

# From Intimate Exams to Ritual Nicking: Interpreting Nonconsensual Medicalized Genital Procedures as Sexual Boundary Violations

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#### Abstract

**Purpose of Review** This review seeks to integrate scholarly discussions of nonconsensual medicalized genital procedures, combining insights from the literature on obstetric violence with critiques based on children's rights. In both literatures, it is increasingly argued that such interventions may constitute, or be experienced as, violations of patients' sexual boundaries, even if performed without sexual intent.

Recent Findings Within the literature on obstetric violence, it is often argued that clinicians who perform unconsented pelvic exams (i.e., for teaching purposes on anesthetized patients), or unconsented episiotomies during birth and labor, thereby violate patients' bodily integrity rights. Noting the intimate nature of the body parts involved and the lack of consent by the affected individual, authors increasingly characterize such procedures, more specifically, as sexual boundary violations or even "medical sexual assault." Separately, critics have raised analogous concerns about medically unnecessary, nonconsensual genital cutting or surgery (e.g., in prepubescent minors), such as ritual "nicking" of the vulva for religious purposes, intersex genital "normalization" surgeries, and newborn penile circumcision. Across literatures, critics contend that the fundamental wrong of such procedures is not (only) the risk of physical or emotional harm they may cause, nor (beliefs about) the good or bad intentions of those performing or requesting them. Rather, it is claimed, it is wrong as a matter of principle for clinicians to engage—to any extent—with patients' genital or sexual anatomy without their consent outside of certain limited exceptions (e.g., is not possible to obtain the person's consent without exposing them to a significant risk of serious harm, where this harm, in turn, cannot feasibly be prevented or resolved by any less risky or invasive means).

**Summary** An emerging consensus among scholars of obstetric violence and of children's rights is that it is unethical for clinicians to perform any medically unnecessary genital procedures, from physical examination to cutting or surgery, without the explicit consent of the affected person. "Presumed" consent, "implied" consent, and "proxy" consent are thus argued to be insufficient.

Keywords Pelvic exams · Episiotomy · Ritual nicking · Intersex surgeries · Circumcision · Consent

# Introduction

This review brings together two distinct strands of research in medical and sexual ethics that have largely been developing in parallel. One is from the literature on obstetric

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violence, the other from the literature on children's rights. Both literatures seek to show how certain wrongful/harmful practices may become so embedded within institutions or power structures, including medicine, that they may come to be seen as "normal" or "inevitable"—not only to those who engage in the practices but also sometimes to those who are wronged or harmed [1–3]. What unites the practices considered in this review is that they all involve interventions into the genital or sexual anatomy of individuals who are undergoing medical care. The focus is on situations in which the explicit consent of the individual *could* be obtained (i.e., without placing them at a significant risk of serious harm), but where it is nevertheless not obtained. In these situations, clinicians may believe that the individual's



consent is "implicit," can be "presumed," or is obtainable by "proxy," whereas critics argue that these assumptions are unjustifiable.

The first strand of research concerns unconsented socalled intimate exams: namely, pelvic or prostate exams conducted without prior permission (e.g., on anesthetized patients), typically for teaching or training purposes [4]. Critics argue that these exams, being both nontherapeutic<sup>1</sup> and nonconsensual, violate patients' bodily integrity rights irrespective of the level of physical or emotional harm they may cause, whether on average or in a specific individual.<sup>2</sup> Given that, compared to various other parts of the body, people have an especially weighty interest in determining for themselves whether or how others may engage with their genital or sexual anatomy (see Box 1), some authors go further to argue that these exams—in failing to respect that weighty interest—should be viewed as "medical sexual assault" [10•, 11, 12•]. Similar arguments about the importance of obtaining explicit consent for procedures involving a patient's sexual anatomy, unless doing so would expose the individual to a significant risk of serious harm (e.g., due to a medical emergency; call these exceptional procedures "medically necessary"), have recently been made in relation to episiotomies performed during birth and labor [13, 14•, 15].

The second strand of research concerns medically unnecessary genital cutting or surgery in persons considered too young to consent, primarily prepubescent minors (hereafter, "children"). Examples include ritual "nicking" of a child's vulva for religious reasons, intersex infant "normalization" surgeries, and nontherapeutic newborn penile circumcision. These types of procedures should be contrasted with genital cutting or surgery performed after puberty—at the individual's own request—as such procedures fall outside the scope of this review.

In the case of minor children, it is commonly argued that parents may give "proxy" consent for interventions into the child's body which they judge to be in the child's best interests. However, even among those who accept this view, it is widely acknowledged that there are, or must be, certain limits to the sorts of procedures that clinicians—qua clinicians—can ethically or even legally offer to perform on children's bodies, especially on their genitalia, notwithstanding parental requests or permission [16]. For example, it is generally agreed that clinicians may not permissibly

<sup>&</sup>lt;sup>2</sup> On the nature and 'scope' of the moral right to bodily integrity, see Earp et al. [7], Tesink et al. [8], Alderson [9].



perform "cosmetic" labiaplasties on children who are incapable of consenting [17]; nor may they apply decorative genital piercings to children's penises or vulvas, even if this were demanded by the child's parents [18]. It might be thought that such practices are condemnable insofar as they lack "health benefits" [but see [19]] or are unacceptably risky. However, increasingly, it is argued that—as with pelvic exams on anesthetized patients—it is *categorically* wrong<sup>3</sup> for a clinician to touch, much less apply surgical instruments to, the genitals of a patient who lacks consent capacity unless doing so is *medically necessary* [20•, 21, 22, 23•].

