

## ARTICLE

# Relationship of cervical ectopy to chlamydia infection in young women

Vincent Lee, Jean M Tobin, Elizabeth Foley

## Abstract

**Objective** Genital *Chlamydia trachomatis* infection is the most common bacterial sexually transmitted infection (STI) in the UK. Behaviours including multiple sex partners and inconsistent condom use, and biological factors such as cervical ectopy, may increase susceptibility to STIs. Cervical ectopy is thought to increase risk of chlamydia infection by exposing columnar epithelium to a potential infectious inoculum. This study aimed to determine whether chlamydia was more prevalent in young women with cervical ectopy.

**Methods** Clinical notes of women aged 16–24 years attending the Portsmouth Genitourinary Medicine Clinic for an STI screen during the period May–July 2003 were reviewed retrospectively. Information collected included the presence or absence of cervical ectopy, smoking habits, methods of contraception, number of sexual partners in the previous 3 months, and previous STIs. Chlamydia infection was diagnosed by using strand displacement amplification on cervical swabs.

**Results** A total of 231 women were included in the study. The mean age was 19.8 years. Evidence of cervical ectopy was found in 107 women. Chlamydial infection was detected in 37.4% (40/107) of those women with cervical ectopy and 21.8% (27/124) in those without cervical ectopy. This difference was statistically significant ( $p = 0.009$ ). The significance remained even when accounting for confounding variables.

**Conclusions** Cervical ectopy is a common physiological process in young women. Recognition of cervical ectopy should alert the clinician to the possibility of a genital chlamydia infection. Opportunistic screening for chlamydia in young people should be offered to reduce the prevalence of infection and its sequelae.

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### Key message points

- Genital *Chlamydia trachomatis* infection is the most common bacterial sexually transmitted infection in the UK.
- A diagnosis of chlamydia is more likely in young women with cervical ectopy.
- Opportunistic screening for chlamydia in young people should be offered to reduce the prevalence of infection and its sequelae.

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## Introduction

Genital *Chlamydia trachomatis* infection is the most common bacterial sexually transmitted infection (STI) in the UK. Previous studies<sup>1–4</sup> have reported highest rates in the under-25-year-old age group. Adolescent behavioural risks for STIs include multiple sex partners and inconsistent condom use. Biological factors that may increase susceptibility include cervical ectopy.

Cervical ectopy is a common physiological process that can occur in adolescence, during pregnancy and in response to hormonal contraceptive pills. Cervical ectopy is thought to increase risk of chlamydia infection by exposing columnar epithelium to a potential infectious inoculum. It has previously been suggested that cervical ectopy is a possible risk factor for chlamydial infection.<sup>5–13</sup>

The aim of the present study was to determine whether chlamydia was more prevalent in young women with cervical ectopy.

## Methods

Women aged 16–24 years attending the Portsmouth Genitourinary Medicine (GUM) Clinic for an STI screen during the period May–July 2003 were included in the study. All health care providers involved in the study were experienced in recognising cervical ectopy. The presence or absence of cervical ectopy was documented. The notes were reviewed retrospectively and the presence of cervical ectopy, smoking habits and methods of contraception were correlated with chlamydial infection. Chlamydia infection was diagnosed by using strand displacement amplification on cervical swabs.

**Table 1** Baseline characteristics of the 231 study participants

Characteristic	Cervical ectopy present	Cervical ectopy absent
Patients [n, (%)]	107 (46.3)	124 (53.7)
Age (years)		
Mean	20.1	19.9
Median	20	20
Range	16–24	16–24
Sexual partners in last 3 months (n)		
1	73	96
2	30	26
3	4	2
Previous STIs (n)		
None	102	105
Chlamydia	3	15
Gonorrhoea	0	1
Genital warts	1	4
Genital herpes	1	1
Smoking [n, (%)]	39 (36.4)	39 (31.4)
Previous pregnancy [n, (%)]	20 (18.7)	31 (25.0)
Contraception [n, (%)]		
None	10 (9.4)	11 (8.9)
OCP	75 (70.1)	76 (61.3)
Condom	9 (8.4)	17 (13.7)
DMPA	7 (6.5)	17 (13.7)
IUD	6 (5.6)	3 (2.4)
Chlamydia positive [n, (%)]	40 (37.4)	27 (21.8)

DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; OCP, oral contraceptive pill; STI, sexually transmitted infection.

