as having anxiety state with both questionnaires. All of the 21 patients were classed as being depressed with both questionnaires.

Table 3 records the mean anxiety and depression scores. Lower scores reflect less psychiatric illness. There was no difference in anxiety and depression scores between women who had a hysterectomy and those treated hysteroscopically. Although significant differences in anxiety and depression were observed at six months, these are of doubtful clinical importance.

Regression analysis confirmed that the degree of anxiety and depression before the operation was not significantly related to how long the women had had menorrhagia (for short, intermediate, or long spells $F_{1,196}=0.13$, $P>0.7$ for anxiety and $F_{1,194}=0.25$, $P>0.6$ for depression). The degree of depression and anxiety before the operation was, however, positively correlated with the degree at 12 months ($r=0.54$, $P<0.001$ before operation; $r=0.37$, $P<0.001$ at 12 months). There was no significant correlation

Table 4—Median scores (interquartile range) on psychosocial adjustment to illness scale during study

	Hysterectomy	Conservative surgery
Before operation		
No of patients	89	94
Attitudes to health care	5 (3 to 7)	5 (4 to 7)
Home	5 (3 to 9)	5 (3 to 8.5)
Employment	4 (2 to 5)	3 (2 to 5)
Sexual relationships	5 (2 to 9)	5 (2 to 8)
Family relationships	2 (0 to 3)	2 (1 to 4)
Social activities	6 (2 to 11)	6 (3 to 10)
Psychological distress	9 (5.5 to 12)	8 (5 to 11)
One month after operation		
No of patients	92	104
Home	3 (1 to 5)	1 (0 to 3)*
Employment	6 (5 to 8)	3.5 (2 to 5)†
Psychological distress	4 (2 to 7)	3 (2 to 6)
Six months after operation		
No of patients	84	91
Sexual relationships	10 (6.5 to 12)	10 (7 to 11)
Social activities	6 (4 to 6)	6 (4 to 6)
Psychological distress	4 (1 to 7)	4 (2 to 8)
Twelve months after operation		
No of patients	85	97
Health care attitudes	3 (2 to 4)	2 (2 to 4)
Home	2 (1 to 4)	1 (1 to 2)‡
Employment	0 (0 to 1)	0 (0 to 2)
Sexual relationships	10 (9 to 12)	10 (8 to 11)
Family relationships	0 (0 to 2)	0 (0 to 1)
Social activities	6 (3 to 6)	6 (3 to 6)
Psychological distress	4 (1 to 7)	3 (2 to 6)

*Mann-Whitney U test, $P<0.001$.

†Mann-Whitney U test, $P<0.0001$.

‡Mann-Whitney U test, $P<0.05$.

Table 2—Baseline characteristics in women who had hysterectomy or conservative surgery for dysfunctional bleeding. Values are numbers (percentages) of women unless stated otherwise

	Hysterectomy (n=99)	Conservative surgery (n=105)
Mean (SD) age (years)	40.3 (5.2)	40.1 (5.0)
Duration of symptoms (years):		
> 5	48 (49)	54 (51)
2-5	35 (35)	40 (38)
1-2	14 (14)	9 (9)
< 1	2 (2)	2 (2)
Marital status:		
Single	1 (1)	1 (1)
Married/stable relationship	92 (93)	94 (90)
Divorced, separated, widowed	6 (6)	10 (10)
Mean (SD) personality scores:		
Neuroticism	14.5 (5.4)	14.6 (4.9)
Lie	10.6 (4.7)	9.4 (4.0)
Tough mindedness	2.0 (1.8)	2.2 (1.9)
Extraversion	11.1 (5.3)	11.0 (4.9)
Mean (SD) anxiety score	9.5 (4.2)	8.7 (3.8)
Depression score (geometric mean (95% confidence interval))	5.8 (5.0 to 6.7)	5.3 (4.6 to 6.0)
Median marital state score (interquartile range)	14.5 (8.75 to 23.0)	14.0 (9.0 to 21.5)

between neuroticism and the scores for anxiety ($r=0.10$) or depression ($r=0.05$) 12 months after the operation.

ADJUSTMENT

There were few differences between the two groups in their adjustment measured by the psychosocial adjustment to illness scale. As can be seen in table 4, there were few significant differences between the treatment groups.

