

## Circumcision: A cut below the belt

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*Human subtlety . . . will never devise an invention more beautiful, more simple, or more direct than does nature, because in her inventions, nothing is lacking, and nothing is superfluous.*

—LEONARDO DA VINCI (1452–1519)

Circumcision is the commonest surgery being practised in the USA.<sup>1</sup> Circumcised male population is reported to be as much as 24%, 48%, 72% and 67%–97% in the UK, Canada, Australia and USA, respectively.<sup>2,3</sup> In the USA more than 60% of boys born in a year are circumcised, the figure being under-representative, as circumcision is voluntarily reportable and about 5% of hospitals participate in such reporting.<sup>4,5</sup> Circumcision, also known as prepuce amputation, or prosthetomy<sup>6</sup> is usually done either for sociocultural or for therapeutic reasons. Publications favouring ‘non-cultural non-therapeutic circumcision’ (NNC) have recently dominated scientific discourse.<sup>7–9</sup> Ethical aspects of NNC are being debated with differing views ranging from favouring recommendations to labelling it as criminal.<sup>10,11</sup>

### Medicalization of circumcision

Circumcision is believed to be the oldest surgery on mankind, being recorded as long as 15,000 years ago. It was ‘medicalized’ by the 19th century<sup>12</sup> when it became a necessary procedure in the USA along with medicalization of childbirth. It was adopted by doctors due to financial benefits accruing as the procedure fee as well as additional fee due from the prolonged hospitalization of the child.<sup>13</sup> The basic tenet of ‘primum non nocere’ was overlooked, something that was never an option in surgical profession till very late, when it was waived off, only for organ donation. This specific immunity from the Hippocrates’ advice, that ‘first one should do no harm to a patient’, was sanctioned by the Massachusetts Supreme Court only when Dr Joseph E. Murray faced an ethico-

legal dilemma while contemplating the first successful renal transplant at Peter Bent Brigham Hospital.<sup>14</sup> Surely, NNC cannot be equated with renal transplant by any stretch of scientific indulgence.

Recently reported benefits of NNC and subsequent guidelines have accelerated the medicalization of NNC.<sup>15</sup> The medical fraternity seems to be endorsing NNC; a survey reports that circumcision is a common source of income for many surgeons, paediatricians, family physicians and obstetricians, as many of them perform at least one NNC in a month.<sup>16</sup> The task force on circumcision<sup>15</sup> has identified some benefits from male circumcision (prevention of urinary tract infection [UTI], male acquisition of HIV, transmission of some sexually transmitted infections [STIs] and penile cancer). It tries to reverse the de-medicalization of NNC that was achieved in the 1960s by a drive from the insurance healthcare systems and grassroot workers despite resistance from the medical community and parents.<sup>17</sup> It has ignited medico-legal debates with apprehensions that medicalization of NNC downplays surgical risks. There is an imperative need for it to be debated in a gender-neutral manner for social justice, as was done in case of female genital mutilation (FGM).<sup>18</sup>

The proponents of NNC base their case on a Cochrane Review that showed benefits related to HIV acquisition. The same review questions the haste in adopting NNC and calls for further research into economical and ethical considerations before issuing any guidelines for medicalization of NNC.<sup>19,20</sup> It reminds us of a saying: ‘It is difficult to get a man to understand something when his salary depends upon his not understanding it.’<sup>21</sup> The advocacy for NNC becomes more suspicious given the demand of some practitioners clamouring for ‘the right to ensure that the procedure is carried out by an experienced surgeon’.<sup>22</sup> Non-NNC practitioners have expressed their disappointment and have asked for legal action against those trying to medicalize even non-NNC, thus potentially eating into public money for cultural issues.<sup>23</sup> Non-NNC practitioners have questioned the very idea for state regulation when there was no such