Among other, more immediate worries, such as pain or the risk of surgical complications, critics of medically unnecessary child genital procedures contend that these procedures necessarily contravene the child's (future) boundary-setting rights over their own sexual anatomy. In other words, they allege that the procedures violate one's right to sexual autonomy, 4 which includes the right to refuse potentially unwanted genital contact or modification, before one is capable of exercising that right (i.e., the right is violated preemptively or in advance) [for discussion, see [26]]. Thus, like the first strand of research focused primarily on obstetric procedures, this strand, focused on children's bodies, emphasizes the central role of informed personal consent, rather than third-party judgments of harm or benefit, in grounding the ethics of medicalized genital procedures. In either case, if someone is temporarily *unable* to consent to a medically unnecessary genital procedure—whether as an anesthetized adult or a prepubescent child—it is argued that clinicians must wait until it becomes possible to obtain the person's consent before proceeding with the intervention even if it could reasonably be judged to be beneficial.

## **Intimate Exams and Episiotomies**

Consider unconsented 'intimate' exams (see Box 1 regarding this terminology). As noted, these are nontherapeutic pelvic or prostate exams performed on patients who are sedated or under general anesthesia, primarily for educational or training purposes, but without their explicit prior consent [27–29, 30•, 31, 32]. In response to growing outcry about this practice, at least 19 US states have passed statutes as of 2022 to clarify that such unconsented intimate exams are not only unethical, but unlawful [32–34]. According to the bioethicist

Note: it is a basic tenet of Western medical ethics that even *therapeutic* procedures cannot ethically be performed on patients who are able to consent but who decline to do so [5]. This is true regarding any type of medical care (whether involving the pelvic region or anywhere else) and applies even when the patients' decisions contradict their physicians' recommendations [for a recent discussion, see Earp et al. [6]].

<sup>&</sup>lt;sup>3</sup> That is, wrong as a matter of principle within the relevant ethicolegal context.

<sup>&</sup>lt;sup>4</sup> This right is often considered to be even more important, or worthy of respect, than one's overall right to bodily autonomy. For a recent philosophical discussion, see Kianpour [24]. For a classic article, see Archard [25].

and legal scholar Dena Davis, even apart from such statutes, such behavior "constitutes the tort of battery":

Battery is defined as harmful or offensive contact. These pelvic exams clearly constitute offensive contact. [Physicians] might claim [they] could not have known that the person would regard it as offensive, but that defense will not wash ... if the medical faculty assumed that most patients would consent, they would just ask; the resistance to asking permission suggests that they know that at least some patients would refuse. [27] (p. 193)

The implied argument, then, is that patients have a *right* to refuse such contact. This, in turn, entails that they must where possible (e.g., without putting their lives at risk) be given a meaningful opportunity to do so. Those who, by contrast, believe it is unnecessary to create the conditions for such refusal may contend that the exams in question are "low risk" procedures, while also stressing that they are done without sexual intent for the benefit of medical students and thus, ultimately, future patients [27]. However, critics respond that these claims, even if true, are unpersuasive. Even if the exams were for the patient's own benefit, rather than that of medical students or others, they would still have a right of refusal.

The reason for this is that the primary ethical—and also legal—criterion for permissibly intervening into another person's sexual anatomy (whether or not that person is currently occupying a patient role) is neither a clinician's assessment of how "risky" the intervention is, nor whether they take themselves to have good intentions, but rather, the person's own consent [28]. This consent cannot simply be presumed. As the journalist Misha Valencia writes, "The very act of penetrating someone's genitals without their permission or knowledge, absent a medical emergency, is [not only unethical but] criminal. We shouldn't redefine, accept, or minimize this behavior just because it's being done by a medical professional. Actually, just the opposite: We should expect medical providers to adhere to a higher standard" [29] (p. 3).

Comparable arguments have been made about unconsented procedures during hospital births, such as episiotomies, <sup>5</sup> as highlighted in recent work by Marit van der Pijl and colleagues [14] [see [36–43] for comments and replies]. As evidenced by patient testimony, many women experience episiotomies—when done without their explicit consent—as intrusive, unwelcome, and even, in some cases, as a personal violation akin to sexual assault [13]. The latter

interpretation coheres with the aforementioned legal and ethical assumption that, with few exceptions, people ought to have the chance to give *or withhold* their consent to others' engagement with their bodies, particularly when it comes their genital or sexual anatomy—among other bodily features (e.g., breasts or anus) that are widely considered to be especially intimate or private (see Box 1).

# Box 1. Why are some body parts but not others considered "intimate"? Adapted from [37].

As philosopher Talia Mae Bettcher argues, there is a reason that grabbing someone's genitals (or breasts, etc.) without their consent, versus grabbing their hand without their consent, is usually a more serious wrong. There is a distinctive sort of violation involved in the former that is not involved in the latter. This violation has to do with the relationship between *selective*, *voluntary* exposure of our genitals (etc.) under certain conditions—i.e., based on a personal decision to "open ourselves up" to others' engagement with those normally hidden body parts—and the very possibility of certain kinds of human intimacy [44•].

As Bettcher acknowledges, when clinicians gain intimate access to our bodies for medical purposes, "the pursuit of intimacy is not the aim." Rather, "health is, and the traversal of sensory boundaries may be *necessary* for medical purposes" [44•] (p. 6, emphasis added). If it is not necessary, however—and we have also not consented—the background conditions for appropriate traversal have not been met. Our boundaries have been violated. Which is to say, the very boundaries that make certain forms of intimacy possible in our lives, including sexual intimacy with chosen romantic partners, may be degraded by such unconsented traversals.

Patients generally agree on the social significance of genitals, as distinct from other parts of the body. Pelvic exams are often considered by patients to be "particularly threatening" and sometimes perceived as fearful, anxiety-provoking, embarrassing, humiliating, or disempowering. Prostate exams are often viewed similarly, with patients sometimes experiencing shame and mistrust. And yet, there is no known literature about patients' similar feelings for, say, an eye or shoulder exam [4].

This is not to suggest that what is considered intimate or private about the body is the same for every person in every situation. Even what it means to give valid consent in a medical setting may be subject to sociocultural variation. Understandings of what is medically "necessary" may also differ [45]. But there are some widely shared background norms within Western medicine as it is currently practiced in liberal democracies of the Global North, such as England or the United States [46]. That is the assumed context of this review. Yet insofar as similar notions of consent, bodily integrity, and sexual intimacy do carry normative force beyond this context, the arguments reviewed herein may have wider purchase.

