Reprocessing bloodstained ThinPrep Papanicolaou cervical cytology samples using glacial acetic acid increases the satisfactory rate in previously unsatisfactory smears

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ThinPrep (TP) Papanicolaou (Pap) tests containing excessive red blood cells (RBCs) can usually result in an unsatisfactory report. Approximately 4% of unsatisfactory reports are due to the presence of excess RBCs, which interfere with sample processing by competing with epithelial cells for space on the TP filter membrane, causing the filter to become blocked. When this happens, fewer epithelial cells transfer to the slide, resulting in an unsatisfactory smear. A pre-process glacial acetic acid (GAA) wash lyses RBCs and could reduce the number of samples being reported as unsatisfactory.

Over a one-month period, a total of 30 TP slides were screened and reported as "unsatisfactory due to excessive blood". The criteria for reporting samples as unsatisfactory is based on the Bethesda 2001 guidelines,[1] which state an adequate TP sample should contain an estimated minimum of 5000 well-visualised, well-preserved squamous cells. Each slide was reprocessed using 30-mL GAA wash solution according to a standard protocol and each slide was rescreened.

From the 30 slides reprocessed using GAA, 24 (80%) were reported as "satisfactory for assessment" after treatment. These 24 pretreated samples included one sample that showed a high-grade squamous intraepithelial lesion (CIN3), where the original sample reported "too few abnormal cells to make a reliable assessment". Two samples showed bacterial vaginosis (BV) infection, both of which were not previously reported. Six (20%) samples remained "unsatisfactory for assessment" due to the presence of lubricant that interfered with the quality of the preparation.

Unsatisfactory Pap tests decrease the chances of detecting an abnormality, cause inconvenience to patients and add costs to the cervical cancer screening programme. By performing GAA pretreatment on samples containing excessive blood, it is estimated that the Irish screening programme can save an estimated €6000 a year on repeat smears.

The purpose of this small study was to achieve a decrease in the number of samples being reported as "unsatisfactory due to excessive blood", and results showed that an 80% reduction could be realised. In conclusion, using a GAA wash is a beneficial laboratory procedure for TP samples containing excessive blood and significantly improves the screening quality of such samples.

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Reference

1 Solomon D, Nayer R eds. *The Bethesda System for Reporting Cervical Cytology: Definitions, Criteria, and Explanatory Notes* 2nd edn. New York: Springer, 2004.

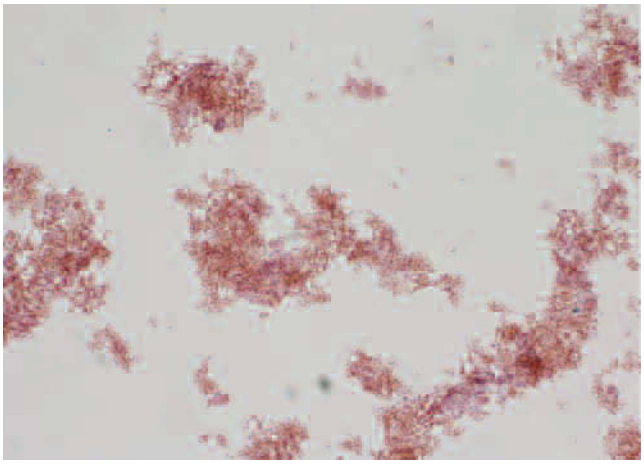

Fig 1. A ThinPrep sample showing 'ghost cells' before treatment with GAA (Papanicolaou stain, original magnification x40).

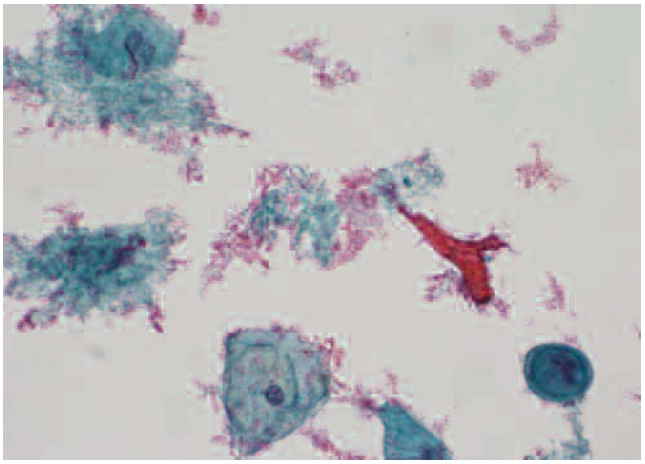

Fig 2. A ThinPrep sample showing a reduction in RBCs after treatment with GAA (Papanicolaou stain, original magnification x40).