

**Medical Perspectives on Routine
Circumcision:
A review of current literature, and
recommendations**

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"To cut or not to cut,
that is the question
Whether tis better in the flesh to suffer
the clamps and slashes of unnatural surgery,
Or to take arms against a sea of custom,
And, by opposing, end them."¹

The issue of whether babies should be routinely circumcised continues to be fiercely debated in the US. The controversy is peculiar only to the US; routine (non-religious) circumcision, which begun about a century ago, has been largely abandoned in other English-speaking countries. Of the 1.19 million boys born in the US in 1987, some 61% were circumcised at birth, whereas the rate in Australia and Canada is 25%(6% in Quebec) and negligible in New Zealand, England and the Northern European countries. When compared to a 90% incidence in the 1950s and 60s, circumcision seems to be growing less popular in recent years. There are three reasons for this declining use of a once universal procedure. First, over the past 20 years, many of the reasons once given for infant circumcision have been called into question. Second, the natural childbirth movements that begun in the late 70s fueled the development of a vigorous anti-circumcision movement, whose polemical tenets are passionately argued in Rosemary Romberg's book, "Circumcision, the Painful Dilemma". Third, and most recently, insurance companies and other third-party payers have begun questioning the utility of the procedure, using tangible cost-benefit analysis. Very recent evidence, however, that supports the case for circumcision may reverse this declining trend in the future.

Circumcision is the surgical removal of the foreskin, or prepuce. The prepuce covers, like a monk's cowl, the head or glans of the penis. At birth, the prepuce is only retractable in 4% of infants, but by early adolescence all normal prepuces should be full retractable. The failure of an adult foreskin to retract is called phimosis, and is a medically accepted indication for circumcision. At the inner-most edge (see diagram) of the prepuce and glans, there are glands that produce a cheesy substance called smegma, on which numerous microbes grow. Many of the bad effects of being uncircumcised have been *traditionally* attributed to an accumulation of smegma and the attendant bacteria. The outer side of the foreskin is normal keratinized skin, but the inner side, as is the glans of the uncircumcised penis, is a soft, moist mucous tissue (stratified squamous), similar to the walls of the vagina. Circumcision removes the foreskin's moist tissue, and exposure of the glans converts, or hastens the conversion of, its moist tissue into normal skin. Most of the benefits being attributed to circumcision *today* rely on the removal of this moist tissue, which is thought to be a preferred portal for disease.

BENEFITS

Medical (Pathological) Indications. Apart from phimosis, as described above, there are other indications for circumcisions: paraphimosis (the phimosed foreskin slips back off or behind the glans, but cannot go back on, and strangles the swollen glans), recurrent balanitis (infection of the skin of the glans). None of these conditions can be diagnosed

¹ With my profound apologies to William Shakespeare.

in the newborn, where the failure of the foreskin to retract represents a normal, not a diseased state. Circumcision, however, totally prevents all of these conditions. It is estimated that as many as 18% of uncircumcised boys will develop at least one of these conditions by 8 years of age. Routine neonatal circumcision may thus help prevent a more painful, complicated and risky circumcision later in life.

Urinary Tract Infections(UTIs). Uncircumcised boys have a higher incidence of UTI than their circumcised counterparts. Ginsburg and McCracken², in their study of UTI in infants under 8 months, note that 95% of such infections occur in uncircumcised boys. Wiswell's³1987 study of over 400,000 infants notes a 10-fold high rate of UTI in uncircumcised boys. A meta-analysis of all such studies reveals a 5- to 89-fold higher rate of UTI in uncircumcised boys. UTI can have serious complications, and many cases are often not diagnosed. Circumcision is thought to protect against UTI by removing a source for bacterial colonization, the preputial sac.

Colonization of the prepuce, with fecal bacterial setting up a local base using smegma for nutrition, would then be a prelude to more advanced incursions up the urethra, into the body.

Sexually Transmitted Diseases(STD) and AIDS/HIV. There is a likely positive relation between an intact prepuce and STD. A higher rate of genital herpes, condyloma acuminatum, and chancroid has been reported in uncircumcised men⁴. Uncircumcised men also have a much higher chance of acquiring HIV from heterosexual intercourse; recent reports suggest that circumcision protects against HIV (which cannot penetrate intact skin) infection by reducing the virus's major route of entry into the body. Admittedly, the American Academy of Pediatrics' most recent task force(1989) on circumcision found the data inconclusive. I personally opine, in the light of very recent corroborating data from the mid 90s (reported in class - Sci Am), that circumcision greatly reduces the risk of HIV infection; indeed it is the strongest factor in explaining HIV infection rates in Africa.