As van der Pijl and colleagues note in their article about episiotomies, the social significance of the genitals as intimate anatomy in many cultures "leaves a very small margin for error because invasion of these body parts without consent is an, unfortunately, relatively widespread and well-known social phenomenon with a specific degrading, humiliating and dehumanizing meaning." Sadly, as we will illustrate in later section, "[t]he medical setting cannot fully escape this connotation" [14] (p. 614).



<sup>&</sup>lt;sup>5</sup> Incisions into the perineum to widen the vaginal opening. Other procedures related to birth and labor that have recently been argued to require explicit consent include "amniotomy, operative vaginal delivery, placement of fetal scalp electrodes or intrauterine pressure catheters, and cervical examination" [35] [p. 628].

Making a similar point about unconsented pelvic exams more than 20 years ago, Dena Davis argued that "medical practice cannot abstract itself from the culture in which it operates; thus we have the persistent preference of many patients for female gynecologists, the practice of requiring chaperones when male doctors perform pelvic exams even on conscious patients, and other ways in which the medical establishment acknowledges the special status and concerns that attach to the reproductive parts of our bodies." After noting that these parts are sometimes colloquially referred to as "our privates," Davis writes: "Our community expresses that heightened concern by surrounding offensive touching of one's reproductive parts with heightened protection and heightened penalties for infractions" [27] (p. 194).

Of course—in the overwhelming majority of cases—clinicians who perform episiotomies, pelvic exams, or other genital procedures on patients without their express permission, do not *intend* to degrade or humiliate their them, much less treat them in a dehumanizing manner. However, as we will discuss, the "meaning" of one person's nonconsensual involvement in another's sexual anatomy is not solely, or even primarily, determined by the intentions of the actor. Rather, it is up to the recipient of such behavior to decide about its meaning in relation to their own embodiment and sexual boundaries.

## From Adults to Children

The preceding arguments do not only apply to procedures, such as episiotomies or educational pelvic exams, that are primarily carried out on adults. Young people, too, may be exposed to unwanted or unwarranted touching of their sexual anatomy both within and outside of a medical context [47]. The unnecessary pelvic exams performed by disgraced former sports medicine physician Larry Nassar, discussed below, are a particularly striking example of this. However, other medically unnecessary procedures affecting children's sexual anatomy continue to be performed by clinicians—often without the child's consent or agreement—despite typically being much more intrusive than "mere" genital touching or examination.

A key example is genital cutting or surgery. In some cases, such an act may be medically necessary in the sense that it must be performed without delay to prevent a serious harm to the child [48]. In such a high-stakes, time-sensitive situation, it may not be possible to delay the procedure until the child can consent or assent on their own behalf. Instead, doctors may need to rely on the "proxy" consent of the child's parents or guardians. Such emergency procedures are generally uncontroversial.

In other cases, however, clinicians may, at the request or with the agreement—of parents or guardians, choose to perform a medically *unnecessary* genital procedure on a child, not to prevent a serious and imminent physical harm, but for largely sociocultural reasons [49]. When this is done on a *non-voluntary* basis, that is, without, at minimum, the well-informed and uncoerced agreement of the child, distinctive ethical concerns are raised. As noted, such procedures may include medicalized "nicking" or "pricking" of the vulva (i.e., to draw a drop of blood for ceremonial purposes, also sometimes proposed as a compromise to avoid more invasive cutting) [50–52], infant intersex "normalization" surgeries [53••, 54, 55], or newborn penile circumcision [56–58].

Traditionally, supporters of these practices have argued that they are, or may be, in the best interests of the child (e.g., by conferring probabilistic health advantages, such as a moderately reduced risk of potential future infections), or at least that they are not so harmful, if performed relatively safely by a qualified practitioner, to justify refusing parental requests for them [59–64]. In response, opponents of the practices have often tried to show that they are, or may be, more physically or emotionally harmful than had previously been assumed [e.g., [65–68], with both sides appealing to various empirical studies or testimonials to bolster their respective positions. Either way, an assumption has been that the measurable *consequences* of these practices are what determines their moral status. However, within the literature on medicalized child genital cutting practices in the Global North [69], another argument is gaining traction that more closely parallels the rights-based reasoning of opponents of unconsented pelvic exams or episiotomies.

As mentioned, this reasoning puts less weight on thirdparty judgments of how harmless or beneficial a proposed genital procedure (i.e., on someone else) will be, and more weight on the ability of the individual concerned to make their own decision—including with respect to what counts as a relevant harm or benefit in the first place, and/or how much weight to place on each given one's preferences and values. Thus, the view holds that it is always, as a default, wrong for a clinician to interfere with a patient's sexual anatomy without their own consent. If someone is unable to consent due to a temporary lack of decision-making capacity, such as an unconscious adult or an infant child, clinicians must, according to this view, therefore wait until the person (re) gains capacity before proceeding with the intervention. This ensures that the person has a chance to exercise their aforementioned right of refusal: namely, their right to refuse any unnecessary or unwanted contact with their so-called intimate anatomy (see Box 1).

If, by contrast, a clinician acts before the person is in a position to refuse, for example, by performing a medically unnecessary genital procedure on them while they are unconscious or underage, their right of refusal is violated in advance. What is done cannot be undone. Thus, it is only



when a nonconsensual genital procedure must be performed immediately (i.e., while the person lacks capacity) to prevent a sufficiently serious harm to them<sup>6</sup> that it becomes even potentially permissible according this view [e.g., [20]].

# **Resisting a Sexual Interpretation**

The idea that a routine, medicalized genital procedure could be (experienced as) a sexual boundary violation is not self-evident to everyone. Regarding unconsented pelvic exams, for instance, Dena Davis has described an interpretive "chasm" between two groups of people, namely, potential patients and (some) medical educators. On the one hand, the non-physicians she observed making posts in an online discussion forum on the topic, most of whom were female, "reacted with shock and outrage." Some physicians and physician educators, on the other hand, responded by saying, "This is the way everyone learns to do pelvic exams. What's the problem?" [27] (p. 193).

