

CONTROVERSY

Benefits of newborn circumcision: is Europe ignoring medical evidence?

Edgar J Schoen

A major difference between the paediatric care provided in Europe and that provided in the US stems from the attitudes of care providers toward newborn circumcision as a preventive health measure. In the US, the great majority of newborn boys (about 1.4 million annually) are circumcised, whereas in Europe, neonatal circumcision is rarely done. European countries consider newborn circumcision an unnecessary surgical procedure which increases the costs of operating nationalised health systems, whereas in the US, circumcision is generally considered a simple, rapid operation with medical benefits which accrue throughout life.

Local foreskin problems and hygiene

Phimosis, balanoposthitis, and difficulty of ensuring adequate genital hygiene in uncircumcised boys have been best described in the European literature.¹⁻⁴ US anticircumcision groups claim that genital hygiene can easily be maintained as the foreskin naturally separates, but, in reality, genital hygiene in uncircumcised boys has been shown to be poor, even in British and Scandinavian middle class schoolboys.^{1,2}

The prevalence of true phimosis (anatomic constriction of the preputial opening, which must be distinguished from adherent foreskin) in published studies varies from 0.3% to 0.9%,⁵ but true phimosis requires circumcision later in life, when the procedure is more difficult, risky, and expensive.^{6,7} Balanoposthitis has been estimated to occur in 4% of uncircumcised boys, and incidence peaks at age 2 to 5 years.³ Although treatment can be conservative, late circumcision is often necessary for recurrent cases, and medical management requires additional physician visits and treatment.

Cancer of the penis

The evidence that circumcision protects against penile cancer is overwhelming. In the US, incidence of penile cancer in circumcised men is essentially zero (about one reported case every five years), but it is 2.2 per 100 000 in uncircumcised men (about 1000 cases are reported annually). On the basis of life table analysis, Kochen and McCurdy estimated that an uncircumcised man in the US has a lifetime risk of penile cancer of one in 600.⁸

During the last 50 years in the US, six major series of cancer of the penis encompassing more than 1600 cases have been reported; none of these cancer patients was circumcised in infancy.⁹ Human papilloma virus and smegma have been implicated in the aetiology of penile cancer.¹⁰ Of the approximately 50 000 cases of cancer of the penis that have occurred in the US since the 1930s (and which resulted in about 10 000 deaths), only 10 were reported in circumcised men.⁹ Newborn circumcision virtually eliminates this devastating threat.

Urinary tract infection (UTI)

When the American Academy of Pediatrics Task Force on Circumcision report was issued,⁵ data from Wiswell *et al* suggested that uncircumcised male infants had an increased risk of clinically significant UTI.¹¹ Since then, the evidence has become definitive, indicating a greater than 10-fold increased risk of UTI in uncircumcised boys compared with their circumcised counterparts in the first year of life.¹²⁻¹⁴ Uncircumcised preschool boys and men are also at increased risk for UTI.^{15,16} UTI in infants can lead to permanent renal parenchymal damage.¹⁷ The pathophysiological basis of UTI in uncircumcised males was convincingly demonstrated by Fussell *et al* in electron photomicrographs showing preferential binding of uropathic fimbriated bacteria, mainly *Escherichia coli*, to the sticky mucosa of the foreskin, from which point they migrate up the urethra.¹⁸ A meta-analysis of the nine major studies relating UTI to circumcision showed a mean 12-fold increased risk of UTI in uncircumcised boys.¹⁴ These worldwide studies indicated that between 0.9% and 4.2% of uncircumcised infant boys have a symptomatic UTI in the first year of life.¹⁴

UTI is particularly dangerous in the first months of life, during which 36% of uncircumcised boys with UTI were found to have bacteraemia, 3% to have meningitis, and 2% acute renal failure; moreover, 2% died.¹⁹ Further, most uncircumcised boys with UTI in the first six months of life show renal parenchymal damage,¹⁷ and in 10% to 15% of those aged less than 1 year, renal scarring develops, which can result in systemic hypertension.

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Sexually transmitted disease (STD)

A link between the foreskin and STD has long been proposed.²⁰⁻²⁴ In his classic, turn-of-the-century work on circumcision, Remondino described the protective effect of circumcision against syphilis, genital herpes, and urethritis.²⁰ STD agents that disrupt the epithelium (syphilis, chancroid, herpes, and papilloma virus) are believed to enter through miniabrasions of the foreskin, and the warm, moist environment under the foreskin permits growth of organisms causing urethritis.²⁵ In almost all published series, these forms of STD were more common in uncircumcised men; reports of the converse are rare. Reports from Africa beginning in the late 1980s indicated that uncircumcised, heterosexual men were from four to eight times more likely than circumcised men to contract HIV upon exposure to infected women.²⁶⁻²⁹ Multiple reports since then were summarised in 1994 by Moses *et al* who found that, in 22 of 30 studies, a statistically significant increase in HIV infection occurred in uncircumcised men (a mean of four times the risk of circumcised men).³⁰ The authors felt strongly enough about these findings to recommend adult circumcision of African men to halt the raging AIDS epidemic on that continent.

Recently Caldwell and Caldwell studied the AIDS epidemic in sub-Saharan Africa where nearly 25% of the population is HIV positive as a result of heterosexual viral transmission.³¹ The authors concluded that lack of male circumcision was the only factor that seemed to correlate with the exceptionally high susceptibility to HIV infection.

