

## Routine circumcision: the opposing view

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*A key mission of our journal is to challenge readers with new concepts and provide new ideas and insights. To accomplish this mission, we have started this new section — Point / Counterpoint. This regular feature will highlight the most important debates in urology. The purpose of the section is to encourage vigorous and informed discussion on controversial issues in urology through the presentation of diverse opinions. We aim for a dispassionate discussion of controversies, recognizing that strong passions may exist in support of some positions.*

For millennia, routine newborn male circumcision has been endorsed for a variety of purported benefits. Over the ages, claimed advantages have included the formation of a covenant with god, the enhancement of sexual pleasure, the reduction of sexual pleasure, and a cure for bedwetting, syphilis, penile cancer, mental illness and masturbation.<sup>1</sup> In more modern times, some advocates of circumcision have equated the procedure to a form of vaccination.<sup>2</sup> Circumcision is thus depicted as protective against future problems of the foreskin such as phimosis and recurrent balanitis as well as neonatal urinary infection (UTI), cervical carcinoma and HIV/AIDS. Do these potential advantages justify routine circumcision of healthy newborn males on a widespread scale? Should public policy dictate that health care resources be redirected to this procedure when all but 1 province in Canada has delisted newborn circumcision from the schedule of insured services? Let's look at the evidence.

### Prevention of urinary tract infection

It is well established from epidemiological studies first carried out by Wiswell and colleagues that the incidence of febrile UTI in otherwise anatomically normal males in the first year of life is lower in circumcised, compared with intact, males.<sup>3</sup> The exact risk reduction varies somewhere between 4-fold and 12-fold depending on the study one chooses to quote. However, the actual incidence of UTI in the first year of life is low. Even a 10-fold reduction in infection rates equates to changing the incidence of UTI from 1 in 100 to 1 in 1000 male babies. It has been calculated that the rate of UTI

among infant boys with foreskins must equal or exceed 29% for neonatal circumcision to be cost effective.<sup>4</sup> Conversely, for neonatal circumcision to be cost-neutral, each patient hospitalized for UTI would need to cost \$229 564!<sup>5</sup> In 2004, it is estimated that approximately 1.2 million newborn circumcisions were performed in the United States. The estimated direct cost of these procedures was \$1.2 billion, a large sum of health care funds that could be directed toward more effective preventative and therapeutic interventions.<sup>6</sup>

### Prevention of HIV/AIDS

A complete discussion of the relation of male circumcision and HIV is beyond the scope of this paper. Some studies conducted in Africa have shown that HIV is more common in uncircumcised males, while others have shown the opposite or no difference. Despite the fact that the evidence indicating a protective effect of circumcision is based on observational studies of adult circumcision in a developing country, there is now a ground swell of support for considering the procedure as a viable strategy for preventing sexually acquired infections. A recent Cochrane systematic review found insufficient evidence to support an interventional effect of male circumcision on HIV acquisition in heterosexual men. The authors noted that individual "researcher's personal biases and the dominant circumcision practices of their respective countries" complicated the interpretation of the existing data on the effect of circumcision on HIV transmission rates.<sup>7</sup> Three randomized controlled trials (RCTs) have subsequently been published on heterosexual female-

to-male transmission of HIV in high-risk areas of sub-Saharan Africa.<sup>8-11</sup> All 3 supported adult circumcision as a protective measure. However, these trials were all terminated early, a characteristic that tends to overstate the effect of an intervention. In North America, where HIV rates are much lower, transmission is primarily by homosexual contact and intravenous drug use, making these RCTs inapplicable to this jurisdiction. Further, based on 1998 WHO data of developed countries, the United States has the highest rate of HIV and also the highest rate of infant circumcision.<sup>5</sup> This alone casts doubt on the utility of routine circumcision in preventing HIV infection in developed countries.