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demand for state regulation for other natural acts of human cleanliness, i.e. nail-cutting, shaving of pubic hair, plucking of axillary hair and beard trimming, considered equivalent to circumcision by the proponents of circumcision, NNC or otherwise.<sup>24</sup> The non-NNC practitioners have challenged such proponents to defend a similar request for amputation of a healthy limb, FGM or assisted suicide.<sup>25</sup>

### Sifting through the shifting 'position statements' on NNC

In 1971, the American Academy of Pediatrics (AAP) ruled against NNC stating that 'there are no valid medical indications for neonatal NNC,'<sup>26</sup> reaffirming the same in 1975. In 1989, AAP stated that 'it could neither encourage nor discourage it but the potential health benefits needed a consideration in decision-making'.<sup>27</sup> In 1998, AAP relaxed its attitude towards NNC, stressing the protection against UTI, penile cancer and various STIs.<sup>28</sup> The 2012, AAP guidelines justify NNC to families choosing it for these and potential benefit of reduced male acquisition of HIV in heterosexuals.<sup>15</sup>

### Sociopolitical response to NNC

Recently, activists in San Francisco tried to criminalize NNC and almost succeeded in getting it through by a public referendum but for an injunction by the Supreme Court.<sup>29</sup> Opposition to NNC is historical since the times of Epiphanes (2nd century BCE), Hadrian the Roman Emperor (2nd century CE) and Soviet Union forbidding it, well into the 20th century. Germany renewed the ban on NNC (earlier banned in the 19th century<sup>30</sup>) following a June 2012 Cologne court ruling, treating circumcision at par with the criminal act of grievous body harm.<sup>29</sup> A similar Swedish law has been labelled as 'the first legal restriction on Jewish practices in Europe since Nazi era'.<sup>31</sup> Denmark views the right to have an intact human body as a fundamental right and views any non-medically indicated surgery as a physical assault. They believe that circumcision has no value, given good healthcare, proper hygiene, and more effective (condom use) prophylactic measures. Denmark points to the evidence that circumcised men and their female partners report more sexual problems than the uncircumcised ones.<sup>32</sup> The absurdity of NNC becomes glaring with reports of NNC-related deaths of more than 20 South African boys in May 2013 alone.<sup>33</sup> These adverse events are not localized to periphery. Even tertiary care centres have reported serious complications.<sup>34</sup> Arguments against NNC are more scientific than the original pro-NNC arguments. Proponents of NNC view circumcision to be necessary to stop excessive sexual activities especially masturbation that was thought to cause tuberculosis, seizures, psychiatric illness, blindness and self-abuse.<sup>35</sup>

So much so, in the mid-19th century circumcision was touted as a public health measure, a symbol of American citizenship and even a cure for leg paralysis, epilepsy and mental disorders, etc.<sup>35</sup> As an incentive to males it was reported that greater number of females preferred circumcised males<sup>36</sup> and that the circumcised males had more partners and more varied experience<sup>37</sup> and that up to 90% of college-going women expressed preference for pictures of circumcised penises over uncircumcised.<sup>38</sup>

### Is the advocacy of NNC scientifically sound?

#### Preventing urinary tract infections (UTIs) in childhood?

Risk of repeat UTIs has been shown to be lowered by circumcision, but 111 circumcisions would be needed to prevent one UTI in un-predisposed boys, hence the net benefit would at best be probably restricted to the predisposed boys with recurrent UTIs.<sup>39</sup> It is interesting to note that studies from Israel have reported the risk of UTIs in circumcised boys to be three times higher than in uncircumcised.<sup>40</sup> These scientific observations from pro-circumcision community domains make the theoretician who believe prepuce to be the 'cesspool' of bacteria<sup>41</sup> loose to those who see the foreskin as an immunological barrier.<sup>42</sup> The patho-protective role of prepuce till puberty is universally accepted. The study of functional anatomy of prepuce came very late, i.e. after 1930. The understanding revealed that the glans penis being protopathic in sensitivity needs to be protected from pathogenic insults. This protection is provided by a ridged band of the prepuce having a high concentration of 'fine-touch' nerve receptors (Fig. 1). Prepuce amputation leads to sensory imbalance leading to aggressive intercourse (reported as desirable by females preferring circumcised partners but inhumanly by those preferring the uncircumcised<sup>36-38</sup>) that creates microhabitats for various pathogens to dwell in. Had the prepuce been an inappropriate structure, mammals (including humans) that have it, would have evolved out of it, based on the theory of natural selection. Its non-disappearance and preserved architectural virginity for more than 60 million years is a call to the scientific firmament to take lessons in its functionality.<sup>35</sup>

