

# Ayre v Aylesbury cervical spatulas

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**SUMMARY** A single blind crossover study compared the traditional Ayre spatula with the new Aylesbury spatula. The study group consisted of all women attending the department of genitourinary medicine during a 16 month period.

The same incidence (3.6%) of dyskaryotic smears was found using the Ayre spatula (74/2077) as the Aylesbury spatula (72/2003). The incidence of smears with endocervical cells, however, was significantly greater using the Aylesbury (33.4%) than the Ayre (20.4%) spatulas, despite there being no difference in the incidence of smears with epithelial abnormalities. Quantitative studies thus showed that the Aylesbury gave no more accurate results than the Ayre spatula.

Recent reports have suggested that modifications to the design of the Ayre spatula traditionally used to collect cervical cytology specimens resulted in improved detection of dyskaryosis and improved cellular quality of smears.<sup>1,2</sup>

The new Aylesbury spatula has a protruding tip angled slightly from the main shaft of the spatula and has a broader knuckle than the Ayre spatula. These features enable wider contact with the endocervix when the spatula is rotated through 360°, and the Aylesbury spatula would therefore be expected to sample the transformation zone more effectively than the Ayre spatula.<sup>2,3</sup> We thought it important to compare the new and traditional design spatulas in the setting of a genitourinary medicine clinic because of the known high rates of cervical intraepithelial neoplasia and false negative cytology results in women attending these clinics.<sup>4</sup>

## Patients and methods

All women attending the department of genitourinary medicine of Leeds General Infirmary in a 16 month period and requiring a cervical cytology smear were included in the study, which used a single blind crossover design. Each spatula type was used by all the medical staff in the department and then exchanged with the other type of spatula at four monthly intervals until about equal numbers of smears had been taken with both spatulas. In all, 2077 smears were taken with the Ayre and 2003 with the Aylesbury spatulas. The cytology laboratory staff were not aware at any time

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Accepted for publication 13 February 1989

which spatula type was being used.

The criterion for evaluating smear performance was the success in detecting dyskaryosis (as shown by the characteristic nuclear abnormalities of hyperchromatism, disproportionate nuclear enlargement, and irregular distribution of chromatin) and wart virus infection (as indicated by the presence of koilocytes and dyskeratosis or parakeratosis). These definitions accorded closely with recently published guidelines on interpreting abnormal cervical cytology.<sup>5</sup>

An assessment of smear quality was based on the presence of endocervical cells and squamous metaplastic cells. An inadequate smear was defined as having excess inflammatory cells or erythrocytes or insufficient material for interpretation (a thin smear).<sup>6</sup>

## Results

Table 1 shows the numbers of women in each age group who had smears taken with each type of spatula; the overall age range was 15-52 and the mean age 23 years.

The incidences of epithelial abnormalities and inadequate smears are shown in table 2. Dyskaryotic

Table 1 *Ages of 4080 women from whom cervical cytology smears were taken with either Ayre or Aylesbury spatulas (figures are numbers (percentages) of women)*

Age (years)	Ayre (n = 2077)	Aylesbury (n = 2003)
<20	457 (22.0)	460 (23.0)
20-24	718 (34.6)	621 (31.0)
25-29	456 (22.0)	395 (19.7)
30-34	250 (12.0)	260 (13.0)
35-39	145 (7.0)	200 (10.0)
40-44	37 (1.8)	44 (2.2)
>45	14 (0.7)	23 (1.2)

Table 2 Performance (success in showing dyskaryosis or wart virus infection) of 4080 smears taken with Ayre or Aylesbury spatulas (figures are numbers (percentages) of smears)

	Ayre (n = 2077)	Aylesbury (n = 2003)	Difference
Dyskaryosis	74 (3.6)	72 (3.6)	NS
Dyskaryosis plus wart virus infection	92 (4.4)	94 (4.7)	NS
Inadequate	72 (3.5)	122 (6.1)	p < 0.001

smears were found in 74/2077 taken with the Ayre spatula compared with 72/2003 taken with the Aylesbury spatula, and dyskaryosis and wart virus infection in 92/2077 taken with the Ayre and in 94/2003 taken with the Aylesbury spatula, neither difference being significant. Significantly more inadequate smears were, however, taken with the Aylesbury spatula (122/2003, 6.1%) than with the Ayre spatula (72/2077, 3.5%) ( $\chi^2 = 14.9$ ; p < 0.001).