### Prevention of cervical carcinoma

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It has been observed that the prevalence of cervical cancer is low where male circumcision is practised. Historically, this has been attributed to a decreased prevalence of human papilloma virus (HPV) on the circumcised penis. However, a recent meta-analysis on HPV and circumcision concluded that the medical literature does not support the claim that circumcision reduces the risk of genital HPV infection.<sup>12</sup> Even if circumcision conferred a reduction of HPV, does that indicate that routine circumcision should be advocated to reduce the prevalence of the vector for cervical cancer? The use of surgery for disease prevention is an unusual public health intervention. It would seem a more prudent health care policy to offer the recently available HPV vaccine against oncogenic strains of the virus to young females before the onset of sexual activity than to perform surgery on all males in the neonatal period.<sup>13</sup>

### Prevention of penile carcinoma

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Over the last 75 years, many case series showing that most penile cancers occurred in uncircumcised individuals have been published. Does that indicate that all males should be circumcised to prevent this rare cancer? It is notable that the incidences of penile cancer in Denmark, Finland, Norway and Japan, where less than 1.5% of men are circumcised, are lower than in the United States, where the majority of men are still circumcised.<sup>14-18</sup> If circumcision is believed to decrease the risk of developing cancer, why do these noncircumcising

countries with similar standards of living and hygiene have lower incidences of penile cancer?

The American Academy of Pediatrics policy notes that 9–10 cases of penile cancer are diagnosed each year per 1 million men, indicating that, although the risk is higher for uncircumcised men, the overall risk is extremely low.<sup>19</sup> Because this disease is rare and occurs later in life, advocating circumcision as a preventive practice is difficult to justify.

### Prevention of future foreskin problems

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One of the difficulties in assessing the incidence of foreskin problems in the non-circumcised male is that of defining “phimosis.” All newborn males have a physiologic phimosis, with the glans adherent to the inner mucosal surface of the prepuce. Gradual separation of the glans from prepuce takes place spontaneously over many years, often not being complete until puberty.<sup>20</sup> Referrals for circumcision later in childhood because of an asymptomatic non-retractile foreskin, possibly with some ballooning upon voiding, are commonly made in error. Usually, in this setting, anxious parents and referring physicians require education on the care of the normal foreskin and the patient does not require an operation.<sup>21</sup> The Canadian Pediatric Society states that no more than 1% of boys will require post-neonatal circumcision, and Australian reports indicate that normal preputial adhesions are often misdiagnosed as phimosis, leading to unnecessary circumcisions.<sup>22,23</sup> The rate of true pathological phimosis is less than 1%<sup>24</sup> and this usually responds to a short course of topical steroid ointment.<sup>25</sup> Occasionally, uncircumcised boys experience an episode of balanitis requiring oral antibiotic therapy. The rate of this is estimated at 1%–2% and does not justify prophylactic or therapeutic circumcision.<sup>26</sup> An analogous situation would be to recommend myringotomy and tubes in every child who suffers an episode of otitis media.

### Complications of newborn circumcision

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Health is not only about disease prevention, but also about well-being and the avoidance of harm. How harmful is routine non-therapeutic circumcision? The overall rate of immediate and long-term complications arising from newborn circum-

cision is a matter of debate and in truth unknown. The estimated rate of complication worldwide has been reported as lying between the extremes of 0.1% and 35%.<sup>27</sup> Minor complications such as bleeding, infection and prolonged hospitalization are thought to occur in less than 5% of cases. Tragic partial or complete penile amputation, urethral injury and even the rare death have been reported. Meatal stenosis requiring intervention occurs in 5%–10% of males circumcised in the newborn period.<sup>28</sup> This is believed to be secondary to dermatitis of the unprotected glans exposed to wet diapers. Circumcision revision under anesthetic for penile concealment, skin bridges or an unacceptable cosmetic result is probably the most common long-term complication prompting a urological referral: in one survey, fully one-third of pediatric urologists in the United States reported experience as an expert witness in circumcision litigation cases.<sup>29</sup>

## Conclusion

Newborn circumcision remains an area of controversy. Social, cultural, aesthetic and religious pressures form the most common reasons for non-therapeutic circumcision. Although penile cancer and UTIs are reduced compared with uncircumcised males, the incidence of such illness is so low that circumcision cannot be justified as prophylaxis. The role of the foreskin in HIV transmission in developed countries is unclear, and safe sexual practice remains the cornerstone of prevention. There remains a lack of knowledge regarding what constitutes the normal foreskin both among parents and among primary care providers. This lack of knowledge results in a burden of costs to our health care system in the form of unnecessary urological referrals, expansion of wait times and circumcisions. Routine circumcision of all infants is not justified from a health or cost-benefit perspective.

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The positions provided in the Point / Counterpoint series are presented as general information and do not necessarily reflect the personal opinions of the authors.

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