JOURNAL CLUB

A new method of permanent hysteroscopic tubal occlusion

Tissue response to the STOP microcoil transcervical permanent contraceptive device: results from a prehysterectomy study. Valle RF, Carignan CS, Wright TC and the STOP Prehysterectomy Investigation Group. *Fertil Steril* 2001; **76**: 974–980.

This study provides some new information on the STOP microcoil device, a new permanent method of tubal occlusion. The study looked at: patient tolerance and recovery from device placement; patient safety and comfort following device insertion; tubal occlusion; and tubal histology. The study was small and non-randomised. Women were followed up prospectively from recruitment to hysterectomy. This time interval varied from 1 day to 30 weeks.

The STOP device itself is made of a stainless steel inner coil and a dynamic expanding outer coil made from Nitinol and fibres of polyethylene terephthalate (PET fibres). The outer coil attaches itself to the fallopian tubes. The PET fibres produce an inflammatory response that extends to cause tubal occlusion. The device is delivered via a 5-French gauge hysteroscope. General anaesthesia was not used, but most women had an epidural (29) or other local anaesthesia (7). A hysterosalpingogram (HSG) was carried out, prior to hysterectomy. Findings suggest that device placement was successful, but in some cases in only one tube. Perforation occurred in three cases, but was only noted at the time of hysterectomy. Mild postoperative pain (65%) and bleeding (34%) were also reported. Tubal occlusion was observed in all tubes in which the device had been placed. Inflammation and fibrosis was identified by histological assessment in tubes from 27 women. It is unclear how these 27 cases were chosen for histological diagnosis.

Bias may have been introduced at a number of levels. Women recruited had to be prepared to defer their hysterectomy following insertion. It is unclear if device insertion was performed by one or more clinicians. It was disappointing that women were not randomised to one method of anaesthesia or another, or even to receive no anaesthesia. No information was given with regard to patient tolerance to this procedure or to the HSG. This as may have implications for patient tolerance and acceptability of this new contraceptive device. Larger safety and efficacy studies are ongoing.

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Bone density and hormonal contraception revisited

Forearm bone density in long-term users of oral combined contraceptives and depot medroxyprogesterone acetate. Perrotti M, Bahamondes, L, Petta C, et al. *Fertil Steril* 2001; **76(3)**: 469–473.

This cross-sectional survey compared the bone mineral density (BMD) of women who had used the contraceptive injection of medroxyprogesterone acetate (DMPA) or combined oral contraceptives (COCs) for at least 2 years with women who had never used hormonal contraception.

Subjects were women aged 30–34 years, who were part of a study that has previously been reported. Readers are referred back to this original study for information about methodology and power calculations, which is frustrating. This previous study reported the BMD measurements of the DMPA users, but not those of the contraceptive pill users.

The researchers measured forearm BMD by single x-ray absorptiometry. Measurement of lumbar spine and neck of femur BMD by dual x-ray absorptiometry (DXA) is the 'gold standard' investigation for BMD, so comparison with other studies and assessment of clinical significance of this study is difficult. The authors acknowledge this in their discussion.

BMD was not measured at baseline, but was measured after at least 2 years of contraceptive use (the mean for COC use was 68 months and for DMPA it was 42 months). This difference in length of use may have affected the results. 'Controls' were age-matched women who had never used hormonal contraception.

There was no significant difference in forearm DXA BMD between the three groups studied. There was a trend toward lower BMD in the DMPA users but this was not statistically significant.

DMPA users were of higher parity and were heavier than COC users and controls. Greater weight, higher parity, and the performance of work outside the home were all associated with higher BMD. Sixty-three women were enrolled in each group; in the discussion section the authors estimate that 839 women in each group would have been required to find a statistically significant difference in BMD between DMPA users and non-users.

The acknowledged limitations of this survey, and the type of measurement used, make it difficult to generalise about the usefulness of the study, and to accept the assertions that there is no difference between BMD of DMPA and COC users after 2 years of hormonal contraception.

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The pill and risk of myocardial infarction

Oral contraceptives and the risk of myocardial infarction. Tanis B, Van den Bosch M, Kemmeren J, et al. *N Engl J Med* 2001; **345(23)**: 1787–1793