Although the groups did not differ overall in terms of sexual outcome, similar numbers of women overall reported improved and lowered sexual interest (50/185 (27%) v 46/185 (25%) respectively).

MARITAL RELATIONSHIP

Analysis of the Golombok Rust inventory of marital state showed that at 12 months there was no significant difference between the two treatment groups. Median scores and interquartile ranges were 14 (7.5 to 21.3) for women who had a hysterectomy and 14 (8.3 to 17.8) for women who received conservative treatment.

Table 3—Anxiety and depression scores during study

	Before operation, both groups (n=196)	After operation			
		At 6 months		At 12 months	
		Hysterectomy (n=82)	Conservative surgery (n=96)	Hysterectomy (n=85)	Conservative surgery (n=97)
Anxiety:					
Mean (SD)	9.1 (4.0)	4.7 (3.7)	6.4 (4.2)*	5.5 (3.8)	5.7 (4.4)
Depression:					
Geometric mean (interquartile range)	5.5 (5.0 to 6.1)	1.3 (1.1 to 1.6)	1.8 (1.5 to 2.3)	1.6 (1.3 to 1.9)	1.6 (1.3 to 2.0)

* $P<0.05$, t test; difference = -1.7 (95% confidence interval -2.9 to -0.5).

† $P<0.05$, t test; ratio=0.7 (0.5 to 0.9).

Discussion

The debate about the merits of hysterectomy has adduced conflicting findings (probably because of different research methods). The debate has, however, stimulated interest in the reasons that influence referral for hysterectomy,²⁰ the provision of guidelines for its use,²¹ and its standing in relation to the less invasive procedures.

This randomised trial of hysterectomy and two methods of hysteroscopic surgery offers an opportunity to assess the procedures' relative merits in terms of their psychiatric and psychosocial impact on a large number of women treated for dysfunctional uterine bleeding. In the wake of the assertion that hysterectomy causes psychotic illness,²² there has been a stubborn assumption about its impact on mental health. Our results, consistent with those of two other prospective studies,^{6,7} are encouraging—hysterectomy did not lead to a significant increase in psychiatric illness. On the contrary, both treatment groups reported a decrease in psychiatric symptoms after surgery. The degree of anxiety and depression at 12 months was the same for the two treatments. Moreover, the strong positive correlation between the preoperative scores on the hospital anxiety and depression scale and those at 12 months suggests that the raised scores at follow up are more likely to be attributable to mental state before treatment than to hysterectomy. Although we cannot measure spontaneous remission of psychiatric symptoms with our study design, we think that such remission is unlikely to favour one treatment in particular.

Using the general health questionnaire, Dwyer *et al* found that transcervical endometrial resection was associated with less psychiatric illness four months after hysterectomy than directly after the operation.⁹ This difference in outcome between the two studies may be because the general health questionnaire measures not only anxiety and depression but also physical factors and social functioning, whereas the hospital anxiety and depression scale measures affective state or anhedonia. The general health questionnaire may, therefore, have identified not only affective changes but also changes that were due to the physical effects and extent of recovery associated with hysterectomy.

The high preoperative prevalence of psychiatric illness in our study is consistent with the results of surveys at gynaecology clinics.²³ Postoperatively, however, the women's degree of anxiety and depression was similar to that of the local population. Menorrhagia might trigger psychiatric symptoms, and the combination of gynaecological and psychiatric symptoms may encourage specialist referral. The prospect of surgery may itself lead to anxiety and depression.

SEXUAL ADJUSTMENT

A persistent concern has been the alleged effect of hysterectomy on sexual life, either because of the impact of the surgery on ovarian function or on the anatomy of the genital tract or because of the putative symbolic meaning of the uterus.^{4,21,24} The concern has also been perpetuated by unresolved uncertainties about the extent to which an intact cervix and uterus are essential for full orgasm.²⁵ In this study hysterectomy and hysteroscopic surgery achieved similar results when assessed at 12 months, but some women in both of the groups attributed positive and negative changes in their sexual life to their treatment. The impact of treatment on the marital relationship was unremarkable. At no stage did either treatment lead to a significant improvement or deterioration in the relationship—which was also observed in another study at 18 months.⁶