#### Prevention of HIV and STIs?

Some studies have shown an association between uncircumcised and risk of HIV-I acquisition (relative risk 2.3–8.1).<sup>43-47</sup> But a small percentage of seroconversion limited the power of such studies. These studies failed to show relation between circumcision and HIV. Similarly the risk of acquiring HIV infection as reported to be lower with circumcision in Africa was not seen to be so in the developed world. These contradictory and geographically non-reproducible data created scientific

division till a meta-analysis revealed the flaws and inconclusiveness of findings in all these trials.<sup>47-52</sup> While there is sub-Saharan support to NNC from American academia and the WHO, the scientists in other countries are not in its favour. It is felt that the advocacy ignores the doubts about the robustness of evidence, underestimates the risk and harm of circumcision and violates the ethics and human rights, hence the notion of circumcision as a 'surgical vaccine' is polemical and unscientific.<sup>18,20,53</sup> Irrespective of the inconsistent data, the advocates believe that circumcision removes the HIV target cells (T cells and dendritic cells) in the prepuce mucosa and abolishes the cavity that harbours the pathogens.<sup>54,55-57</sup> This explanation is self-defeating, because even after circumcision there is enough penile glans mucosa left that has the same cells in highly rich concentrations. These cells, i.e. Langerhans cells, are the immune cells as we know and not otherwise. The immune benefit of these cells in an intact prepuce is substantiated by the studies showing higher incidence of community-associated methicillin-resistant *Staphylococcus aureus* infections in circumcised as compared to those with an intact body.<sup>58</sup> Not willing to cede ground, the proponents of NNC think it to be beneficial in reducing HIV acquisition in men who have sex with men (MSM). But there is no evidence to support circumcision for the prevention of HIV and other STIs among MSM.<sup>59</sup> Rather, circumcision is likely to alter the sexual behaviour, i.e. shifting from penetrative to receptive anal practice along with erectile difficulties and premature ejaculation.<sup>60</sup>

#### Protection from penile carcinoma?

After a review of more than 1000 cases of carcinoma penis and all of them being uncircumcised, it was hastily concluded that circumcision is a vaccine against squamous cell carcinoma penis.<sup>61</sup> But incidence of carcinoma penis in a circumcision-dominant nation as the USA (21 per million) and largely uncircumcised nation such as Denmark (11 per million) and Japan (3 per million) does not support NNC. It is also negated by continued presentation of carcinoma penis in neonatally circumcised cases.<sup>62-65</sup> Carcinoma penis has been attributed to other risk factors, i.e. medical conditions of penis, sexual activity, HPV infection and smoking, all being related to poor hygiene and habits.<sup>66</sup> Circumcision makes prepuce hygiene a pre-civilization laity. To those being nurtured with almost religiously alluded hygienic care of the intact phallus with glans and prepuce, the advocacy of NNC seems like a camouflaged scientific deceit.