This was an interesting and informative paper adding information on the risk of myocardial infarction (MI) with combined oral contraceptive pills. It was a large retrospective population study carried out in The Netherlands. Cases were obtained by a search of hospital databases. Eligible women aged between 18 and 49 years, who had had an MI according to the international classification of disease codes (ICD-9) were identified. Control women were recruited from all areas in The Netherlands by a random digital dialling system to reduce bias. A total of 321 women with an MI and 925 controls were investigated further. Recall bias was reduced by the use of picture cards of a variety of contraceptive pills. Second-generation pills containing levonorgestrel and third-generation pills containing gestodene or desogestrel were included. Women who had used pills that contained 30 µg were included. Any differences in risk, therefore, were attributed to different progestogens. Confounding factors, such as age, blood pressure, diabetes, obesity and smoking, were all taken into consideration when logistic regression analysis was used to provide statistical analysis. The odds ratio (OR), with 95% confidence intervals (CI), were used to express the odds that a woman with an MI was exposed to a particular pill compared to the odds that a woman with MI was not exposed. Even when correcting for these confounding variables the results showed that the risk of MI among current users was twice that of non-users (OR 2, CI 1.5–2.2). This risk was increased at all ages, except 18–24-year-olds. The duration of pill use had little effect. Risks were very high for other risk factors, for example: smoking OR 13.6 (95% CI 7.7–23.4); hypertension 6.1 (95% CI 3.1–12.1); and obesity OR 5.1 (95% CI 2.7–9.6). Women with no conventional risk factors who used the pill had a relative risk of MI of 3.1 (95% CI 1.0–9.2). The adjusted OR for MI was 2.5 (95% CI 1.5–4.1) for women using second-generation pills when compared to non-users. The OR for MI was 1.3 (95% CI 0.7–2.5) from third-generation pills when compared to non-users, but this result was inconclusive. Among pill users, the OR was 2.1 (95% CI 1.5–3.0) for those without a pro-thrombotic defect compared to 1.9 (95% CI 0.6–5.5) for those with a mutation. Clinically, these findings are relevant, since this large population study has showed that the risk of MI is increased amongst women who use third-generation pills. Since absolute risk of MI is also age-related, the use of the pill will have greatest effect in women who continue to use the pill over the age of 35 years. However, other risk factors, such as smoking, have a greater risk.

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Oral contraception and cardio-vascular disease. Stampfer M. *New Engl J Med* 2001; **345**: 1841–1842.

This editorial points out that the results of the paper by Tanis et al. (see above review) are consistent with four of five previous studies. The editorial concludes that 'increasing evidence suggests that third-generation oral contraceptives are indeed safer than previous formulations in terms of risk of cardio-vascular disease', but also reminds readers that associated smoking is a far greater risk.

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Sex in the millenium

In December 2001, the *Lancet* published three reports on sexual behaviour, from the second UK National Survey of Sexual Attitudes and Lifestyles (NATSAL 2000). The three papers from this survey are critically appraised here. The study is described in detail on the NATSAL website (www.qb.soc.surrey.ac.uk/surveys/nssal/nssalintro.htm) where copies of the survey instruments can be downloaded. The investigators conducted a postcode-based probability sample survey of the UK population, with over-sampling in the Greater London area. The key differences between the NATSAL 1990 and 2000 studies included (1) the use of

computer-assisted self-interview (CASI), (2) additional questions related to STI acquisition and sexual mixing, and (3) the post-stratification weighting technique employed to adjust the sample to the general population. They used a mixture of face-to-face interview and CASI. Of 16 998 households identified with a resident between the ages of 16 and 44 years old, 11 161 respondents were interviewed (a crude response rate of 63.1%). The survey will have important implications for sexual health care providers.

Sexual behaviour in Britain: partnerships, practice and HIV risk behaviours. Johnson AM, et al. *Lancet* 2001; **358**: 1835–1842

Patterns of sexual behaviour are major determinants of sexual infections (STIs) and HIV. This paper discusses the NATSAL 2000 survey findings, for self-reported sexual behaviour, in 16–44-year-olds in the UK. From this the Department of Health (DoH) constructed the recently published estimates for HIV prevalence in the UK.

In the past 5 years, mean numbers of heterosexual partners were 3.8 (SD 8.2) for men and 2.4 (SD 4.6) for women; 2.6% of both men and women report same-sex experience. Since 1990, many HIV risk behaviours have increased, especially homosexual partnerships in the past 5 years (2.6% vs 1.5%) and heterosexual anal sex in the past year (12.3% vs 7.0%). Consistent condom use increased, but more people had had sex with two or more partners in the past year and not used condoms. Behaviours were widely variable by age, gender, relationship status and residence in or out of London.

This is a state-of-the art population survey, but there are some unavoidable methodological flaws:

- The sexual behaviour of non-responders (35%) who were absent from home and declined all follow-up may differ significantly from the interviewed sample.
- NATSAL 1990 relied on 'PAPI' (pen-and-paper self-completion). The investigators argue that CASI improved non-completion rates but did not affect actual reporting of sensitive behaviours, so that valid comparisons can be drawn between the data sets.
- Both NATSAL studies exclude people under 16 years and the homeless, giving us no information about these vulnerable groups.
- It is not clear from the *Lancet* paper whether some (but not all) non-English speaking potential participants were included (see website). The proportion from ethnic minorities was too small for reliable subgroup analysis (8.8%) which is a concern as some STIs are over-reported in some minority ethnic groups. Focussed studies of minority ethnic group sexual behaviour are underway.

