

Article	Study Overview	Findings
<p><a href="#"><i>Use of toluidine blue for documentation of traumatic intercourse.</i></a> (1982) Lauber AA, Souma ML. Obstet Gynecol. Nov;60(5):644-8.</p>	<p>Forty four women were examined using toluidine blue dye, half of whom had had consensual sexual intercourse.</p>	<p>Only 1 of the 22 consensual sex patients had positive findings with toluidine blue dye, versus 40% of patients seen within 48 hours of sexual assault.</p>
<p><a href="#"><i>Investigation of microtrauma after sexual intercourse.</i></a> (1984) Norvell MK, Benrubi GI, Thompson RJ. J Reprod Med. Apr;29(4):269-71.</p>	<p>The study looked at whether a colposcope would help identify findings consistent with recent sexual intercourse. Eighteen participants were examined after 72 hours of abstinence, and then again 6 hours after sexual intercourse.</p>	<p>Sixty one percent of patients had identifiable trauma following consensual sexual intercourse, compared to 11% following abstinence.</p>
<p><a href="#"><i>Patterns of genital injury in female sexual assault victims.</i></a> (1997) Slaughter L, Brown CR, Crowley S, Peck R. Am J Obstet Gynecol. Mar;176(3):609-16.</p>	<p>Physical examinations were performed on 311 rape victims seen by San Luis Obispo County's Suspected Abuse Response Team between 1985 and 1993 and contemporaneously on 75 women after consensual sexual intercourse</p>	<p>Among 213 (68%) victims with genital trauma, 162 (76%) had approximately 3 mean sites of injury. Eight (11%) consenting women had just single-site trauma. Two hundred (94%) victims had trauma at one or more of four locations: posterior fourchette, labia minora, hymen, fossa navicularis. Trauma varied by site: tears on the posterior fourchette and fossa, abrasions on the labia, and bruising on the hymen. <b>(CAVEAT: methodology does not hold up under scrutiny in this study and has largely been discredited)</b></p>
<p><a href="#"><i>Variations in vaginal epithelial surface appearance determined by</i></a></p>	<p>107 women were examined 2-3 times over a 4-6 month period using a colposcopic. Exams were</p>	<p>In the 314 exams completed, the most common finding was petechiae. Actual lesions, defined primarily as tears, bruises or abrasions, occurred in only 3.5% of inspections, and were</p>

Note: all abstracts can be found at <http://www.ncbi.nlm.nih.gov/pubmed>

J. Markowitz: Consensual Sex Injury Research Grid

<p><a href="#"><u>colposcopic inspection in healthy, sexually active women.</u></a> (1999) Fraser IS, Lähteenmäki P, Elomaa K, Lacarra M, Mishell DR Jr, Alvarez F, Brache V, Weisberg E, Hickey M, Vallentine P, Nash HA. Hum Reprod. Aug;14(8):1974-8. (AVAILABLE FREE FULL-TEXT)</p>	<p>meant to identify changes to the vaginal and cervical appearance caused by sexual intercourse, tampon use, contraception, and smoking or environmental factors.</p>	<p>associated with sexual intercourse within the previous 24 hours or with tampon use.</p>
<p><a href="#"><u>Anogenital injuries in adolescents after consensual sexual intercourse.</u></a> (2003) Jones JS, Rossman L, Hartman M, Alexander CC. Acad Emerg Med. Dec;10(12):1378-83.</p>	<p>51 adolescent girls, 13-17, examined following reported consensual sex (49% for the 1<sup>st</sup> time); compared to control group of sexual assault patients</p>	<p>Comparison of documented anogenital trauma: 73% of participants after consensual sex vs. 85% of sexual assault patients; Consensual sex patients had injuries commonly involving hymen, fossa navicularis, and posterior fourchette. Nonconsensual sex patients had greater number of injuries involving the fossa navicularis, labia minora, and hymen. The most common type of injury in both groups was lacerations. Sexual assault patients had more anogenital abrasions, bruising, and edema</p>
<p><a href="#"><u>Genital findings of women after consensual and nonconsensual intercourse.</u></a> (2006) Anderson S, McClain N, Riviello RJ. J Forensic Nurs. Summer;2(2):59-65.</p>	<p>102 women examined after consensual sex vs. 56 following reported sexual assault</p>	<p>No statistical difference was noted in the presence of injury between the two groups. The subjects in the nonconsensual group were 8 times more likely to have two or more injuries as the consensual group. There was a statistically significant difference in the injuries to the labia minora: only those in the nonconsensual group had injuries identified in this location.</p>

