



ECAV Practice Paper

Clinical considerations for speculum use in sexual assault medical forensic examinations: A trauma informed perspective

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Executive summary

The use of a vaginal speculum in a forensic medical examination following recent sexual assault has a number of potential advantages:

- A targeted posterior fornix sample can be obtained.
- A fourth sample – the endocervical sample – can be collected. The exact forensic value of this sample is not yet known.
- The vagina and cervix can be checked for injuries. This is particularly important when there is bleeding or ongoing pain but can be positive even in the absence of symptoms. Even when the baseline suspicion is low, a normal finding can still be reassuring to the patient.
- Trace evidence, such as hair or vegetation, can be sought and collected.
- Potential negatives include:
 - patient discomfort, both physical and emotional
 - the potential for retraumatisation of the patient, given the significant rates of childhood sexual abuse amongst women
 - negative impacts on the acceptability of future speculum examinations, if the examination is performed in a disrespectful or unskilled manner
 - concerns about DNA contamination from the equipment
 - concerns about DNA transfer when the speculum is inserted
 - uncertainty about whether lubricant use affects the detection of sperm or DNA
 - allegations from the defence that speculum insertion caused any injuries seen
 - allegations from the defence that the speculum insertion contaminated the sampling site
 - a requirement for examiners to be skilled in speculum use
 - the cost of the disposables, such as the speculum and lubricant.

The alternative to a speculum examination is a blind high vaginal swab. Potential negatives of a blind approach include:

- missing injuries
- having only three rather than four samples (the forensic significance of this is not known).

Overall, it would seem reasonable to offer all women and young people a speculum examination providing it can be done by a sensitive and skilled examiner. *However, the decision must remain the patient's choice and not all patients will accept this option.*

If the victim does not want a speculum examination or the clinician considers the woman to be too traumatised to have this examination, then a blind high vaginal swab should be offered as an alternative (which the woman may accept or refuse).

Consent for a speculum examination (or, indeed, any element of the forensic medical examination) can be withdrawn at any time and clinicians should be alert for signs of altered consent.

Background

The NSW Police Force *Guidelines for the collection of forensic specimens from complainants and suspects* recommends that “an endocervical swab be collected for the detection of body fluids if the endocervix is visible and it is possible to pass a swab and there has been vaginal intercourse (obtain even if condom purported to have been used) within 5 days”.

This recommendation has been present since the first release of the *Guidelines*, in August 2012.

It is an extension of previous practice, with the ECAV *Medical Management of Adult Sexual Assault* (2005) stating:

- “In assessing genital and anal injuries soon after a sexual assault, the insertion of a speculum or anoscope should be carefully considered. Although the use may increase the trauma of the examination for the victim they should be considered when: there is a medical indication, such as the need to identify the source of bright bleeding or the extent of an injury; to facilitate forensic specimen collection, especially 48 hours or more after the assault has occurred. Speculum/anoscope (and colposcope) use should be discussed with the person and specific consent obtained before being used.” (p20)

and

- “Endocervical swabs should be considered if penetration could have occurred and the victim is being seen 48 hours or more after the assault, an endocervical swab increases the likelihood of semen detection and could be utilised up to 7 days after assault.” (p50)

This paper looks at the research evidence behind the practice of speculum use in a forensic medical examination.

In general, this paper limits the discussion to recent studies (2010 onwards) and excludes results from colposcopic examinations. This was done to increase the likelihood of obtaining data from practices that resemble current Australian practice, both during the forensic medical examination and in the laboratory.

Do speculum samples increase the yield of DNA evidence?

NSW-specific data is not available.

A prospective study of 60 women undergoing a forensic examination after consensual sexual intercourse found that the posterior fornix was significantly better than the other sites for detection of spermatozoa.¹ A speculum examination allows targeted sampling of this region.

Does speculum use increase the risk of DNA contamination?

Although sterile, speculums and the contents of any sachets of lubricant or vials of water are not certified DNA free.

If a speculum was used and there was an unexplained DNA result, the possibility of contamination must be considered.

Potential sources of contamination include:

- contamination of the disposables, such as lubricant, during the manufacturing process
- incomplete cleaning of re-usable light sources or re-usable speculums
- inappropriate handling of the disposables.

It may also be possible to move DNA from the vulva to the vagina or cervix during speculum insertion. There are no in vivo studies but when a starch solution was applied to the labia of clean genital models and the vagina checked for starch after speculum insertion, contamination occurred in 100% of insertions.² However, contamination also occurred in 87% of cases of swab-only insertion. The significance of these findings in the real world are not known.

