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Impact of medico-legal findings on charge filing in cases of rape in adult women

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Key words
Anogenital injury, clinical forensic medicine, legal outcome, medico-legal evidence, rape, sexual assault, trace evidence

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Abstract

Objective. To assess the impact of the medical documentation and biological trace evidence in rape cases on the legal process. *Design.* Retrospective descriptive study. *Setting and sample.* Police-reported cases of rape of women ≥16 years old in the Norwegian county of Sør-Trøndelag from January 1997 to June 2003. *Methods.* Police data were merged with data from the Sexual Assault Center at St Olav's Hospital. Charged and non-charged cases were compared. *Main Outcome Measures.* Medico-legal findings and legal outcome. *Results.* A total of 185 police-reported cases were identified. Of the 101 cases examined at Sexual Assault Center, charges were filed in 18 cases. Extragenital injuries were documented in 49 women; five were life threatening. Anogenital injuries were documented in 14 women; eight had multiple anogenital injuries. Documentation of injuries was not associated with charge filing. In only 33% of the cases were swabs collected from women's genitals used as trace evidence by the police. When used, this increased the likelihood for charge filing. A DNA profile matching the suspect was identified in four of the 18 charged cases and in only one among the 54 non-charged cases. *Conclusions.* Half of the women had one or more documented injury. Only one-third of the trace evidence kits collected from the women's anogenital area were analyzed. The analysis of swabs was associated with charge filing, regardless of test results. Increased use of such medical evidence, especially in cases of stranger rape, may ensure women's rights and increase available information to the legal system.

Introduction

Increasing numbers of women report rape to the police. From 1997 to 2009 the numbers of police-reported rapes increased from 396 to 998 in Norway (1). However, there is an international as well as a national concern that conviction rates are low (2–6). There has been considerable political attention to increase the quality of healthcare services (7). Specialized units for victims of rape have been established. In Sør-Trøndelag, a sexual assault center (SAC) was established in 1989 at St Olav's Hospital. The service is accessible for 24 hours, seven days a week, and offers emergency medical care provided by a gynecologist/pediatrician (for minors) and trained nurses. All injuries are systematically documented. Biological trace evidence is routinely collected by multiple swabs taken from women's genitals as well as from other areas of the body on which the assailant might have left traces such as semen, saliva, blood or epithelial cells. However, the gynecologist/pediatrician may not request the specimens to be analyzed, for instance, for the presence of sperm and DNA typing. The swabs are kept by the police, who then decide whether to request analysis by the Institute of Forensic Medicine in Oslo.

Little is known about the impact of injury documentation and results of trace evidence tests on the legal process (6,8). The aim of the study was to assess the impact on the legal process of the medical documentation and analysis of biological trace evidence in police-reported cases of rape.

Material and methods

All police-reported cases of rape and attempted rape of women (≥16 years of age) in Sør-Trøndelag, Norway between 1 January 1997 and 20 June 2003 were identified. Details of

the procedure are described elsewhere (9). Cases were selected based on codes according to the current Norwegian Penal Code (10). A person committing rape or attempted rape is defined as one who obtains sexual activity by means of violence or threats, or with any person who is unconscious or for any other reason incapable of resisting the act, or by means of violence or threats compels somebody to engage in sexual activity with another person, or to carry out similar acts with him- or herself. In addition to vaginal, anal and oral intercourse, touching of genitals, a man's exposed genitals being rubbed between a woman's thighs or buttocks or on her belly, masturbation, licking or sucking of genitals, or insertion of fingers or objects into the vagina or anus is defined as rape. Attempted rape is also punishable, but covered by another paragraph in the Norwegian Penal Code.

The following information was collected from police records: characteristics of the assault and assailant; analysis of trace evidence; and legal outcome. Legal outcome was classified according to the Norwegian Administration of Justice Act into the following four groups: charges filed; no suspect identified; charges not filed; and accusation unfounded. The last group includes cases in which the police concluded that no crime had been committed and cases in which the complaint was retracted.