**Table 2** Prevalence of chlamydial infection by demographic and sexual history in the 231 study participants

Characteristic	Total (n)	Chlamydia prevalence			OR (95% CI)
		n	%	p	
Age (years)					
16–18	64	19	29.7		
19–21	109	30	27.5		
22–24	58	18	31.0		
Partners in last 3 months (n)					
1	169	42	24.9		2.04 (1.05–3.94)
>1	62	25	40.3	0.027	
Previous STI					
None	207	60	29.0		
Chlamydia	17	4	23.5	0.63	
Smoking					
Yes	78	22	28.2	0.84	
No	153	45	29.4		
Previous pregnancy					
Yes	51	19	37.3		
No	180	48	26.7	0.14	
Cervical ectopy					
Yes	107	40	37.4	0.0009	2.14 (1.16–4.00)
No	124	27	21.8		
Contraception					
None	21	5	23.8		
Condom	26	10	38.5	0.74	
IUD	9	3	33.3		
OCP	151	41	27.2		
DMPA	24	8	33.3		

DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; OCP, oral contraceptive pill; OR, odds ratio; STI, sexually transmitted infection.

## Results

A total of 231 women were included in the study. The mean age was 19.8 years. Evidence of cervical ectopy was found in 107 women. Six were non-Caucasians. The baseline characteristics are shown in Table 1.

We evaluated the independent contribution of smoking, previous STIs and previous pregnancy. Previous studies<sup>5,7</sup> suggested that oral contraceptive pills might promote chlamydial infection of the cervix. The present study, however, showed no significant difference between different contraceptive methods (Table 2). There is a trend towards an increase in chlamydia diagnosis in women using condoms. As with previous studies,<sup>9,13–15</sup> chlamydial infection was more common in women with more sexual partners in the previous 3 months.

Chlamydial infection was detected in 37.4% (40/107) of those women with cervical ectopy and 21.8% (27/124) in those without cervical ectopy. This difference was statistically significant ( $p = 0.009$ ). The significance remained even when accounting for confounding variables. One patient was found to have concurrent gonorrhoea.

## Discussion

In 1998, the Department of Health in England funded a pilot opportunistic chlamydia screening programme in Wirral and Portsmouth. Prevalence of genital chlamydia infection diagnosed in GUM clinics was similar to those in other health care settings. Awareness of genital chlamydia infection and its consequences if left untreated were raised after the pilot study. In recent years, young women attend GUM clinics for sexual health screening because in most areas this is the main or only place where screening for all STIs is undertaken. With more widespread availability of screening, women presenting without symptoms have much the same rate of STIs wherever they are tested.

The present study shows that a diagnosis of chlamydia is more likely in young women with cervical ectopy. To assay for chlamydia we used a nucleic acid amplification technique test with higher sensitivity than the enzyme immunosorbent assay methods used previously.<sup>16</sup>

The relationship between oral contraceptive use and chlamydia has been debated. The present data show there is no increased risk of chlamydial infection in women taking the contraceptive pill. Although the oral contraceptive pill has been associated with the presence of cervical ectopy, there was no significant difference in the proportion of women with cervical ectopy with any contraceptive method in this study. Use of condoms is advocated to prevent the acquisition of STIs. It is surprising that in the present study more women using condoms as their contraceptive method had chlamydia infection. Adolescents frequently change or discontinue contraception, have variable compliance with any contraceptive method, and change the frequency of intercourse. We did not assess the consistency of condom use that may account for the results.

No previous studies have been done to determine whether chlamydial infection caused cervical ectopy. Both genital chlamydial infection and cervical ectopy are common in young women. We designed the present study to assess whether young women with an ectopy were more likely to have chlamydia, among other reasons as a potential aid to diagnosis by alerting clinicians to the possibility of infection.

In the present study, women with a previous pregnancy were found to have more genital chlamydia infection but less ectopy than those without a previous pregnancy. This finding is not statistically significant and may be due to demographic features such as being in a stable relationship with the father of the child. We did not design the study to examine the relationship between pregnancy and chlamydia; a further study would be needed to investigate this aspect.

In conclusion, cervical ectopy is a common physiological process in young women. Young people are at increased risk for chlamydial infection. Opportunistic screening for chlamydia in young people should be offered to reduce the prevalence of infection and its sequelae. Recognition of cervical ectopy should alert the clinician to the possibility of a genital chlamydia infection.

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