Cancer of the Penis. Routine circumcision almost totally eliminates the risk of development of penile cancer, which has an incidence of some 0.7 to 0.9 per 100,000 men in the US, and a mortality rate of 25%⁵. One study suggests the rate of penile cancer in uncircumcised males is 1 in 6006(167 in 100,000), whereas in Israel the rate is less than 0.1 in 100,000 men. Although circumcision at birth is invariably protective, later circumcision is less or not successful in preventing this cancer. Many penile cancers are related to human papillomavirus, a virus that causes malignant transformation, which may suggest that many cases are derived from sexually transmitted infections. Thus, circumcision may protect against cancer via the same mechanism it protects against STD.

² Ginsburg CM, McCracken GH Jr: Urinary tract infections in young infants. Pediatrics 69:409, 1982

³ Wiswell TE, Geschke DW: Risks from circumcision during the first month of life compared with those for uncircumcised boys. Pediatrics 83:1911, 1989

⁴ Parker SW, Steward AJ, Wren MN, et al: Circumcision and sexually transmitted disease. Med J Aust 2:288, 1983

⁵ Persky L, deKernion J: Carcinoma of the penis. CA 36:258, 1986

⁶ Kochen M, McCurdy S: Circumcision and the risk of cancer of the penis: A life table analysis. Am J Dis Child 134:484, 1980

Cancer of the Cervix. This cancer is far less common in Jewish and Muslim women, than in communities that are uncircumcised⁷. Studies indicate a strong correlation between this cancer, multiple sexual partners, frequent sexual intercourse, and sexually transmitted disease. Further, the same viruses that cause cancer of the penis also are those most commonly associated with cervical cancer. Unfortunately, statistical data linking uncircumcised men to cervical cancer is currently inconclusive, and we await data from larger, more controlled studies. If the relationship is proved, a likely mechanism would be as for the case of penile cancer, with men acting as a reservoir for a cancer-causing virus.

Methods. A review of various methods will be provided in class, but is largely omitted here in the interest of brevity. The very distinguished mohel I spoke with, Mr. Joel Shoulson⁸, uses the Mogen clamp, which was developed by his father, together with topical anesthetics. Interestingly, the use of such anesthetic creams was pioneered by younger Mr. Shoulson. Mr. Shoulson exclusively performs circumcisions, though not only on Jews, and his tens of thousands of patients have never reported any problems. In contrast, doctors report a complication rate of 1% - 5%, depending on the patient and the expertise of the doctor. Mr. Shoulson's expertise in the field is so well-known that urologists often request *his* help during circumcisions of atypical foreskins. The Mogen clamp, as shown in the accompanying illustration, helps meet all four requirements for a successful circumcision:

1. asepsis
2. adequate but not excessive excision of outer and inner sides of the foreskin
3. hemostasis
4. protection of the glans penis

COMPLICATIONS AND RISKS

Surgical Risks. All surgery carries the risk of unexpected (or excessive) bleeding and infection. Reassuringly, circumcision is probably not a potentially fatal procedure; in 500,000 consecutive circumcisions in New York City⁹, no fatalities resulted. Bleeding is the most common complication of circumcision, with an incidence of between 0.1% and 35%. Mr. Shoulson usually circumcises boys on the 8th day after birth, when the infant clotting system(reflected in prothrombin times and Vitamin K levels) is considerably better developed; consequently, he reports a negligible rate of post-circumcision bleeding. Also, the Mogel clamp forcefully crushes the edges of the prepuce together before excision, limiting or preventing bleeding. Most episodes of bleeding that do occur are minor, and are usually controlled with direct pressure to the wound. Reported infection rates vary from .5% to 10% in various studies; most are of little or no consequence, and heal very well without the need for further medical intervention.