Do speculum samples increase the yield of non-DNA evidence DNA?

No published data exists.

There is anecdotal evidence that non-DNA evidence – such as foreign bodies – is sometimes found in women who have no current vaginal symptoms. This evidence would have been missed if a routine speculum examination had not been done.

Do speculum samples increase injury detection?

A number of papers have considered injury rates in patients in whom a speculum is used during the forensic medical examination and/or after consensual sex – the injury rates varied from 3 to 10% in complainants and 0 to 1.5% in controls.

Presumably these injuries would not have been detected had a speculum not been used.

¹ Astrup BS1, Thomsen JL, Lauritsen J et al. Detection of spermatozoa following consensual sexual intercourse. *Forensic Sci Int* 2012 10;221(1-3):137-41

² Loeve AJ, Bilo RAC, Emirdag E et al. In vitro validation of vaginal sampling in rape victims: the problem of Locard's principle. *Forensic Sci Med Pathol* 2013;9:154–62

Specifically:

- A prospective study of 41 women having a forensic examination after reporting a sexual assault to police and 81 women presenting for routine cervical screening or with sexual health concerns to a primary health care service found injuries to the vaginal wall or cervix in 4/41 (10%) of the non-consensual group and none of the consensual group.³
- In a prospective study of 98 women examined within 48 hours of consensual sexual intercourse, no lesions were seen in the vaginal wall or on the cervix.⁴
- A study of retrospective data from 500 complainants and prospective data from 68 women recruited at the time of their routine cervical smear test who had recently had sexual intercourse found injuries to the vaginal wall or cervix in 15/500 complainants (3%) and 1/68 of the controls (1.5%).⁵
- A retrospective review of 122 postmenopausal and 130 premenopausal women undergoing a forensic medical examination at a Sexual Assault Referral Centre found a total of 7/152 cervical injuries (4.6%) and no vaginal injuries; the majority of injuries were in the postmenopausal group.⁶

Could a speculum examination create injuries?

One small study examining 27 patients before and after speculum examination found only one new genital injury after insertion – a labial abrasion.⁷ The relevance of this finding to Australian practice is not known but is questionable: the study used toluidine blue and interpretation was done using digital photographs taken with a colposcope.

Could lubricant use adversely affect evidence yield?

No data on victims of sexual assault are available.

However, a prospective study of 60 women undergoing a forensic medical examination after consensual sexual intercourse found that the use of lubricants was inversely correlated with the number of spermatozoa to a borderline significant level ($p = 0.053$).⁸ The increased comfort from lubricant use⁹ must be weighed against this.

³ Lincoln C, Perera R, Jacobs A et al. Macroscopically detected female genital injury after consensual and non-consensual vaginal penetration: A prospective comparison study. *Journal of Forensic and Legal Medicine* 2013;20:884-901

⁴ Schmidt Astrup B, Ravn P et al, Nature, frequency and duration of genital lesions after consensual sexual intercourse—Implications for legal proceedings. *Forensic Science International* 2012;219:50–56

⁵ McLean I, Roberts SA, White C et al. Female genital injuries resulting from consensual and non-consensual vaginal intercourse. *Forensic Science International* 2011;204:27–33

⁶ Morgan L, Dill A, Welch J. Sexual assault of postmenopausal women: a retrospective review. *BJOG* 2011;118:832–843

⁷ Jones JS, Dunnuck C, Rossman L et al C. Significance of toluidine blue positive findings after speculum examination for sexual assault. *Am J Emerg Med* 2004;22(3):201-3

⁸ Astrup BS1, Thomsen JL, Lauritsen J et al. Detection of spermatozoa following consensual sexual intercourse. *Forensic Sci Int* 2012 10;221(1-3):137-41

⁹ Hill DA, Lamvu G. Effect of lubricating gel on patient comfort during vaginal speculum examination: a randomized controlled trial. *Obstetrics & Gynecology* 2012;119(2, Part 1):227–3

Are speculum examinations acceptable to patients?

No published data is available.

However, anecdotal evidence suggests that speculum examinations are generally acceptable to patients, especially women who have had previous Pap smears.

Could a speculum examination re-traumatise a patient?