Key messages

- Dysfunctional interine bleeding can be distressing and inconvenient and often requires surgical treatment
- Hitherto hysterectomy has been the preferred procedure, though women may be ill post-operatively
- The introduction of hysteroscopic procedures demands an evaluation of different surgical methods according not only to gynaecological criteria but also in terms of their psychiatric and psychosocial outcome
- This randomised trial of hysterectomy and hysteroscopic surgery found that both methods had satisfactory outcomes in terms of anxiety, depression, and psychosocial adjustment

PSYCHOSOCIAL ADJUSTMENT

In terms of psychosocial functioning we found little evidence to advance the specific claims of either treatment. At one month women who had had a hysterectomy fared less well at work and at home, but this is hardly surprising in view of the well documented extended period of recovery after this operation.¹⁰ At 12 months the only difference was in favour of conservative surgery in relation to adjustment at home.

The finding that the women in our study had residual difficulties in their sexual lives is not incompatible with our earlier observation that they reported a high level of satisfaction with treatment.¹⁰ The relief from their distressing symptom—which half of them had endured for at least five years—may have compensated for many of the reported postoperative consequences.

Personality (and neuroticism in particular) has been implicated in the aetiology of gynaecological complaints²⁶ and in the outcome of hysterectomy,²⁷ but we found that personality did not relate significantly to outcome in terms of mental health.

CONCLUSIONS

Hysterectomy and conservative surgery achieved similar and highly successful outcomes in terms of psychiatric and psychosocial criteria. We found no evidence that hysterectomy is associated with an increase in postoperative psychiatric illness.

The outcome of hysterectomy and hysteroscopic surgery is not significantly influenced by personality or duration of the dysfunctional uterine bleeding. Neither treatment affects marital relationships, and both treatments have similar effects on sexual relationships. The psychiatric and psychosocial results from this study provide a basis for genuinely informed choice for women who have to decide between two highly effective methods of treatment for dysfunctional uterine bleeding.

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Seasonal variation in deep vein thrombosis

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In many temperate countries coronary events and stroke, as well as related deaths, are more common in winter than in summer.¹ Fatal pulmonary embolism has also been reported more often in winter.^{2,3} This might be linked to changes in coagulation factors⁴ and to peripheral vasoconstriction, leading to reduced blood flow in the legs.⁵ Alternatively, venous stasis due to vasodilatation is greatest in summer. These uncertainties prompted us to study the seasonal distribution of deep vein thrombosis of the legs by reviewing the month of presentation of all patients with this diagnosis referred to our vascular laboratory over six years.

Subjects, methods, and results

All files coded as "suspected" deep vein thrombosis (n=7303, mean (SD) age 63 (19), 58% women, 85% medical patients) or "confirmed" deep vein thrombosis (n=1905, age 65 (20), 54% women, 83% medical patients) were selected from the database of our vascular laboratory over the period 1989-94. Diagnosis was made by a combination of continuous wave Doppler and venous occlusion plethysmography or, from 1992, by B mode venous compression ultrasonography. Inconsistency of the extracted data was found in only seven out of 300 cases (2.3%) by comparison with randomly selected original charts.

The monthly number of confirmed events over the six year period ranged from 27 to 37 in January, 13-29 in February, 23-33 in March, 16-29 in April, 16-38 in May, 20-36 in June, 14-39 in July, 18-40 in August, 24-32 in September, 22-32 in October, 21-31 in November, and 24-37 in December. The monthly variation was similar for suspected events. The figure shows the number of suspected and confirmed events by season over the six years studied, with seasons defined as follows: winter (December, January, February); spring (March, April, May); summer (June, July, August); autumn (September, October, November). Time series analysis with the moving average technique did not suggest any regular or irregular variation in the occurrence of the events. In addition, no differences were found for the monthly or seasonal distribution of the suspected events (Kruskal-

Wallis, $P=0.43$ and 0.99 , respectively) or confirmed events ($P=0.27$ and 0.14 , respectively).

Comment

This survey shows that in Geneva, a city with a continental climate and quite wide temperature differences between summer and winter, there is no seasonal variation in the incidence of suspected and confirmed deep vein thromboses. This conclusion is based on a large population and a long period.

Fig 1—Number of suspected and confirmed deep vein thromboses related to seasons during 1989-94 in Geneva