Discussion and conclusions

The decision to discourage newborn circumcision in the UK and the resultant decrease in the number of circumcised males occurred before the accumulation of this evidence about the protective effect of circumcision against UTI and HIV infection. Particularly in the face of an expanding worldwide AIDS epidemic, these benefits are a powerful argument in favour of encouraging universal newborn circumcision. In an editorial comment on the epidemic spread of HIV-1 in Asia, Weniger and Brown pointed out that in those countries in which circumcision is practiced (Bangladesh, Indonesia, and the Philippines) rapid sexual transmission of HIV-1 is less likely.³² When properly done, newborn circumcision is a quick, simple procedure with a low complication rate. Morbidity and costs of circumcision are much lower for newborns than they are for older patients.^{6,7}

Moreover, about 70 million circumcised US males currently attest to the lack of effect of circumcision on either emotional health or sexual performance, and no objective studies indicate otherwise. As a matter of fact, evidence indicates that women in Middle America have a sexual preference for circumcised men, mainly from the standpoint of aesthetics and hygiene.³³

The multiple benefits of newborn circumcision are additive over a lifetime and include

prevention of cancer of the penis, of balanoposthitis, and protection against the effects of phimosis and poor hygiene as well as prevention of UTI and STD, particularly of HIV. Protection against these diseases constitutes a substantial public health advantage and provides a strong argument in favour of instituting universal newborn circumcision in Europe. With AIDS spreading rapidly in developed Western countries in persons who practice heterosexual behaviour as well as in men who practice homosexual behaviour, implementation of universal circumcision beginning with Europe is prudent and timely.

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Commentary

The above paper by Schoen reflects the influence of culture and habit on the interpretation of medical practice. The practice of neonatal circumcision, so rare in Europe and ubiquitous in the USA, has been discussed. The author credits Europe with avoiding neonatal circumcision on cost grounds. I think this is a basic misconception. The practice of medicine in Europe is far less invasive than in the US and medical intervention, particularly irreversible mutilating surgery, is avoided unless there is a proved medical benefit. The morbidity of neonatal circumcision is occasionally significant, and recent evidence demonstrating evidence of altered pain responses in infants after neonatal circumcision suggests that the unperceived morbidity may be significantly higher.¹

Balanitis xerotica obliterans is usually considered an absolute indication of childhood circumcision, but has an incidence significantly under 1%, with a peak incidence at 6–10 years. Balanoprophthitis occurs in up to 4% of uncircumcised boys, but fewer than 1% go on to three episodes or more of this minor local infection. Where these justify intervention we have learnt from our European colleagues of the value of preputioplasty, which saves the prepuce and has much less morbidity than circumcision. It is rare that physiological phimosis fails to resolve spontaneously and also is treatable by preputioplasty.

Circumcision as an alternative to hygiene in prevention of penile carcinoma, is an oft voiced argument. The author has quoted figures based on the 1971 national cancer survey (US) and extrapolated from the unsupported assumption that all penile carcinomas occurred in uncircumcised males.² More recent data calculate the relative risk in the US to be 3.2 times greater in the intact male.³ Using the author's own source, the quoted incidence of penile carcinoma in the US was one per 100 000 (1969–71). This is a comparable incidence with that in Finland⁴ at the same time, where the circumcision rate is less than 1%, of 0.5 per 100 000 (1970) with a 78% relative 20 year survival rate. Thus, I find Marshall's argument at a meeting of the Society for Paediatric Urology, that one would have to perform 140 circumcisions a week, for 25 years, to prevent

one case of carcinoma of the penis, enough to prevent me from setting out on such a course.⁵

The strongest argument in favour of neonatal circumcision is the recognition that circumcision removes a reservoir of bacteria, associated with urinary tract infection, and indeed, in the child with an abnormal urinary tract where prophylaxis has failed to prevent urinary tract infection, I also practice circumcision. The author identifies, however, a paper that reports a pattern of male urinary tract infection in the first month, unassociated with renal tract anomaly, which we rarely see in the UK, and perhaps is linked to the practice of forcible preputial retraction (Rushton *et al*⁶; discussion). The protection of vulnerable infants with abnormal urinary tracts, possible pre-existing renal dysplasia, and a risk of new scar formation, would be better assured by renal ultrasound and family history screening.

The author's extrapolation of knowledge that circumcision reduces the transmission rate of HIV within the unprotected population of developing countries, to a belief that this has a role within the European population, is I feel, irrelevant where barrier contraceptives are readily available and considerably more efficacious.

Finally, there are now strong pressure groups (NOCIRC and INTACT), largely in North America, protesting against the perceived assault of circumcision. Duckett estimates a million adult males in the US would pay significant fees for a preputial reconstruction when its possible.⁵

In countries where neonatal circumcision is rarely practised, and appropriate non-aggressive management of the normal foreskin, with non-forcible retraction and regular cleaning after spontaneous relaxation of the physiological phimosis, there is no medical or population demand for neonatal circumcision. This supports the conclusion that neonatal circumcision is a social ritual with a grain of medical origin, and aligns with the recent guidelines of the Canadian Paediatric Society, that 'circumcision of newborns should not be routinely performed'.⁷

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