*Meatitis, meatal ulcers, and meatal stenosis*¹⁰. The meatus is the interface between the urethra and the external surface of the penis, where urine exits. The foreskin in the normal (incontinent) infant protects the delicate meatus from inflammation (meatitis) following exposure to urine in soiled diapers. Worsening inflammation, combined with abrasion against wet diapers, results in ulceration at the meatus. If ulcer is missed, or healing is prolonged, granulation(like scar) tissue forms at the meatus, occluding it and

⁷ Kaplan GW: Circumcision: An overview. *Curr Probl Pediatr* 7:1, 1977

⁸ Personal Conversation, April 15, 1997

⁹ King LR: Neonatal circumcision in the United States in 1982. *J Urol* 128:1135, 1982

¹⁰ Berry CD Jr, Cross RR Jr: Urethral meatal caliber in circumcised and uncircumcised males. *Am J Dis Child* 92:152, 1956

resulting in meatal stenosis, or narrowing of the meatus. Meatal ulcers almost never occur in uncircumcised boys, but occur in 8% to 30% of circumcised boys, usually when the child is still in diapers. Thus, meatal ulcers are the commonest complication peculiar to circumcision. The entire problem with the meatus and circumcision can usually be prevented by careful post-circumcision care by the baby's parents.

Rare problems with circumcision. As a procedure requested by most Americans parents primarily for cosmetic reasons, the most frequent complaint after circumcision is that of asymmetric or insufficient skin removal, typically due to the circumcisor leaving too much inner preputial skin and too little outer preputial penile skin. This results in a two-tone penis, which while fully functional, is often unpopular with parents. Post-circumcision phimosis occurs in about 2% of circumcisions, when excessive inner preputial skin is left; it is easily corrected with an minor touch-up operation. Skin bridges occur when the healing edges of the circumcision wound attaches the glans to the penile skin over the corona; this is also easily treated with an quick outpatient procedure. Partial amputation of the penis or the tip of the glans has been reported in medical literature, especially when the Mogen clamp is used, but Mr. Shoulson emphatically denies that this problem ever occurs when a skilled operator is using the clamp. Any severed parts can usually be reattached, though. Penile necrosis, causing the sloughing off and loss of the entire penis, is a complication of hurried hospital circumcisions, when electrocauterization is used with the metal Gomco clamp. Unfortunately, the best approach to this complication is to raise the child as a female!

Pain. Circumcision is a painful procedure¹¹, even in newborns. Although many infants sleep through or after the procedure, neonates respond to pain with sweating, increased pulse and blood pressure and increased plasma cortisol (stress hormone) levels. Behavioral changes include changes in cry pattern, irritability and altered sleep patterns. These responses are always of short duration, from minutes to hours, and there is no evidence of any long-term changes. Surgeons typically inject local anesthetics at the base of the penis ("dorsal nerve block") which relieves pain for 6 hours. This, as does Mr. Shoulson's topical application of an eutectic mix of local anesthetics (EMLA), significantly diminishes pain response in babies. The use of local anesthesia, especially when injected, carries the rare risks of allergy, anaphylaxis (severe allergic-type shock), cardiac rhythm disturbances and sudden collapse and death.

CONCLUSION

Have you ever held a warm, new-born baby in your arms, someone who's but a few hours old? As you look at his small but perfectly formed body, you can't help marvelling at the excellence of creation. All of us relive Adam's joy when God created Eve for him: 'This at last is bone of my bone and flesh of my flesh...'¹² Circumcision, for non-Jews, poses a dilemma. On one hand, we are loathe to hurt the innocent baby, even if only a single drop of blood is shed, yet at the same time we want to protect and enrich the child's health. But today there is no simple resolution to this conflict. Parents will have to weigh many different factors before deciding whether to have their baby boy circumcised, or whether the benefits outweigh the costs. In my opinion, considering solely the medical benefits and costs, I feel that routine circumcision is probably indicated - especially considering the grave illnesses prevented by circumcision, and the

¹¹ Dixon S, Synder J, Holve R, et al.: Behavioral effects of circumcision with and without anesthesia. *JDev Behav Pediatr* 5:246, 1984

¹² Gen 2:23

relatively minor risks of the procedure. The cost-benefit analysis, considering only tangibles, probably is against circumcision in the US. But there are many other intangibles, such as culture and religion that cannot be numerically quantified. For instance, Jews throughout history have risked persecution and murder in order to heed God's covenant in Gen 17, bravely defying prohibitions against circumcisions. The astute physician must be able to tailor his advice for each set of parents he meets, keeping in mind that every person comes to him with a different set of values. Because of this divergence in the personal valuation of intangibles, there probably will never be an easy, universal conclusion to this dilemma.

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