The latter response may initially seem callous. However, it must be remembered that these physicians bring their own embodied experiences to patient encounters that are rooted in a particular history. As a part of their training, for example, physicians must get used to certain ways of interacting with people's bodies (touching them, cutting into them, and so on) that would be highly transgressive in a non-medical context. Thus, the felt significance of certain body parts in a clinical setting, and/or the goals or intentions one has in relation to those parts (e.g., seeking training versus receiving treatment), may differ for many physicians compared to non-physicians at an intuitive level [71].

Thus, as Davis notes: "defining the offense as a sexual one is understandably distressing to physicians, who have gone to great lengths to define pelvic (and mammary) exams in nonsexual ways" [27] (p. 194). The same lesson applies to clinicians who engage in medically unnecessary genital procedures in infants and children. From their vantage point, presumably, an intervention into a patient's genitalia or other intimate anatomy could only appropriately be considered a *sexual* violation if the physician undertaking the intervention had a sexual intent.

This may have been true, for example, of Larry Nassar, the previously mentioned erstwhile physician to the US women's national gymnastics team. Nassar used his position of medical authority to abuse hundreds of women and young girls in his care, most often under the guise of conducting "pelvic exams" or "therapies" [72–74]. Although the athletes were not physically injured by the procedures, and although many did not initially object to them (trusting as they did in Nassar's status as their doctor), they later came to understand what had happened as a sexual violation.

Nassar was clearly a bad actor. He deliberately penetrated his patient's genitalia, knowing this was not medically necessary, seemingly for his own enjoyment. But it is not clear that such a motive is necessary for a sexual violation in this context to occur. Otherwise, it might seem that a "good actor"—one without sexual motives—could perform the same physical actions under the same medical circumstances as Nassar without comparable issue. However, that does not seem to be case. Once a patient comes to understand that, when they were in a vulnerable position (e.g., too young to consent), their doctor deliberately penetrated their genitals, *knowing this was not medically necessary*, it may be immaterial to them what his "actual" motives were. *The patient's* sexual embodiment was invaded without due cause [see, e.g., [75]].

The same point applies to unconsented intimate exams carried out for medical training purposes. Presumably, the vast majority of educators who instruct their students to perform such exams are "good actors." They do not see their behavior as sexual. Their intention is to help their students. Yet according to midwife and ethicist Stephanie Tillman, "[o]nly flimsy differences delineate Nassar's assaults from unconsented educational penetrative pelvic exams under anesthesia" [12] (p. 15). In both cases, a trusted authority figure physically probes (or instructs the probing of) the genitalia of a vulnerable person within their care. In neither case is this done with the patient's permission, and nor do they face an urgent medical situation, such that their "hypothetical" permission could plausibly be assumed [76]. Intentions aside, therefore, a violation has occurred: a violation of a person's sexual embodiment.

This is not to suggest that intentions do not matter. For example, they may often shed light on a person's moral character: someone with bad intentions should typically be judged more harshly than someone with good intentions, all else being equal. However, according to the view under consideration, the moral status of the action itself (i.e., a clinician intervening into a patient's sexual anatomy outside of a relevant medical emergency) is more appropriately understood in terms of the consent of the patient than in terms of the intent of the practicing clinician [77].

Some clinicians embrace this perspective. Peter Ubel is one such pioneering physician who has studied the practice of pelvic training exams by medical students [71]. He states, "We don't see a pelvic exam as having any sexual content at all, but that's not how other people perceive it. There's no way a physician would ever equate a pelvic exam with rape—there is no rape content to it. *But the fact that* 



<sup>&</sup>lt;sup>6</sup> A sufficiently serious harm, in this case, is one that (a) poses a substantial threat to the person's long-term well-being, yet (b) cannot realistically be prevented or resolved by any less risky or intrusive means than by the proposed nonvoluntary genital procedure, such that—at least on some views—(c) the person's hypothetical consent to the procedure can in fact legitimately be presumed. However, see Pugh [70] for an alternative perspective.

someone else perceives it that way makes it important" [78] (n. p., emphasis added). Shawn Barnes, another physician, agrees, and as a medical student helped to pass Hawaii's law requiring explicit consent for pelvic exams by medical students [79]. Julie Chor, an obstetrician-gynecologist, also supports explicit consent for pelvic exams and sees this as integral to the physician/patient relationship [31]. Thus, while Davis, in her early paper, anecdotally found many clinicians in favor of the status quo, growing numbers of clinicians do acknowledge the social distinction between the genitals and other body parts and the corresponding (heightened) importance of letting patients determine what happens to their intimate anatomy.

# Implications for Child Genital Cutting or Surgery

If the preceding analysis is correct, then medically unnecessary intimate exams may violate patients' rights—including their sexual boundary-setting rights—just in case they are done without the patient's own consent. This section considers whether the same conclusion applies, perhaps *a fortiori*, to medically unnecessary genital *cutting* or *surgery* that is likewise done without the patient's own consent (for example, in the case of infants and children).

Patient testimony is once again instructive. Consider the practice of surgically "normalizing" the genitalia of children born with certain intersex traits due to a difference of sex development [54]. The goal in these cases is not to prevent an imminent physical harm, but rather, to conform the child's genitals to a perceived ideal for dimorphic (male or female) embodiment [80]. Although many individuals who were subjected to such surgeries in early childhood do not (openly) report feeling resentful about them [64], many others do regard what was done to them before they could consent as a serious violation of their bodily autonomy [81–83]. Moreover, for some, this violation feels sexual in nature, even if that was not the intent; and the fact that it took place in a medical setting, far from reducing the concern, may make the sense of violation even worse. According to Janik Bastien-Charlebois, an intersex woman and professor of sociology:

I did not have a word for that kind of sexual [violation], nor could I ever envision it applying to such a context, having been raised to see doctors as benevolent professionals whom I must trust, and who have a right of access to my body. This dispossession process is insidious. We are told our bodies belong to ourselves in some awareness-raising classes at school or by parents, except experience often imprints another message ... that our bodies belong to medicine, and that doctors have the final authority to judge of its worth. [84] (n. p.).