If more than one assailant was reported, information regarding the most active of the assailants was recorded. The assailant was classified as mentally disordered or impaired if he was psychotic during the event, mentally retarded or considered at risk of repeating the offence. The relationship between woman and assailant was defined as partner (current or previous partner/husband/boyfriend), family member, acquaintance (assailant known >24 hours), casual acquaintance (assailant known <24 hours) or stranger (not previously known). Venues defined as private included the woman's, assailant's or other person's residence. Public venues included any public indoor or outdoor location or a vehicle. Physical violence was graded as severe (presence of weapon/attempted strangulation/fracture or internal injuries), light/moderate (holding/punch/kick) or none/verbal threats. If more than one category of violence was described, the answers were stated according to the above-mentioned order.

Penetrative assault included anal, vaginal or oral penetration. If more than one type of penetration was described, answers were ranked according to the above-mentioned order. Forced masturbation, attempted penetration, touching up/fondling and other sexual acts were classified as non-penetrative assaults. The sexual act was classified as unknown if the event had taken place while the woman was asleep, inebriated or unconscious.

Women's personal characteristics and objective findings were collected from the medical records and included age, education and occupational status, as well as psychosocial history. Reported alcohol consumption in relation to the assault was classified as no intake, intake of less than five units of alcohol and intake of five or more units of alcohol/heavily intoxicated; the last category included clinically intoxicated, with periods of amnesia and suspicion of being involuntarily drugged. Objective documentation upon SAC visit included emotional status and observed extragenital and anogenital injuries. Location, type and number of injuries were recorded. Extragenital injuries were classified as serious when evidence of attempted strangulation, head injury with concussion and stab/incision wounds were present, moderate when bruising of the head and neck could be expected to result in significant headache, lacerations requiring suture/dressing (11), bite marks and/or injection marks were present, and minor when erythema, swelling, bruises, abrasions, lacerations and/or suction marks were present. Cases with more than one type of injury were classified according to the most serious one. Anogenital injuries included tears, abrasions and bruises (ecchymoses/petechiae). Reported 'redness and/or swelling' was excluded. In the study period, gross visualization was the technique used for documentation of anogenital injuries.

The study was approved by the Regional Committee for Medical and Health Research Ethics. As the data set included police files, permission was also obtained from the Norwegian Director General of Public Prosecutions and the Advisory Board on Secrecy and Research. The merging of data was also approved by the Norwegian Data Inspectorate.

Statistical analysis

Variables were analyzed by descriptive statistics, and the relation between the outcome variable (charges filed) and the independent categorical variables was analyzed. Cases where no suspect was identified and cases classified by the police as accusation unfounded/complaint retracted were excluded. Data analysis was performed with SPSS version 16.0 (SPSS Inc., Chicago, IL, USA). We used for categorical variables Pearson's χ^2 test, Fisher's exact test or Pearson's χ^2 test of heterogeneity. Significance was assumed if $p<0.05$. Missing data were calculated, but excluded when statistical tests were performed. In some analyses, multivariable logistic regression was applied to adjust for time interval from assault to medical examination.

Results

A total number of 222 cases were identified in the police files. Male victims (n=8), minors (≤16 years of age, n=28) and unidentified victims (n=1) were excluded. For the remaining 185 women, information regarding 101 who had been medically examined at the SAC was also available from the healthcare system.

Table 1 shows women's age, assault- and assailant-related characteristics among all police-reported cases. Figure 1

Table 1. Assault- and assailant-related characteristics among all police-reported cases of rape and attempted rape, and by charge filing[a], in Sør-Trøndelag, Norway, between January 1997 and June 2003.