<p><a href="#"><i>Changes in genital injury patterns over time in women after consensual intercourse.</i></a> (2008) Anderson SL, Parker BJ, Bourguignon CM. J Forensic Leg Med. Jul;15(5):306-11. (AVAILABLE FREE FULL-TEXT)</p>	<p>Women (n = 35) ages 18-39 had two “evidentiary type” pelvic examinations to document injuries after consensual intercourse. 49% reported digital penetration of the vagina in addition to penile penetration of the vagina</p>	<p>At Time 1 (within 48 h of consensual intercourse) there was a larger total surface area of injury, as well as a larger surface area of injury to the posterior fourchette; a larger surface area of abrasions; and a larger surface area of redness compared to Time 2 (24 h after Time 1).</p>
<p><a href="#"><i>Forensic sexual assault examination and genital injury: is skin color a source of health disparity?</i></a> (2008) Sommers, MS, Zink, TM, Fargo, JD, Baker, RB, Buschur, C, Shambry-Ebron, DZ, Fisher, BS. Am J Emerg Med, 26, 857-866. (AVAILABLE FREE FULL-TEXT)</p> <p><a href="#"><i>Health disparities in the forensic sexual assault examination related to skin color.</i></a> (2009) Sommers MS, Fargo JD, Baker RB, Fisher BS,</p>	<p>This study compared anogenital injury prevalence and frequency in women of different races following consensual sexual intercourse. One hundred twenty women (63 Black, 57 White) underwent a forensic sexual assault examination following consensual sexual intercourse. Visual inspection, colposcopy technique with digital imaging, and toluidine blue application were used to document the number, type, and location of anogenital injuries.</p>	<p>Fifty five percent of the participants had at least one anogenital injury following consensual intercourse. The percentages were significantly different between White (68%) participants and Black (43%) participants, but in looking at location, only for the external genitalia (White = 56%, Black = 24), not for the internal genitalia (White = 28%, Black = 19%) or anus (White = 9%, Black = 10). Dark skin color rather than race was a strong predictor for decreased injury prevalence.</p>

J. Markowitz: Consensual Sex Injury Research Grid

<p>Buschur C, Zink TM. J Forensic Nurs. 5(4):191-200.</p>		
<p><a href="#"><i>Comparison of methods for identifying ano-genital injury after consensual intercourse.</i></a> (2010) Zink T, Fargo JD, Baker RB, Buschur C, Fisher BS, Sommers MS. J Emerg Med. 2010 Jul;39(1):113-8. (AVAILABLE FREE FULL-TEXT)</p>	<p>Compared consensual intercourse-related ano-genital injury prevalence using 3 different forensic examination techniques: 1) direct visual inspection, 2) colposcopy, and 3) toluidine-blue contrast application. One hundred twenty women, 21 and older were examined following consensual sexual intercourse. The time between intercourse &amp; exam ranged between 1-23 hours.</p>	<p>Fifty five percent of consensual sex patients had injury. The use of toluidine-blue resulted in a significantly higher prevalence of tears and abrasions on the external genitalia than when either direct visualization or colposcopy was used. Direct visualization and use of the colposcope were more effective at identifying contusions and redness.</p>
<p><a href="#"><i>Female genital injuries resulting from consensual and non-consensual vaginal intercourse.</i></a> (2010) McLean I, Roberts SA, White C, Paul S. Forensic Sci Int. May 28. [Epub ahead of print]</p>	<p>Two cohorts were recruited: a retrospective cohort of 500 sexual assault patients and 68 women recruited at the time of their routine cervical smear test who had recently had sexual intercourse.</p>	<p>Almost 23% of sexual assault patients sustained an injury to the genitalia, visible within 48 hours of the incident. This was 3 times more than the 5.9% of women who sustained a genital injury during consensual sex.</p>
<p><a href="#"><i>Vaginal lacerations from consensual intercourse in adolescents.</i></a> Frioux SM, Blinman</p>	<p>Described lacerations of the vaginal fornices, an injury known to be associated with consensual sexual intercourse in 4 adolescent</p>	<p>Lacerations of the upper vagina are not frequently reported in forced vaginal intercourse, but are occasionally reported as injuries sustained during consensual coitus. In the absence of reported sexual assault, a severe vaginal fornix laceration is</p>