As an additional point of overlap, consider that many unconsented pelvic exams are thought to happen while the patients are unconscious; they only learn about what happened to them later. A similar process of "discovery"—with a subsequent feeling of violation—can occur with certain forms of child genital modification [85]. This may happen, for instance, when a person reads about, or more vividly, watches a video of the procedure to which they were subjected prior to forming conscious memories. As one man named William (age 58) reports:

It took a long time for me to watch a circumcision video, but when I did, it was obvious that the baby was suffering extreme pain. ... Then I realized, that happened to me. Even though I don't remember it, I greatly resent that a physician, for a fee, strapped me to a board and cut off about half the covering of my penis, probably without any anesthetic. ... I can't believe that a physician, who is sworn to improve health and to do no harm, could possibly do this to a helpless infant. If I were a physician, I would not cut off part of a boy's body for all the money in the world. [86] (pp. 55 and 58).

However, even when part of a child's body is not actually "cut off," interventions into their genitals that are not medically necessary may still be experienced as sexual violations. A "test case" for this view is the example of ritual "nicking" of the vulva—assuming a medicalized form—as this is widely considered to be among the least severe or invasive types of genital cutting performed on children (of any sex) by clinicians. Most commonly practiced today in parts of South and Southeast Asia, where it is often done by Muslim healthcare providers on cultural or religious grounds [86–88], ritual nicking has also been proposed as a "compromise" procedure in certain Global North countries, such as the USA [50] and Italy [89] (i.e., to discourage parents from mainly African immigrant groups from seeking more invasive interventions).

Defenders of legal tolerance for ritual nicking often argue that the procedure is insufficiently *physically harmful* to justify state prohibition and punishment [90]. Yet, physical harm is not the only relevant consideration. From a sexual-boundary based perspective, nonconsensual ritual nicking may be seen as an intrinsic violation; or at least, a potentially unwanted (and therefore possibly emotionally harmful) form of *genital interaction* [91].

Consider the experience of Saleha Paatwala, a young Muslim woman from the Dawoodi Bohra community, whose religious leaders endorse a form of genital cutting for girls, alongside a more invasive procedure (i.e., penile circumcision) for boys, that is alleged to be similar to the ritual nick [92]. At the age of 7, Saleha was taken by her grandmother to be "circumcised" by an unfamiliar woman:

She asked me to lie down and, uh, this very thought gave me goosebumps all over my body. [This] woman started



pulling down my underwear. And that whole idea ... it was really scary. She took it out and now she spread my legs, grabbed the blade, and cut something between my legs. It was definitely painful. [But] it was more embarrassing because a lady whom I did not know saw my [private] area at that point of time, and she did not see but she also cut ... [93] (n. p.)

Although Saleha mentions the pain of being cut, she primarily stresses the embarrassment of feeling exposed: having her underwear pulled down, legs spread apart, and genitals viewed by someone she did not know. She had been socialized to see her genitals as intimate anatomy (see Box 1). In other words, she was led to believe that this was a special part of her body she had a *right* to make certain decisions about—a right that was now being taken away. As she explains, that day, it wasn't "just a piece [of flesh] that was cut, it was a part of me, a very important part that I wouldn't give a right to, a right to someone to even *touch* without my consent" [93] (n. p.).

As the stories of Saleha, William, and Janik illustrate, just like some adults who, upon learning what was done to their genitals by a clinician while they lacked capacity, come to feel disturbed and even sexually violated by the intervention (e.g., an unconsented pelvic exam under anesthesia), so too do some individuals affected by childhood genital procedures come to feel a similar way [e.g., [94–98••]; see also references above]. But even if someone does *not* come to feel harmed or violated, it may still be argued that a violation has occurred. Already, it is widely accepted that if a person-whether an adult or legal minor-is capable of consenting to genital contact, "but declines to do so, no type or degree of expected benefit, health-related or otherwise, can ethically justify the imposition" of such contact. If, by contrast, "a person is not even capable of consenting due to a temporary lack of sufficient autonomy (e.g., an intoxicated adult or a young child)," it is argued that there are strong moral reasons, if not an absolute right, "in the absence of a relevant medical emergency to wait until the person acquires the capacity to make their own decision" [20] (p. 18).

### **Conclusion**

Medicalized nonconsensual genital procedures are often evaluated in terms of harms or benefits. However, recent ethical analysis has focused on ways in which such procedures can (also) be understood—and experienced as—sexual boundary violations. Across literatures, an emerging view among opponents of these practices is that the fundamental wrong involved in such nonconsensual genital interventions, when performed by clinicians in the absence of a justifying medical emergency, is not (only) that they carry a certain level of risk of physical or emotional harm. Nor, critics

contend, is the wrong fundamentally due to (assumptions about) the good or bad intentions of clinicians performing such procedures. Rather, it is due to morally objectionable features inherent in the procedures themselves: namely, that they involve a medically unnecessary interference with a vulnerable person's sexual anatomy, without their consent, in situations where, among other considerations, their hypothetical consent cannot be presumed. It is increasingly argued that clinicians may not ethically perform any medically unnecessary genital procedures, whether by means of touching or examination, nicking or pricking, cutting (including episiotomy), or surgery, without the explicit authorization of the person themselves.

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#### **Declarations**

**Conflict of Interest** In May of 2023, BDE delivered a lecture at the University of Helsinki on the ethics of genital modification for an academic workshop organized by Intakt Finland, which covered the cost of economy travel and lodgings. MB is affiliated with Bruchim, a Jewish support group for families opting out of *brit milah*. See <a href="https://www.bruchim.online/">https://www.bruchim.online/</a>.

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#### References

Papers of particular interest, published recently, have been highlighted as:

- Of importance
- Of major importance
- Malatino H. queer embodiment: monstrosity, medical violence, and intersex experience. Lincoln: University of Nebraska Press; 2019. p. 265.