Characteristics	Total reported N=185	Charges filed N=134	
	n (%)	Yes n=30 n (%)	No n=104 n (%)
Woman's age			
16–17 years	48 (26)	7 (23)	24 (24)
18–24 years	80 (43)	12 (40)	45 (43)
25–34 years	32 (17)	5 (17)	18 (17)
≥35 years	25 (14)	6 (20)	16 (15)
Assault characteristics			
Woman–assailant relationship			
Partner	22 (12)	2 (7)	17 (16)
Family	2 (1)	1 (3)	1 (1)
Acquaintance	82 (44)	18 (60)	56 (54)
Casual acquaintance	32 (17)	3 (10)	18 (17)
Stranger	41 (22)	6 (20)	9 (9)
Missing	6 (3)	0	3 (3)
Venue			
Private	118 (64)	19 (63)	78 (75)
Public	64 (35)	11 (37)	24 (23)
Missing	3 (2)	0	2 (2)
Physical violence			
None/verbal	43 (23)	7 (23)	29 (28)
Light/moderate	109 (59)	19 (63)	55 (53)
Severe	14 (8)	1 (3)	10 (10)
Missing	19 (10)	3 (10)	10 (10)
Type of sexual assault			
Vaginal penetration	103 (56)	13 (43)	67 (64)
Anal penetration	8 (4)	0	6 (6)
Oral penetration	3 (2)	2 (7)	1 (1)
Other sexual acts	46 (25)	11 (37)	18 (17)
Missing	25 (14)	4 (13)	12 (12)
Assailant characteristics			
Age groups			
≤24 years	47 (25)	13 (43)	28 (27)
25–34 years	47 (25)	6 (20)	36 (35)
≥35 years	51 (28)	11 (37)	38 (37)
Missing	40 (22)	0	2 (2)
More than one assailant			
Yes	18 (10)	1 (3)	8 (8)
No	164 (89)	29 (97)	96 (92)
Missing	3 (2)	0	0
Assumed origin			
Norwegian	127 (69)	28 (93)	82 (79)
Non-Norwegian	33 (18)	2 (7)	21 (20)
Missing	25 (14)	0	1 (1)
Mentally disordered/impaired			
Yes	10 (5)	9 (30)	1 (1)
No	126 (68)	21 (70)	97 (93)
Missing	49 (27)	0	6 (6)
Assault-related alcohol consumption			
Yes	90 (49)	24 (80)	58 (56)
No	9 (5)	2 (7)	6 (6)
Missing	86 (47)	4 (13)	40 (39)

[a] Excluded cases with unknown assailant (n=37), unfounded/withdrawn cases (n=13) and missing outcome (n=1).

outlines the legal outcome. Cases classified as 'charges not filed' include those where evidence was considered insufficient (n=101), one case classified as time barred and two cases in which the suspect was considered not legally responsible at the time of the crime. In a total of 30 cases charges were filed; 22 suspects were convicted. All reported assailants were male. Interrogation of the assailant was conducted in 136 cases. The majority of assailants confirmed sexual contact (n=81), and four admitted assault. The assailant being mentally disordered or impaired was associated with charge filing (p=0.0001). One single assailant was reported in 164 cases, two in 13 cases, and three or more in an additional five cases. Physical violence was described by 123 women; 14 of them reported severe violence, of whom nine reported attempted strangulation and five described the presence of a weapon. Reporting attempted penetration or other types of sexual acts was significantly associated with charge filing (χ^2=5.7, p=0.017). However, neither having sustained physical violence nor the reporting of severe violence was associated with charge filing. Other characteristics in Table 1 were not significantly associated with charge filing in the total set of police cases.

Table 2 shows personal characteristics, documentation of injuries and results from trace evidence analysis among the 101 women medically examined at the SAC. Comparison of cases examined at the SAC in which charges were filed and not filed excluded 29 cases; 22 cases in which the assailant was unknown and seven cases assumed unfounded.

The number of extragenital injuries varied between none and 20 (median three); 15 had four or more injuries, while five women had 10 or more injuries. Most injuries were minor to moderate, but five women had sustained more serious injuries; four had signs of attempted strangulation, and one had been slashed by a knife. Injuries in the head/neck region were documented in 16 women, and at the trunk or extremities in 27. Among the latter, injuries on the ulnar side of a forearm were documented in two women, suggestive of self defense, while seven women were bruised on the inside of an upper thigh, probably from forced separation.

The documentation of any extragenital injury was not associated with charges being filed, even after adjusting for time interval from assault to medical examination.

Anogenital injuries ranged from none to 10 (median two); five were single site, four had two or three, while four had four or more anogenital injuries documented. Five injuries were located in the vestibulum, three in the posterior fourchette, three in the perianal area, two in the perineum, and one in each of the following areas: vagina, labia minora and labia majora. The most common type of anogenital injury was superficial tear/laceration (n=11); in three women abrasions were documented, and in one woman petechial hemorrhage. Among cases in which charges were filed, two of 18 had sustained more than one anogenital injury, compared with