J. Markowitz: Consensual Sex Injury Research Grid

<p>T, Christian CW. Child Abuse Negl. 2011 Jan;35(1):69-73</p>	<p>patients during a 6 month period, and contrasted these injuries with injuries sustained during sexual assault.</p>	<p>consistent with the diagnosis of coital injury from consensual intercourse.</p>
<p><a href="#"><u>Nature, frequency and duration of genital lesions after consensual sexual intercourse-Implications for legal proceedings.</u></a> Astrup BS, Ravn P, Lauritsen J, Thomsen JL. Forensic Sci Int. 2011 Dec 20. [Epub ahead of print]</p>	<p>Described the nature and duration of genital lesions sustained during consensual intercourse. Ninety eight women were examined within 48 hours; 50 were examined an additional 2 times within the following 7 days.</p>	<p>34% had lesions when examined with the naked eye; 49% when examined with a colposcope; and 52% when examined with toluidine blue dye. "The lesions lasted for several days; the median survival times for lacerations were 24, 40 and 80h, respectively."</p>
<p><a href="#"><u>A pilot study to test the differential validity of a genital injury severity scale, in development for use in forensic sexual assault examinations.</u></a> Larkin HJ, Cosby CD, Kelly D, Paolinetti, LA. J Forensic Nurs 2012 March; 8: 30-38</p>	<p>Pilot study tested a genital injury severity scale. Exams were conducted on a sample of patients presenting following consensual sex and reported sexual assault.</p>	<p>"...There is a significant difference in the prevalence of Class A (less severe) and Class B injuries (more severe) between the [Sexual Assault and the Consensual Intercourse] groups (SA: Class A 60%/Class B 40%; CI: Class A 90%/Class B 10% (p= 0.0001)). This initial validation study shows effectiveness in using magnification and [toluidine blue dye], combined with a standardized injury severity scale, in describing external genital injury in women after sexual intercourse."</p>
<p>Patterned genital injury in cases of rape - A case-control study. Astrup BS, Ravn P, Thomsen JL, Lauritsen J. J Forensic Leg Med. 2013 Jul;20(5):525-9.</p>	<p>Prospective, case controlled study of female genital lesions after vaginal penetration. Lesions (specifically, lacerations, contusions/hematomas and abrasions) were compared between 39 women reporting</p>	<p>"The overall frequency of having one or more lesion of any kind was strikingly similar between groups, but cases had more complex findings with a higher frequency of abrasions, haematomas. and multiple lesions compared to controls. However, differences were only significant using the naked eye or colposcopy, whereas results using toluidine blue dye did not reach significance. Cases had a higher frequency of lesions in</p>

J. Markowitz: Consensual Sex Injury Research Grid

	sexual assault and 98 women who had had consensual vaginal intercourse.	locations other than the 6 o'clock position, significant when using colposcopy and toluidine blue dye.”
--	---	---