Despite these scientifically doubtful opinions, the NNC is being peddled by the arguments of convenience in sub-Saharan Africa.<sup>67</sup> The spouse opinion in these regions is vehemently against NNC as they report NNC being the reason for their husband's growing infidelity. Probably

the aggressiveness of the act from the lost penile sensation leading to suboptimal satisfaction leads them to seek the loss in someone else as reported.<sup>68</sup> Otherwise too, the geographically specific benefits of the NNC cannot be and should not be extrapolated to male population of other regions where maintenance of prepuce hygiene has been handed down over the generations as is supported by European assertions. Even for the much touted shouted benefits, the high number of NNCs needed to treat the potential conditions does not justify recommendation for routine NNC in such regions.<sup>69,70</sup>

#### Ethical considerations for NNC

There are concerns that NNC singles out boys for bodily humiliation and indirectly harass the girls as well.<sup>11</sup> It is pertinent to note that NNC which is usually performed in adulthood is more dangerous and painful than infant circumcision. It is work disruptive, requires a period of convalescence, is expansive, is a drain on operative room resources, disrupts sexual life and leads to greater loss of privacy.<sup>11</sup> Absence of consent in a minor undergoing NNC violates the notion of personal security. The thus circumcised may feel harmed by NNC leading to an adverse opinion about the medical profession. Many scientists advocate that as NNC is not essential to a person's current well-being, his interests should be considered distinctly in isolation from those of his family's so that no potential harm is done to a person simply for family's gratification.<sup>71-73</sup> There are scientifically expressed concerns that NNC permanently alters the body/body-image, with pain and potential physical or psychological harm, for benefits that have not been unequivocally proven.<sup>72</sup> Even if, NNC is recommended and performed to prevent cervical disease in a future partner, the fiducial assumption of an heterosexual relationship is contemptuous of the right to choose the gender of one's partner. Even for this cervico-protective issue, common sense tells us that a genitally intact male can have NNC at the opportune time.<sup>74,75</sup>

The guidelines issued by professional bodies such as the General Medical Council (GMC) and the British Medical Association (BMA) raise many ethical dilemmas. Current GMC guidelines allow a doctor not wanting to carry out a non-therapeutic circumcision to invoke conscientious objection. This seems illogical, as any ethical doctor will object to conducting a clinically unnecessary surgery. A plain language understanding of GMC guidelines with those of BMA suggest that such a doctor may be guilty of negligence and in breach of the Human Rights Act.<sup>76</sup> An indiscriminate advocacy of NNC raises many more societal ethical issues. Men circumcised by NNC advocacy are known to become casual about sexual relationship, indulge in sexual experimentation and risk-taking behaviour, neglect condom usage, thus increase the risk of acquiring and disseminating HIV/AIDS or



STIs, etc.<sup>68,77</sup> The aggressiveness in intercourse and other behaviour is already known to be associated with circumcision.<sup>35</sup> Incentivizing male circumcisions will handicap a scientific crusade against and reinvigorate the demand for female circumcision, i.e. FGM, especially in settings where both practices are known to have been prevalent.<sup>78</sup> Any revival of pro-FGM debate will be a huge setback at a time when the battle against FGM seems to be won.

In June 2012, one author (Brij B. Agarwal) had a chance to interact with super model Waris Dirie who is a victim of FGM. She cried in the meeting and said: 'In Africa there are millions of women who suffer from fistulas as a consequence of FGM, and become incontinent. Politicians have failed me. Now I ask the doctors to support me in my fight against FGM and the terrible health consequences it causes.'<sup>79</sup> This is a wake-up call for all advocates of NNC lest it becomes a propaganda tool for FGM adherers.

#### Quality of life after NNC

*'These, then, are the human genitals. Considering their great delicacy, complexity and sensitivity, one might imagine that an intelligent species like man would leave them alone. Sadly, this has never been the case. For thousands of years, in many different cultures, the genitals have fallen victim to an amazing variety of mutilations and restrictions. For organs that are capable of giving us an immense amount of pleasure, they have been given an inordinate amount of pain.'*