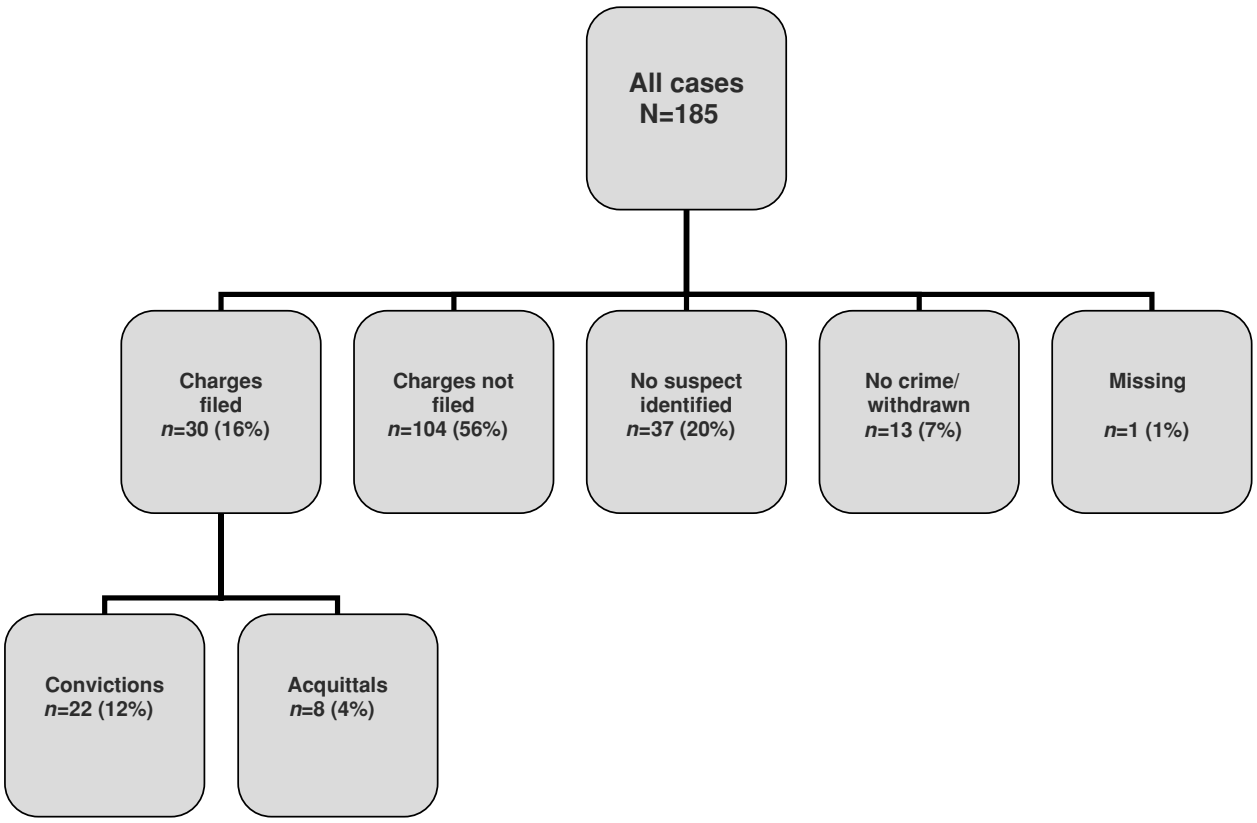

Figure 1. Legal outcome among all police-reported cases of rape and attempted rape in the Norwegian county of Sør-Trøndelag from January 1997 to June 2003.

five in the 54 non-charged cases. Restricting the analysis to those reporting anal/vaginal penetrative assault or adjusting for time interval from assault to medical examination did not change this pattern.

Swabs were collected from 90 women. In the 30 cases where trace evidence was analyzed, swabs had been collected from the anogenital area in 28 cases and from both anogenital and extragenital locations (skin or mouth) in eight women, and oral samples were analyzed from two women. Trace evidence analysis was associated with charge filing (χ^2=12.2, p=0.0001). In 26 of these cases the interval from assault to collection was ≤24 hours (χ^2=3.7, p=0.055; data not shown). Among the 72 SAC cases where an assailant was identified, the relationship between the assailant and the woman was known in 70. The trace evidence kits were analyzed in eight of 22 (36%) of the cases with casual acquaintance/stranger assailant, vs. 18 of 39 (46%) of the cases with partner/acquaintance assailant (χ^2=0.55, p=0.46). We found no differences in women's age or in self-reported penetration regarding trace evidence analysis.