A speculum examination can be upsetting during a forensic medical examination. For example, in one study an interviewee said, “She tried about three times [to insert a speculum], and I really didn’t want to do that at the time, ’cause I think I was reliving the whole experience and just wanted to put my clothes on after a while.”¹⁰

It is well known that women dislike speculum examinations. According to one literature review, common emotional reactions include embarrassment, feeling exposed, vulnerability, anxiety, humiliation, and powerlessness.¹¹ For example, one study of women visiting a private obstetrician/gynaecologist found that one in four were anxious during the pelvic examination.¹² Negative emotional contact with the examiner and young age are particular risk factors for discomfort during the gynaecological examinations.¹³

Furthermore, women who have experienced past sexual violence have more intensely negative feelings and report being more uncomfortable during almost every stage of a gynaecological examination when compared to controls^{14,15,16}.

The risks of a stressful speculum examination, according to retrospective studies, include poor compliance with future Pap smear screening¹⁷ and vaginismus¹⁸. In particular, because a negative first experience significantly affects future attitudes to speculum examinations,¹⁹ particular care should be taken with patients who have never had a speculum inserted in the past.

¹⁰ Du Mont J, White D, McGregor MJ. Investigating the medical forensic examination. *Social Science & Medicine* 2009;68:774–780

¹¹ Williams AA, Williams M. A Guide to performing pelvic speculum exams: a patient-centered approach to reducing iatrogenic effects. *Teaching and Learning in Medicine* 2013;25(4):383–91

¹² Reddy DM, Wasserman SA. Patient anxiety during gynecologic examination: behavioral indicators. *Journal of reproductive medicine* 1997; 42(10):631-6

¹³ Hilden M, Sidenius K, Langhoff-Roos J et al. Women's experiences of the gynecologic examination: factors associated with discomfort. *Acta Obstet Gynecol Scand* 2003;82(11):1030-6

¹⁴ Robohm JS, Buttenheim M. The gynecological care experience of adult survivors of childhood sexual abuse: a preliminary investigation. *Women & Health* Volume 1997 ;24(3):59-75

¹⁵ Weitlauf J, Finney JW, Ruzek JI et al. Distress and pain during pelvic examinations: effect of sexual violence. *Obstetrics & Gynecology* 2008;112(6):1343-50

¹⁶ Weitlauf JC, Frayne SM, Finney JW et al. Sexual violence, Posttraumatic Stress Disorder, and the Pelvic Examination: How Do Beliefs About the Safety, Necessity, and Utility of the Examination Influence Patient Experiences? *Journal Of Women’s Health* Volume 2010;19(7):1271-80

¹⁷ Oscarsson MG, Benzein EG, Wijma BE. Reasons for non-attendance at cervical screening as reported by non-attendees in Sweden. *J Psychosom Obstet Gynaecol* 2008;29(1):23-31

¹⁸ Pedersen BL, Mohl B. Vaginismus—Iatrogenic precipitation and maintenance. *Acta Obstetrica et Gynecologica Scandinavica* 1992;71:525–8

¹⁹ Wijma B, Gullberg M, Kjessler B. Attitudes towards pelvic examination in a random sample of Swedish women. *Acta Obstet Gynecol Scand* 1998;77(4):422-8

Identified indicators of anxiety during a speculum examination include covering or shutting the eyes, holding hands, putting hands on shoulders, holding onto the table, and using hands to cover the pelvis.²⁰

Key steps to reduce anxiety and discomfort include:

- explaining the purpose and steps of the examination, using a diagram or model if this is available
- describing what it can feel like
- reassuring the patient that she can stop it at any time.
- making eye contact and checking in regularly
- using relaxation techniques, such as breathing techniques
- inserting and withdrawing the speculum slowly, and stopping if there is pain.²¹

Conclusions

There are a number of unanswered questions about the value of – and the potential for problems to arise from – speculum examinations during a forensic medical examination.

It is certainly possible for a poorly performed examination to have negative effects on patients.

However, there are also a number of known positives and women should be able to choose what they want and do not want to do, after an appropriate discussion.

Consent can be withdrawn at any time and examiners must be alert for signs of altered consent.

²⁰ Reddy DM, Wasserman SA. Patient anxiety during gynecologic examination: behavioral indicators. *Journal of reproductive medicine* 1997; 42(10):631-6

²¹ Williams AA, Williams M. A guide to performing pelvic speculum exams: a patient-centered approach to reducing iatrogenic effects. *Teaching and Learning in Medicine* 2013;25(4):383–91