—MORRIS, 1985<sup>80</sup>

Quality of sexual satisfaction after circumcision has been debated for long in the published literature. In a large randomized controlled trial (RCT) it was found that there was a significant improvement in sexual satisfaction during 24 months follow-up from the pre-circumcision baseline, in uncircumcised men as compared to the circumcised men. Circumcision led to erectile dysfunction, orgasm difficulties in male partner and dysorgasmia, dyspareunia, sense of incomplete sexual need fulfilment in female partner. These factors have also resulted in marital incompatibility issues after NNC.<sup>81–84</sup> These changes in sexual perception have been substantiated by studies in basic functional neurology. These studies have shown that the transition region from the external to the internal prepuce is the most sensitive region of the uncircumcised penis. It is more sensitive than the most sensitive region of the circumcised penis. Circumcision ablates the most sensitive portion of the penis.<sup>85</sup>

The anatomy of prepuce is unique, being the result of a midline rendezvous involving ectoderm, neuroectoderm and mesenchyme. This gives birth to a fine five-layered structure having squamous mucosa, lamina propria,



**Fig. 1.** Ridged bands emanating from the frenulum; retracted intact penis. From Cold CJ, Taylor JR. The prepuce. *BJU Int* 1999; 83 (Suppl 1):34–44.

dartos muscle, dermis and outer glabrous skin.<sup>86</sup> It is richly supplied by the dorsal nerve of penis and several branches of perineal and scrotal nerves. Autonomic innervation is based from pelvic plexus, parasympathetic from S2–S4 and sympathetic from T11–L2. This complex multilevel innervations of prepuce not only justify its role in sexual function but also explains the inadequacy of either dorsal penile nerve block or penile ring block anaesthetic techniques for NNC. What further compounds the torture is that most of neonatal circumcisions are done without any anaesthesia or even aided by wine.<sup>86</sup> The glans has only protopathic sensitivity. It is poor in appreciating fine touch, the sensitivity being least except for the heel of the foot. In contrast the ridged band (Fig. 1) of the prepuce has a very high concentration of specialized encapsulated receptors, making it the most essential component of the penile erogenous tissue.<sup>86</sup> The ridged band is also highlighted in worshipping of an intact body in various fertility festivals celebrated in oriental Asian cultures such as Japan<sup>86</sup> (Fig. 2). Glans being protopathic, progressive post-circumcision decline in glans sensitivity leads to reluctance in condom usage, dissatisfaction with orgasms and experimentation including anal sex.<sup>87</sup> The loss of the ridged band by NNC leads to female dissatisfaction as well.<sup>86–88</sup> This scientifically adverse effect of circumcision has been historically exploited as an antidote to the 'original sin' as described in Genesis. This has been reiterated in various teachings of cultures favouring circumcision. The teachings talk about how the intensity of pleasure from intact man can drive the 'Eve' to aggressively seduce her 'Adam' repeatedly for the so-called sin leading to wasting of man's flesh when the procreation and not pleasure should be the end. Hence the need for circumcision to avoid the sin and preserve procreation sans pleasure to the 'Eve'.<sup>89,90</sup>

Scientific literature is replete with evidence showing the positive and dominant contribution of movable foreskin in female arousal and orgasm with studies reporting female orgasm being twice as likely with the intact prepuce.<sup>91</sup> The valve mechanism of the male foreskin prevents the vaginal secretion from escaping,



**Fig. 2.** A Japanese fertility festival at Nagoya; note the banner with ridged bands (arrow) of the prepuce emanating from the frenulum (photograph by Dr R. Brinsko and G. Craigmyles) From Cold CJ, Taylor JR. The prepuce. *BJU Int* 1999; 83 (Suppl 1):34–44.

thus enhancing the experience.<sup>92</sup> Similar conclusions are published in high-impact scientific journals such as the *BJS* and *JAMA* where it is quoted: ‘Penetration in the circumcised man is like thrusting the foot into a sock held open at top, while in the intact it is like slipping foot into a sock that has been previously rolled up.’ These journals have suggested that ‘coitus without a foreskin is comparable to viewing a Renoir whilst colour blind’. It is for these very reasons that various leading journals have titled their opinion about barbarity of NNC as ‘penile plunder’, ‘the fate of the foreskin’, ‘the rape of the phallus’, ‘the foreskin saga’, etc.<sup>93–98</sup>