Spermatozoa were identified in 14 swabs collected from the anogenital area and in one collected from the woman's umbilicus, and in one case spermatozoa were identified both in swabs collected from an anogenital site and from the umbilical area. Identification of spermatozoa was proportionally more common in cases where charges were filed; however, the difference was not statistically significant. Given a DNA profile matching the suspect, charges were filed in four cases, while in one case evidence of crime was considered insufficient.

Discussion

Most cases of rape did not lead to charge filing. Physical injuries were documented in a high proportion of women, but this was not associated with charges being filed. Police-requested analysis of swabs collected from the woman's body was associated with charge filing.

The strength of the study is the comprehensive data set based on both police files and medical records. Another strength is the long follow up, allowing for a final legal conclusion, as the legal process may take several years. Even though this study includes numerous cases collected over a long period, results regarding rare events may be hampered by type 2 statistical error, i.e. the inability to demonstrate significant associations where real differences exist. This is especially so

Table 2. Personal characteristics and medico-legal findings among 101 women who reported rape and attempted rape to the police and had undergone medical examination, and by charge filing[a], in Sør-Trøndelag, Norway between January 1997 and June 2003.

Characteristics	Total N=101	Charges filed N=72	
	n (%)	Yes n=18 n (%)	No n=54 n (%)
Interval between assault and medical examination			
≤24 hours	70 (69)	12 (67)	40 (74)
24–72 hours	18 (18)	0	11 (20)
>72 hours	11 (11)	5 (28)	2 (4)
Missing	2 (2)	1 (6)	1 (2)
Alcohol intake at event			
No intake	9 (9)	1 (6)	5 (9)
<5 units	24 (24)	5 (28)	13 (24)
≥5 units	44 (44)	8 (44)	24 (44)
Missing	24 (24)	4 (22)	12 (22)
Psychosocial factors			
No	52 (52)	9 (50)	28 (52)
Physical/mental disability	12 (12)	4 (22)	7 (13)
Prior or current psychiatric disorder	26 (26)	1 (6)	14 (26)
Prior assault history	10 (10)	3 (17)	5 (9)
Missing	1 (1)	1 (6)	0
Emotional state at examination			
Distressed (e.g. crying, shaking)	63 (62)	11 (61)	33 (61)
Calm, rational	16 (16)	4 (22)	9 (17)
Missing	22 (22)	3 (17)	12 (22)
Extragenital injuries			
None	41 (41)	5 (28)	24 (44)
Minor	39 (39)	8 (44)	18 (33)
Moderate	5 (5)	2 (11)	2 (4)
Serious	5 (5)	2 (11)	3 (6)
Missing	11 (11)	1 (6)	7 (13)
Four or more extragenital injuries			
Yes	15 (15)	3 (17)	7 (13)
No	67 (66)	13 (72)	36 (67)
Missing	19 (19)	2 (11)	11 (20)
Anogenital injuries			
Yes	14 (14)	2 (11)	9 (17)
No	78 (77)	13 (72)	40 (74)
Missing	9 (9)	3 (17)	5 (9)
More than one anogenital injury			
Yes	8 (8)	2 (11)	5 (9)
No	83 (82)	13 (72)	43 (80)
Missing	10 (10)	3 (17)	6 (11)
Trace evidence analyzed			
Yesb	30 (30)	12 (67)	14 (26)
No	59 (58)	3 (17)	34 (63)
Missingc	12 (12)	3 (17)	6 (11)
Spermatozoa detected			
Yes	16 (16)	7 (39)	7 (13)
No	13 (13)	5 (28)	6 (11)
Missing	72 (71)	6 (33)	41 (76)
DNA typing[b]			
Matching suspect	5 (5)	4 (22)	1 (2)
Unidentified male	4 (4)	0	3 (6)
Other	9 (9)	3 (17)	5 (9)
No typing/missing	83 (82)	11 (61)	45 (83)

[a] Excluded cases with unknown assailant (n=22) and unfounded cases (n=7).
[b] Swabs collected from the woman's body.
[c] Included cases where no trace evidence was collected (n=11).

for rare events, such as signs of attempted strangulation and multiple anogenital injuries. The design of the study does not allow us to look into other aspects of police and court work, which obviously may influence legal outcome in rape cases. Further discussion on limitations can be found elsewhere (9).

