Circumcision provides the definitive treatment for phimosis and recurrent balanitis. Removal of the foreskin completely prevents any distal scarring and recurrent infection, as there is no longer any pocket for accumulation of urine and debris. Paraphimosis, where the foreskin has been retracted proximal to the glans and then causes venous congestion of the glans, also is prevented by circumcision. Nevertheless, if a child needs admission to the hospital for reduction of paraphimosis with or without an anaesthetic, recurrence is extremely rare. Even small children become embarrassed by this experience, and are able to manage foreskin retraction to prevent this in the future.

Circumcision does reduce the risk of urinary infection in baby boys, but it is unproven whether good perineal hygiene with simply antiseptics would have the same effect. In many places in the USA, the risk of urinary infection is used as a reason for recommending neonatal circumcision. By contrast,
in most Australian paediatric hospitals, the risk of urinary infection is used only as an indication for circumcision in children with complex urinary tract anomalies that have been diagnosed antenatally. Circumcision confirms marginal benefit against sexually transmitted diseases (approximately 10% advantage) but whether this justifies circumcision of the entire male population is dubious. Certainly, in sub-Saharan Africa, circumcision is reported to have significantly greater benefits, particularly in the reduction of HIV, although not all studies agree with this finding. Approximately 25% of the young adult population in South Africa are now thought to be HIV positive. This extremely high incidence suggests major cultural, social, and hygiene differences between the affected population in Africa and many Western countries.

Penile cancer rates can be reduced significantly by circumcision in early life. Circumcision confers a threefold reduction in the risk of cancer over the lifetime of a man. The very low frequency of penile carcinoma may not, however, justify routine neonatal circumcision. It has been estimated that 300,000 circumcisions may be required to prevent one penile cancer per year. The incidence of penile carcinoma is falling in some Western countries such as Denmark, despite no increase in the number of circumcisions. In fact, circumcision remains a very rare operation in Denmark. It has been suggested that other factors such as the introduction of reticulated hot and cold water to houses throughout Denmark in the last fifty years, is a more likely explanation for the fall in penile carcinoma.

The risks of circumcision, either in the neonatal period or in early childhood, are low. It is estimated that the complication rate in the neonatal period is less than one per cent. The Gomco clamp and Plastibell device have low complication rates, in the order of 0.2%. Nevertheless, the ever present risk of haemorrhagic disease of the newborn, related to inadequate vitamin K stores in the neonate, should be borne in mind. I have one patient who received oral vitamin K at a time when there was a concern about intramuscular injections being linked to a higher incidence of leukaemia later in childhood. The baby lost more than 200 mls of blood after the operation, and barely escaped death from hypovolaemic shock. After resuscitation, an unrecognised liver disease was found, which accounted for the poor absorption of the oral vitamin K, as this required bile salts in the gut.

**ETHICAL ISSUES**

The primary ethical issue for circumcision in babies defies standard principles of surgery, as there is no absolute medical indication. The most fundamental principle of surgery is that no operation should be done if there is no disease, as it cannot be justified if the risk of the procedure is not balanced by the risk of a disease. Even when patients have significant disease, potentially dangerous operations can hardly be justified if their risks are much greater than the disease itself. The problem for routine circumcision is that since there is no disease, no complication whatsoever can be tolerated, since the risks of the procedure are not being balanced against the risks of any present disease. This cost benefit analysis approach exposes routine circumcision as an unnecessary social operation, rather than one justified by medical indications. Since no disease is present in the neonate, perhaps circumcision could be justified by the possible risks to the patient in the future. This is analogous to the circumstance occurring with immunisation of the population against infectious diseases. The risks of immunisation are justified by the fact that the individual risk to the patient is extremely small, however serious, but the benefits are great, since the incidence of the disease in unimmunised populations may be very high, and may even be a majority of the population. By contrast, the diseases which circumcision is able to prevent are uncommon or even rare, and may be 20–70 years into the future. Furthermore, the potential risk for such diseases as HIV/AIDS may not exist when a population of boys circumcised in 2002 reach adult life. We are not certain at present whether AIDS is going to be an even more widespread disease in the future or whether it will be abolished by some new treatment. Therefore, it would be hard to justify mass circumcision with such a small potential gain. Furthermore, the studies in Denmark suggest indirectly that good hygiene with regular washing may be just as effective at preventing the diseases treated by circumcision. The use of potential diseases in the future as an argument in favour of circumcision can be illustrated by urinary infection in the neonatal period. In the USA, the risk of infection (seven per 1000) is used as an indication for circumcision. In our own practice in Australia, however, this is used to offer circumcision to a very small population of boys with known urinary tract anomalies. Since only one per cent of boys suffer a urinary tract infection in the first year of life, most Australian surgeons find it difficult to justify circumcising 100% of the male population when only one per cent will benefit by reduction in urinary tract infection risk. By contrast, selecting those children at most risk of developing a serious urinary infection for circumcision, takes advantage of the potential benefits but without putting the majority of the population at risk.

There are a number of ethical issues around the social indications for surgery. In post second world war Australia, circumcisions became common in the neonatal period. This carried an unwritten assumption, however, that the next generation of children might grow to be soldiers in the third world war. Hopefully, it will not be necessary to revert to mass circumcision of Australian boys and men so that they can be sent to war in arid environments.

Although fathers often want their boys to be circumcised, whether boys wish to be or not is another matter. It may be only a question of time before adult males who were circumcised in childhood begin legal action against their parents or their doctors for so called mutilation of their bodies without a medical indication or permission. Certainly, I have seen a number of men who had significant surgical complications with circumcision in infancy, leading to subsequently inadequate sexual function. The most serious complication is accidental amputation of the end of the penis or excessive removal of penile shaft skin leading to secondary deformity. In addition, there are many reported cases in the literature of diathermy burn leading to complete necrosis of the penis, as well as accidental amputation. In many places, such children have had gender reassignment to female because of the loss of the penis. Every one of these complications is a catastrophe, which could have been avoided by abolition of mass routine circumcision in the neonatal period.

Is circumcision an assault? Surgery would be close to the legal definition of assault if no consent was given and no anaesthetic or analgesia was used. Circumcision done this way is still common place in many parts of the world where five to ten year old boys are held down on the kitchen table by their uncles while another male family member cuts off the foreskin. This is physically cruel and potentially dangerous and must leave major psychological scars. Neonatal circumcision, if done without an anaesthetic, is not far removed from this practice. If doctors agree to perform circumcision on babies and small boys they need to be the advocate for the children and to protect their life and welfare as much as is possible.
CONCLUSIONS
Circumcision does offer some health benefits to babies, boys, and men, but only in a small percentage of the population. All surgeons know that circumcision, albeit a simple operation, is still dangerous and carries potential risks to the patient. As surgeons, we need to weigh up these risks carefully against the possible benefits of any surgical intervention. The surgical argument for circumcision of all neonatal males at present is very weak, and with rising public health standards in the developed world, is likely to remain weak. These issues raise numerous ethical questions about surgery used as a social or religious custom, and as a potential preventive measure for possible diseases far into the future.

Correspondence to: Professor J M Hutson, General Surgery, Royal Children’s Hospital, Parkville, Victoria 3052, Australia; hutsonj@cryptic.rch.unimelb.edu.au

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