Table 3 shows that the Ayre spatula detected more severely dyskaryotic smears (16/92, 17.4%) than the Aylesbury (11/94, 11.7%). The converse was true for borderline dyskaryosis, with the Ayre spatula detecting 4/92 (4.4%) and the Aylesbury 6/94 (6.4%).

The reasons for producing inadequate smears are shown in table 4, which shows that the larger incidence of inadequate smears taken with the Aylesbury spatula was largely because more smears taken with the Aylesbury (54/122, 44.3%) than with the Ayre (18/72, 25%) contained pus or blood ( $\chi^2 = 7.2$ ; p < 0.01).

The number of smears containing either endocervical cells or squamous metaplastic cells is shown in table 5. Significantly more smears with

Table 3 Comparison of epithelial abnormalities in 186 smears showing dyskaryosis or wart virus infection (figures are numbers (percentages) of smears)

	Ayre (n = 92)	Aylesbury (n = 94)
Severe dyskaryosis	16 (17.4)	11 (11.7)
Moderate dyskaryosis	19 (20.7)	18 (19.2)
Mild dyskaryosis	35 (38.0)	37 (39.4)
Borderline	4 (4.4)	6 (6.4)
Wart virus infection	18 (19.6)	22 (23.4)

Table 4 Comparison of 194 inadequate smears (figures are numbers (percentages) of smears)

	Ayre (n = 72)	Aylesbury (n = 122)	Difference
Pus or blood cells	18 (25.0)	54 (44.3)	p < 0.01
Thin smear	54 (75.0)	68 (55.7)	p < 0.01

Table 5 Quality of 4080 smears taken with Ayre or Aylesbury spatulas (figures are numbers (percentages) of smears)

	Ayre (n = 2077)	Aylesbury (n = 2003)	Difference
Endocervical cells	423 (20.4)	669 (33.4)	p < 0.001
Squamous metaplasia	616 (29.7)	556 (27.8)	NS

endocervical cells were taken with the Aylesbury spatula than the Ayre ( $\chi^2 = 13.2$ ; p < 0.001), but the difference in smears containing squamous metaplastic cells was not significant.

## Discussion

Our results showed several important features regarding the Aylesbury spatula and the interpretation of cytology results in general.

Although, as expected, endocervical cells were found significantly more often with the Aylesbury spatula, this was not accompanied by an increased rate of epithelial abnormalities as there was no significant difference between the two spatulas in this respect. The poor correlation found between endocervical cells and dyskaryosis emphasised that endocervical cells are an unnecessary indication of a well taken smear.<sup>17</sup>

The larger number of smears that were inadequate taken with the Aylesbury spatula because of inflammatory or blood cells reflected the large proportion of women with lower genital tract inflammation and the ability of the modified spatula to retrieve these cells from the endocervix.

The similar incidence of epithelial abnormalities detected by the two spatulas in our study group may partly be explained by the fact that the ectocervical location and the epithelial composition of the transformation zone varies with age, hormonal status, and other factors such as semen prostaglandins.<sup>8</sup> In our genitourinary population patients tend to be younger and more likely to be taking oral contraception than women attending gynaecology clinics. In these women the transformation zone is located predominantly on the ectocervix and does not require sampling from the endocervical canal, which the Aylesbury is designed to perform.

We concluded that the Aylesbury was not superior to the Ayre spatula for taking cervical cytology smears from women attending a genitourinary medicine clinic, and we would therefore not advocate its routine use for screening women attending genitourinary medicine clinics.

## References

- Wolfendale MR, Howe-Guest R, Usherwood MMCD, Draper GJ. Controlled trial of a new cervical spatula. *Br Med J* 1987;294:33-5.
- Blenkinsopp WK, Jenkins JL. Cervical smears: choice of spatula is critical. *Lancet* 1986;ii:986.
- Hussain OAN. Which spatula for cervical cytology? *Lancet* 1986;ii:1226.
- Lacey CJN, Mulcahy FM, Sutton J. Prevalence of cervical human papillomavirus infection. *Lancet* 1986;i:558.
- Working party of the British society for clinical cytology. Terminology in gynaecological cytopathology. *J Clin Pathol* 1986;39:933-44.
- Hussain OAN, Butler EB, Evans DMD, Macgregor JE, Yule R. Quality control in cervical cytology. *J Clin Pathol* 1974;27:935-44.
- Kivlahan C, Ingram E. Papanicolaou smears without endocervical cells. Are they inadequate? *Acta Cytol (Baltimore)* 1986;30:258-60.
- Jordan JA, Singer A. *The cervix*. London: WB Saunders, 1976: 87-102.