#### NNC violates basic tenets of surgery

Like any other surgical procedure, circumcision is not free of harm; hence NNC violates the solemn surgical pledge of ‘primum non nocere’. Advocates of NNC consider it as a complication-free procedure as was the classical textbook teaching ‘complications of circumcision should be few and rare’.<sup>99</sup> But the same textbook teachings warn us with a caveat ‘when the surgeon pays less than complete attention to the details of this common

and straightforward procedure, misadventures are inevitable’.<sup>100</sup> Hence, a lot of complications do follow such as pain, infection, haemorrhage, incomplete circumcision, recurrent phimosis, wound dehiscence, concealment of penis, meatal stenosis, inclusion cysts, poor aesthetic cosmesis, urinary retention, necrotizing fasciitis, penile lymphoedema, amputation of penis, urethra-cutaneous fistulae, glans ischaemia, etc.<sup>101–104</sup>

#### NNC, procrustean bed

In ancient Greece, success awaited in Athens for those travelling the road passing by an inn where Procrustes, the blacksmith turned bandit, lived. He lured the gullible traveller with a promise of a magic bed that matched exactly the length of its occupant. Once seduced, Procrustes would fit the traveller to the bed by cutting him up if he was long or stretching him by chains if short. Hence the tailored conformity enforced. The advocates of NNC are simply following the Procrustean standards. Not only the robustness of studies is doubtful,<sup>105</sup> but also NNC being gender discriminatory, as at best it claims to cut HIV acquisition by the suboptimally hygiene-compliant male partner but does not cut transmission to their female partners.<sup>106</sup> While the advocates of NNC give the argument of a ‘cleaner’ circumcised penis, but can they imagine any acceptance of any means, let alone surgical, to make vagina more ‘hygienic’.<sup>107</sup> The aesthetic and functional argument is self-defeating as shown by the sexual quality of life issues and proven scientifically by a study showing that even the excitability of basic penilo-cavernosus reflex is handicapped after circumcision.<sup>108</sup>

Given all this, AAP plans to revise its position, given the insufficient evidence of benefit to recommend NNC routinely. The Royal Dutch Medical Association has called it child abuse and akin to FGM.<sup>105</sup> The absurdity of NNC is becoming more visible by an increasing focus on ways to undo circumcision and restoration of foreskin.<sup>107,109</sup> Uncircumcision has been known since the times when circumcision started.<sup>110</sup> The demand for foreskin restoration is being reported anonymously as well as by circumcised physicians.<sup>111–113</sup> Uncircumcision is also being recommended as a treatment for the psychological ills of some circumcised males.<sup>112</sup> An insight into damage done by NNC has led to understanding of yet another anatomical structure destroyed in NNC, i.e. frenulum. Besides erection, the tension in frenulum is essential for pre-ejaculation orgasm. Like uncircumcision, frenulum reconstruction too is gaining favour as a solution to male orgasm failure.<sup>114</sup>

There is an indirect accusation that uncircumcision being a financially rewarding reconstructive procedure will make the American surgeons happily incentivized to be dysfunctionally silent to voice against NNC.<sup>113</sup> Evolution has taken away some of the vestiges such as hair but the prepuce has not needed to evolve, the appendix that

was thought to be vestigial once is being recommended to be conserved.<sup>115</sup> Foreskin has always been considered the best available skin for reconstruction elsewhere on the body. It has now been proved that keratinocytes derived from the prepuce induce epithelialization and accelerate wound healing with better quality of scarring and pigmentation as compared to classical skin grafts in burns. Prepuce keratinocytes are the best source of extemporaneous autologous skin grafts, hence prepuce should never be sacrificed.<sup>116</sup>

Maybe with the scientific appraisal of the functional anatomy of the foreskin, the ergonomics and mechanics of sexual act, the respect for human rights, genital integrity, gender equality, female sexuality and preservation of foreskin as the best reserve of keratinocytes for future use, NNC will rightfully find its place in the archives.

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