These data are relevant and critically important for sexual health practitioners in the UK, and will find most use in fighting for adequate open-access sexual health services and informing public policy. Using the new estimates, over half of heterosexually acquired HIV remains undiagnosed. Sexual behaviours considered taboo in previous ages are now practised by a significant fraction of the population. The efficacy of CASI in obtaining sensitive information should also be explored for use in clinical settings.

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Sexual behaviour in Britain: early heterosexual experience. Wellings, et al. *Lancet* 2001; **358**: 1843–1850

This paper focuses on early sexual behaviour and its determinants. Until the mid-1990s there was a steady increase in the proportion of women reporting first intercourse under 16 years of age. Further study was required to identify whether or not this level has stabilised. This study has shown there was a statistically significant increase in the proportion of reported condom use at first intercourse. This was not found to be at the expense of other forms of contraception. In fact, combined oral contraceptive (COC) use remained around 25% at time of first intercourse. The absence of contraceptive use at first intercourse was found to be related to age, level of education, and to what the respondent's main source of sexual health information was. School sex education has now become the main source of information about sexual matters for young people. Those who stated that it was their main source of information were more likely to use contraception. Early age at first intercourse was significantly associated with pregnancy, but not with the occurrence of sexually transmitted infections (STIs). The authors recognise that the data used is based on self-reported behaviour and is therefore susceptible to bias, especially when dealing with recall of early sexual experiences. Overall the survey shows factors such as education and social services could have significant preventative intervention potential.

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Sexual behaviour in Britain: reported sexually transmitted infections and prevalent genital *Chlamydia trachomatis* infection. Fenton KA, et al. *Lancet* 2001; **358**: 1851–1854

This third paper is considered in the following review, in which the main findings are summarised and the potential impact on clinical and public health practice explored. The study had two main aims: first, to examine the cumulative incidence of reported sexually transmitted infections (STIs) and, second, to estimate the prevalence of undiagnosed *Chlamydia trachomatis* infection in the general UK population. The study used a rigorously designed stratified probability sampling method, with the aim of ensuring a sample that closely reflected the characteristics of the UK general population. Approximately half of the sample was asked to provide a urine sample for *C. trachomatis* testing.

A total of 11 161 individuals aged 16–44 years were recruited, with a response rate of 65.4%. The data indicated that 10.8% of men and 12.6% of women reported ever having an STI; 3.6% of men and 4.1% of women reported ever being diagnosed with genital warts; and 1.4% of men and 3.1% of women reported previously having had a chlamydia infection. In this population neither HIV nor hepatitis was reported as a previous STI diagnosis.

The study found that 76% of men and 57% of women ever diagnosed with an STI had been to a genitourinary medicine (GUM) clinic. Of the 3569 individuals who were tested, *C. trachomatis* was found in 2.2% (95% CI 1.5–3.2) of men and 1.5% of women (95% CI 1.11–2.14), with the highest prevalence rates in men aged 25–34 years and women aged 18–44 years. Non-married status, age, concurrent sexual relationships and a history of two or more sexual partners in the previous year were all independently associated with a positive test for *C. trachomatis*.

This survey (together with its companion studies within NATSAL 2000) provides a valuable source of population-based data on the epidemiology of STIs and associated health-seeking behaviour. More then 10% of the UK population is estimated to have acquired an STI at some point in their lives. GUM clinics are the main provider of sexual health care for men who have been diagnosed with an STI, but only about half of the women with a diagnosed STI in this study had attended a GUM clinic. This suggests gender-related differences in health-seeking behaviour and probably also, in part, differential testing of men and women in the community. This is a well-recognised phenomenon, partly encouraged by public health strategies (such as the Chief Medical Officer's report on genital chlamydia infection, 1998) which focuses on screening of women. Accurate and up-to-date sexual health education must therefore be available to all health care providers who are potentially diagnosing STIs.

The second important finding of this survey is the similar chlamydia prevalence rates observed in men and women, calling into question the current strategic emphasis on testing women. New technologies, including molecular amplification tests, provide the pathway for more imaginative ways of offering non-invasive chlamydia testing. Given the heterogeneity of the population affected by STIs, these should probably be based in a variety of true community settings, not just health care services. The potential health gain from attracting asymptomatic men and women from the general population for screening should be explored further. In this regard, it will be interesting to compare the results of this survey with those of the ongoing claSS project (further information available at www.Chlamydia.ac.uk), which is currently investigating chlamydia prevalence rates in 18 000 males and females of similar ages. Hopefully the findings can be used together to develop the most health and cost-effective screening programme.

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