- Durrant JE, Stewart-Tufescu A, Afifi TO. Recognizing the child's right to protection from physical violence: An update on progress and a call to actioa. Child Abuse Negl. 2020;110:104297.
- Chadwick R. The dangers of minimizing obstetric violence. Violence Women. 2023;29(9):1899–908.
- Bruce L. A pot ignored boils on: sustained calls for explicit consent of intimate medical exams. HEC Forum. 2020;32(2):125-45.
- Beauchamp TL, Childress JF. Principles of biomedical ethics. Oxford: Oxford University Press; 2013.
- Earp BD, Demaree-Cotton J, Savulescu J. Against externalism in capacity assessment—why apparently harmful treatment refusals should not be decisive for finding patients incompetent. Am J Bioeth. 2022;22(10):65–70.
- Earp BD. The child's right to bodily integrity. In: Edmonds D, editor. Ethics and the contemporary world. Abingdon and New York: Routledge; 2019. p. 217–35.
- 8. Tesink V, Douglas T, Forsberg L, Ligthart S, Meynen G. Neuro-interventions in criminal justice: on the scope of the moral right to bodily integrity. Neuroethics. 2023;16(3):26.
- Alderson P. Bodily integrity and autonomy of the youngest children and consent to their healthcare. Clin Ethics. 2023; online ahead of print.
- Tillman S. Protecting our patients from sexual assault. J Psychosoc Nurs Ment Health Serv. 2018;56(3):2–4.
- 11. Hendricks P, Seybold S. Unauthorized pelvic exams are sexual assault. New Bioeth. 2022; online ahead of print. One of two recent articles (the other by Tillman, below) arguing that personally unauthorized pelvic exams-outside of a relevant medical emergency-are (equivalent to) sexual assault.
- 12.• Tillman S. Presumed consent for pelvic exams under anesthesia is medical sexual assault. IJFAB Int J Fem Approaches Bioeth. 2023;16(1):1–20. One of two recent articles (the other by Hendricks and Seybold, above) arguing that personally unauthorized pelvic exams-outside of a relevant medical emergency-are (equivalent to) sexual assault.
- Morris T, Robinson JH, Spiller K, Gomez A. "Screaming, 'no! No!' it was literally like being raped": connecting sexual assault trauma and coerced obstetric procedures. Soc Probl. 2023;70(1):55-70.
- 14.• van der Pijl M, Verhoeven C, Hollander M, de Jonge A, Kingma E. The ethics of consent during labour and birth: episiotomies. J Med Ethics. 2023;49(9):611–7. A foundational article on the ethics of personal consent in relation to episiotomies, showing why it is consent, as opposed to benefits versus risks as judged by third parties, that determines the permissibility of the operation outside of certain medical emergencies.
- Kumar-Hazard B, Dahlen HG. Setting a human rights and legal framework around 'the ethics of consent during labour and birth: episiotomies. J Med Ethics. 2023;49(9):634–5.
- Ford KK. "First, do no harm": the fiction of legal parental consent to genital-normalizing surgery on intersexed infants. Yale Law Policy Rev. 2001;19(2):469–88.
- ACOG. Breast and labial surgery in adolescents. Washington, DC: American College of Obstetricians and Gynecologists; 2017. p. 1–3. Report No.: 686
- Gaffney-Rhys R. Decoration or mutilation? Female genital piercing and the law. J Crim Law. 2022;86(4):256–70.
- Earp BD. Male or female genital cutting: why 'health benefits' are morally irrelevant. J Med Ethics. 2021;47(12):e92.
- 20. BCBI. Medically unnecessary genital cutting and the rights of the child: moving toward consensus. Am J Bioeth. 2019;19(10):17–28. International consensus statement by more than 90 scholars arguing that all nonconsensual genital cutting is impermissible unless (a) the person is unable to consent and (b) the operation is urgently medically necessary.

- Möller K. Male and female genital cutting: between the best interest of the child and genital mutilation. Oxf J Leg Stud. 2020;40(3):508–32.
- Townsend KG. The child's right to genital integrity. Philos Soc Crit. 2020;46(7):878–98.
- 23. Townsend KG. Defending an inclusive right to genital and bodily integrity for children. Int J Impot Res. 2023;35:27-30. Argues for a clear line between children (presumed incapable of consenting) and adults (presumed capable of consenting) in determining the permissibility of medically unnecessary genital modifications of all types.
- Kianpour CK. Secular sex exceptionalism and new old liberalism. 2023.
- 25. Archard D. The wrong of rape. Philos Q. 2007;57(228):374-93.
- Earp BD, Steinfeld R. Genital autonomy and sexual well-being. Curr Sex Health Rep. 2018;10(1):7–17.
- Davis DS. Pelvic exams performed on anesthetized women. AMA J Ethics. 2003;5(5):193–4.
- Friesen P. Educational pelvic exams on anesthetized women: Why consent matters. Bioethics. 2018;32(5):298–307.
- Valencia M. Pelvic exams being performed on sedated hospital patients without consent. American Patient Rights Association. 2019 Sep;30:1–10.
- 30. Bruce L, Hannikainen IR, Earp BD. New findings on unconsented intimate exams suggest racial bias and gender parity. Hastings Cent Rep. 2022;52(2):7-9. Presents data from a nationally representative survey suggesting that potentially 3.6 million (or more) U.S. Americans may have received an unconsented pelvic or prostate exam within the previous 5 years, with about equal rates reported by men (1.4 percent of those surveyed) and women (1.3 percent of those surveyed).
- Tillman S, Chor J. Educational pelvic examinations under anesthesia: recommendations for clinicians and learners. J Clin Ethics. 2022;33(4):347–51.
- Friesen P, Wilson RF, Kim S, Goedken J. Consent for intimate exams on unconscious patients: sharpening legislative efforts. Hastings Cent Rep. 2022;52(1):28–31.
- Martinez R. Pelvic Exams & Informed Consent. MOST Policy Initiative. 2022:1–4.
- Plantak M, Alter SM, Clayton LM, Hughes PG, Shih RD, Mendiola M, et al. Pelvic exam laws in the united states: a systematic review. Am J Law Med. 2022;48(4):412–9.
- Shalowitz DI, Ralston SJ. Safeguards for procedural consent in obstetric care. J Med Ethics. 2023;49(9):628–9.
- Brione R. Extending the ethics of episiotomy to vaginal examination: no place for opt-out consent. J Med Ethics. 2023;49(9):626-7.
- Earp BD, Bruce L. Medical necessity and consent for intimate procedures. J Med Ethics. 2023;49(9):591–3.
- Lanphier E, Lomotey-Nakon L. Birth, trust and consent: reasonable mistrust and trauma-informed remedies. J Med Ethics. 2023;49(9):624–5.
- Lee JY. Consent and the problem of epistemic injustice in obstetric care. J Med Ethics. 2023;49(9):618–9.
- Mumford K. Capacity assessment during labour and the role of opt-out consent. J Med Ethics. 2023;49(9):620–1.
- 41. Nelson A, Clough B. Episiotomies and the ethics of consent during labour and birth: thinking beyond the existing consent framework. J Med Ethics. 2023;49(9):622–3.
- 42. Stirrat GM. Informed decision-making in labour: action required. J Med Ethics. 2023;49(9):630–1.
- Kingma E, Pijl M van der, Verhoeven C, Hollander M, Jonge A de. Consent and episiotomies: do not let the perfect be the enemy of the good. J Med Ethics. 2023;49(9):632–633.
- 44. Bettcher TM. Phenomenology, agency, and rape. Fem Philos Q. 2023;9(2):1–6. A philosophical analysis of "intimate agency"