We have conducted an analysis of all police-reported cases, and in about half of the cases the victim had been medically examined at the SAC. Considerations on which complainants are sent for medical examination in police-reported rape cases have been described recently (9). Prosecution was more common in cases examined at the SAC, but not significantly so, suggesting that other investigative endeavors also might be rewarding.

Few studies worldwide have addressed the impact of medico-legal findings on legal outcome. In a review paper by Du Mont and White, 13 studies were identified, with the size of series varying from 72 to 888 (6), and three more studies have been published (3,12,13). The reviewed studies are mostly from the USA (six studies) and Canada (four studies). The three studies from the Nordic countries are older, representing a time when police reporting of rape was much less common (8,14,15). In the Norwegian study (8), which covered the period between 1989 and 1992, the conviction rate was much higher (48% compared with 12% in the present study). This is an indication that the pattern of police-reported rape changes, as more women nowadays file a formal complaint. The increase most likely reflects women's willingness to report and not the incidence of rape occurring in the population. The lower conviction rate in our present study may thus reflect an increase in police-reported cases that are more challenging to the legal system.

In most of the studies reviewed (6), no significant association was found between extragenital injuries and legal outcome in terms of charges being filed. Even fewer studies demonstrated any association between anogenital injuries and legal outcome. In the recent Danish study covering the five year period 1999–2004, extragenital injuries were documented in 78% of 216 women and anogenital injuries in 19%. No association with conviction was found (3). In one of the reviewed studies from San Diego, CA, USA (16), colposcopy was routinely used to identify anogenital injuries and a much higher proportion of such injuries was reported (any injury among 67% and multiple anogenital injuries in 36%) compared with that in our study (14% and 8%, respectively). Documentation of multiple anogenital injuries was significantly associated with charge filing in the San Diego study. Hence, an increased attention to techniques to identify minor injuries might increase the willingness of police to file charges. Documentation of multiple injuries is shown to be associated with non-consensual compared with consensual sexual activity (17,18).

Some authors argue that rape usually does not lead to genital injuries and that focus on increased use of technical

procedures such as colposcopy is therefore futile (19). Others strongly support techniques which will increase chances to identify all injuries (20). An interesting finding in the recent study from South Africa (12) is that documentation of anogenital injuries was not associated with charge filing and arrest of a suspect, but increased the likelihood for conviction in cases taken to court. Thus, information from the acute examination might be needed at various stages in the legal system. Omission of immediate meticulous injury documentation with optimal techniques such as colposcopy is a lost opportunity. Most anogenital injuries heal quickly without scarring and are unlikely to be visible at a later stage.

In our study only a third of the trace evidence kits collected upon examination of the women were sent for analysis, in contrast to a little more than half of the kits in other Nordic studies (3,21). In accordance with a Canadian study (11), we found that non-use of trace evidence preserved in the various swabs collected during the acute phase negatively influenced the progress of the case in the legal system. In the recent study from South Africa (12), 69% of collected trace evidence was sent for analysis, indicating a higher level of ambition, at least early in the police investigation, compared with what seems to be the case in our study. The decision by police not to use all available information before deciding not to proceed might be seen as a lack of quality and disregard of the woman's rights, as the collection of trace evidence from her body is not performed for healthcare reasons and may even hamper the healing process.

We do not have information on time aspects of the decision by police on whether to analyze the trace evidence kits or whether they chose to analyze more often in cases with a potential for prosecution, irrespective of forensic analysis. Another Norwegian study has shown that financial factors might also play a role (21).

In situations where the assailant admits sexual contact with the woman, the decision not to request analysis of biological samples may be plausible. However, in our study, when the assailant was a stranger, an even smaller proportion of the trace evidence kits collected from the women's body was analyzed compared with when the assailant was known. Even so, the observed association between the analysis of trace evidence and charge filing might be influenced by other and unknown confounders.

Conclusions

One or more physical injury was documented in half of the women in this series. The police decided to analyze only one-third of the trace evidence kits collected from the women's anogenital area. The analysis of swabs was associated with charge filing, regardless of test results. Increasing the utilization of this kind of medical evidence, especially in cases of stranger rape, may ensure women's rights and increase available information to the legal system.

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