- and why it is that some body parts are considered more "intimate" than others (such that nonconsensual engagement with those body parts typically constitutes a more serious violation.
- Godwin S, Earp BD. The paradox of medical necessity. Clin Ethics. 2023; online ahead of print.
- Earp BD, Shaw DM. Cultural bias in American medicine: the case of infant male circumcision. J Pediatr Ethics. 2017;1(1):8–26.
- Fish M, McCartney MM, Earp BD. Children's sexual development and privacy: a call for evidence-based ethical policy. Clin Pediatr (Phila). 2023; in press
- Wilkinson D. What is "medical necessity"? Clin Ethics. 2023;18(3):285-6.
- Hellsten SK. Rationalising circumcision: from tradition to fashion, from public health to individual freedom—critical notes on cultural persistence of the practice of genital mutilation. J Med Ethics. 2004;30(3):248–53.
- Coleman DL. The Seattle compromise: multicultural sensitivity and Americanization. Duke Law J. 1998;47(4):717–83.
- Wahlberg A, Påfs J, Jordal M. Pricking in the African diaspora: current evidence and recurrent debates. Curr Sex Health Rep. 2019;11(1):95–101.
- O'Neill S, Bader D, Kraus C, Godin I, Abdulcadir J, Alexander S. Rethinking the anti-FGM zero-tolerance policy: from intellectual concerns to empirical challenges. Curr Sex Health Rep. 2020;12(1):266–75.
- 53. •• Liao LM. Variations in sex development: medicine, culture and psychological practice. Cambridge: Cambridge University Press; 2022. An up-to-date, comprehensive discussion of the science and ethics of care for persons with variations in sex development or intersex traits.
- Conway GS. Differences in Sex Development (DSD) and related conditions: mechanisms, prevalences and changing practice. Int J Impot Res. 2023;35:46–50.
- Liao LM, Baratz A. Medicalization of intersex and resistance: a commentary on Conway. Int J Impot Res. 2023;35:51–5.
- Gollaher DL. From ritual to science: the medical transformation of circumcision in America. J Soc Hist. 1994;28(1):5–36.
- 57. Antinuk K. Forced genital cutting in North America: feminist theory and nursing considerations. Nurs Ethics. 2013;20(6):723-8.
- Lempert A, Chegwidden J, Steinfeld R, Earp BD. Non-therapeutic penile circumcision of minors: current controversies in UK law and medical ethics. Clin Ethics. 2023;18(1):36–54.
- Benatar M, Benatar D. Between prophylaxis and child abuse: the ethics of neonatal male circumcision. Am J Bioeth. 2003;3(2):35-48.
- 60. AAP. Ritual genital cutting of female minors. Pediatrics. 2010;125(5):1088–93.
- Mazor J. The child's interests and the case for the permissibility of male infant circumcision. J Med Ethics. 2013;39(7):421–8.
- Arora KS, Jacobs AJ. Female genital alteration: a compromise solution. J Med Ethics. 2016;42(3):148–54.
- 63. Mazor J. On the strength of children's right to bodily integrity: the case of circumcision. J Appl Philos. 2019;36(1):1–16.
- Meyer-Bahlburg HFL. The timing of genital surgery in somatic intersexuality: surveys of patients' preferences. Horm Res Paediatr. 2022;95(1):12–20.
- Lang DP. Circumcision, sexual dysfunction and the child's best interests: why the anatomical details matter. J Med Ethics. 2013 Jul;39(7):429–31.
- Jones M. Intersex genital mutilation a Western version of FGM. Int J Child Rights. 2017;25(2):396–411.

- Hammond T, Carmack A. Long-term adverse outcomes from neonatal circumcision reported in a survey of 1,008 men: an overview of health and human rights implications. Int J Hum Rights. 2017;21(2):189–218.
- 68. Taher M. Examining FGC survivor and FGC impacted community involvement behind FGM/C legislation in the United States: a response to Bader's "From the War on Terror to the moral crusade against Female Genital Mutilation: Anti-Muslim racism and femonationalism in the United States". Violence Women. 2023; online ahead of print.
- 69. Earp BD. Medicalised genital cutting in the Global North may impede abandonment efforts in the South--rapid response to "Medicalisation of female genital mutilation is a dangerous development". The BMJ. 2023;380 online rapid response.
- 70. Pugh J. The child's right to bodily integrity and autonomy: a conceptual analysis. Clin Ethics; 2023; nline ahead of print. A strong philosophical analysis of the child's right to bodily integrity.
- Ubel PA, Jepson C, Silver-Isenstadt A. Don't ask, don't tell: A change in medical student attitudes after obstetrics/gynecology clerkships toward seeking consent for pelvic examinations on an anesthetized patient. Am J Obstet Gynecol. 2003;188(2):575–9.
- 72. Barr J, Murphy D. ABC News. 2018 [cited 2022 Mar 21]. Nassar surrounded by adults who enabled his predatory behavior. Available from: https://abcnews.go.com/Sports/nassar-surrounded-adults-enabled-predatory-behavior/story?id= 52533983.
- Rabin RC. How to keep children safe from abuse at the doctor's office. The New York Times [Internet]. 2018 Jan 26; [cited 2019 Jun 9]; Available from: https://www.nytimes.com/2018/01/26/well/family/lawrence-nassar-gymnastics-doctors-pediatricians-safety.html.
- Ardman R. The Larry Nassar hearings: victim impact statements, child sexual abuse, and the role of catharsis in criminal law comment. Md Law Rev. 2023;82(3):782–819.
- Herring J. Rethinking sexual crimes: from women's consent to men's responsibility. Anat Crime. 2023;17:19–34.
- Kuflik A. Hypothetical consent. In: Miller F, Wertheimer A, editors. The ethics of consent: Theory and practice. Oxford: Oxford University Press; 2010. p. 131–61.
- Merkel R, Putzke H. After cologne: Male circumcision and the law. Parental right, religious liberty or criminal assault? J Med Ethics. 2013;39(7):444–9.
- Goldstein A. Practice vs. privacy on pelvic exams. Washington Post [Internet]. 2003 May 10 [cited 2023 Oct 3]; Available from: https://www.washingtonpost.com/archive/politics/2003/05/10/ practice-vs-privacy-on-pelvic-exams/4e9185c4-4b4c-4d6aa132-b21b8471da58/.
- Barnes SS. Practicing pelvic examinations by medical students on women under anesthesia: Why not ask first? Obstet Gynecol. 2012;120(4):941–3.
- Blackless M, Charuvastra A, Derryck A, Fausto-Sterling A, Lauzanne K, Lee E. How sexually dimorphic are we? Review and synthesis. Am J Hum Biol. 2000;12(2):151–66.
- Dreger A. Intersex in the age of ethics. Hagerstown, MD: University Publishing Group; 1999.
- Human Rights Watch. I want to be like nature made me. Human Rights Watch: Medically unnecessary surgeries on intersex children in the US; 2017.
- Davis G, Feder EK. Intersex: narrative symposium for narrative inquiry in bioethics. Narrat Inq Bioeth. 2015;5(2):87–150.
- Bastien-Charlebois J. montrealgazette. 2020 [cited 2022 Nov 30]. My coming out: the lingering intersex taboo. Available from: https://montrealgazette.com/life/my-coming-out-the-lingering-intersex-taboo.



- 85. Uberoi M, Abdulcadir J, Ohl DA, Santiago JE, Rana GK, Anderson FWJ. Potentially under-recognized late-stage physical and psychosexual complications of non-therapeutic neonatal penile circumcision: a qualitative and quantitative analysis of self-reports from an online community forum. Int J Impot Res. 2023; online ahead of print.
- 86. Rashid AK, Patil SS, Valimalar AS. The practice of female genital mutilation among the rural Malays in north Malaysia. Internet J Third World Med. 2010;9(1):1–8.
- 87. AbR I, Shuib R, Othman MS. The practice of female circumcision among Muslims in Kelantan, Malaysia. Reprod Health Matters. 1999;7(13):137–44.
- Rashid AK, Iguchi Y. Female genital cutting in Malaysia: a mixed-methods study. BMJ Open. 2019;9(4):e025078.
- Fusaschi M. Humanitarian bodies: gender, moral economy and genital modifications in Italian immigration policy. Cah DÉtudes Afr. 2015;217(1):11–28.
- Jacobs AJ, Arora KS. Punishment of minor female genital ritual procedures: Is the perfect the enemy of the good? Dev World Bioeth. 2017;17(2):134–40.
- 91. Buckler M. The ethics of child genital cutting. When does a violation occur? Comments on "Defending an inclusive right to genital and bodily integrity for children" by Dr. Kate Goldie Townsend. Int J Impot Res. 2023;35:31–4.
- Taher M. Understanding female genital cutting in the Dawoodi Bohra community: an exploratory survey [Internet]. Sahiyo: United Against Female Genital Cutting; 2017. p. 1–82. Available

- from: https://sahiyo.files.wordpress.com/2017/02/sahiyo\_report\_final-updatedbymt2.pdf.
- A Dawoodi Bohra woman's experience of female genital cutting [Internet]. 2018 [cited 2023 Jun 28]. Available from: https://www.youtube.com/watch?v=JZSpb9RVqFQ.
- Lightfoot-Klein H, Chase C, Hammond T, Goldman R. Genital surgeries on children below an age of consent. In: Szuchman LT, Muscarella F, editors. Psychological Perspectives on Human Sexuality. New York: John Wiley & Sons; 2000. p. 440-79.
- Watson L. Unspeakable Mutilations: Circumcised Men Speak Out. Ashburton: Amazon Media; 2014.
- Davis G. Normalizing intersex: the transformative power of stories. Narrat Inq Bioeth. 2015;5(2):87–9.
- Earp BD, Darby R. Circumcision, sexual experience, and harm. Univ Pa J Int Law. 2017;37(2-online):1–57.
- 98. •• Hammond T, Sardi LM, Jellison WA, McAllister R, Snyder B, Fahmy MAB. Foreskin restorers: insights into motivations, successes, challenges, and experiences with medical and mental health professionals An abridged summary of key findings. Int J Impot Res. 2023; online ahead of print. The largest ever survey of foreskin restorers, providing rich insights into the kinds of resentment that some affected persons feel in relation to having been circumcised as infants.

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