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## **NEWBORN CIRCUMCISION**

Developed by Thomas Kellner and Dr. Darcie Kiddoo for PedsCases.com.  
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Welcome to PedsCases. My name is Thomas Kellner and I am a third-year medical student at the University of Alberta in Edmonton, Alberta, Canada bringing you this podcast with the help of Dr. Darcie Kiddoo, a Pediatric Urologist here in Edmonton.

During this podcast, we will focus on the follow learning objectives:

1. List the pros & cons of circumcision
2. Discuss the indications & contraindications for circumcision
3. Describe the financial implications and timeline of circumcision
4. Develop an approach to counsel parents on the care for the uncircumcised penis

Let's approach this topic with a case. You are working in an outpatient pediatric clinic when two first-time parents present to you with their healthy, term baby boy named Kyle. The infant's history and physical are entirely normal, and at the end of the visit, his parents ask, "so what's the deal with circumcision? We've been considering it, but we don't know much about it. Should we circumcise our baby?"

This is a reasonable, and not uncommon question. Circumcision is not a topic of daily conversation, and many people, patients and health care providers alike don't have all the knowledge required to discuss it at length. So, let's go through it together! There are some potential benefits associated with circumcision. Most significantly, it can prevent paraphimosis,<sup>1</sup> which is the painful retraction of foreskin behind the glans penis that cannot be returned to the normal position without medical assistance. Circumcision can also lower rates of pathologic phimosis. Pathologic phimosis refers to adhesions or scarring of the foreskin that prevents full retraction. You may be wondering, "can phimosis occur after circumcision?" Indeed, some children with a large suprapubic fat pad may develop adhesions and constriction of the penile skin above the glans following circumcision.<sup>2</sup>

There are other potential benefits. The risk of balanitis, which is inflammation of the glans penis, can also be reduced by circumcision of young infants. In one study, balanitis was diagnosed in 13% of uncircumcised men, compared to 2% of circumcised males.<sup>3</sup> Evidence also suggests that circumcision may reduce rates of urinary tract infections (or UTIs in short) by as much as 90% in the first year of life.<sup>4</sup> However, UTIs are uncommon overall in males compared to females, and this benefit is mostly

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apparent in high-risk patients. High risk refers primarily to males with recurrent UTI or high-grade vesicoureteral reflux, which is a flow of urine in the reverse direction potentially requiring surgery. The number of circumcisions needed to prevent one UTI is 11 for those with recurrent UTI and as little as 4 for those with high-grade vesicoureteral reflux. However in low-risk (that is, healthy) children, as many as 111 circumcisions are required to prevent a single UTI.<sup>4</sup> There is also evidence that circumcision can reduce HIV infection rates in heterosexual males.<sup>5-7</sup> The data on HIV prevention from circumcision are limited, and has mainly been studied in African populations. It is also worth noting that circumcision may be a protective factor against penile cancer, however the number of performed circumcisions required to prevent a single case may be as many as three hundred thousand. Additionally, one study estimated that for every penile cancer prevented, two complications are likely to occur post-circumcision.<sup>8</sup> later in life, the intimate partners of circumcised males may also see a benefit, as there is some evidence that it may decrease rates of cervical cancer. This may be due to circumcised males having lower HPV infection rates,<sup>9</sup> reduced transmission to partners,<sup>10</sup> or even a lower DNA load when infected,<sup>11</sup> but evidence to support these claims is limited at this time.

Now that we understand the pros, let's discuss the cons. There are of course risks associated with any surgical procedure. Short term these include bleeding and infection most commonly, and also less common but more severe complications including amputation of the glans, urethral damage, and buried penis, the latter of which occurs when the area scars down and the penis retracts into the suprapubic fat pad. Rarely, bleeding may result in hypovolemic shock due to the low blood volume, and on rare occasions this may be the first presentation of a bleeding disorder. In the long term, buried penis remains a problem, and the child is also at risk for penile adhesions, general cosmetic concerns, and meatal stenosis, which can require a surgical intervention to resolve.<sup>12</sup>

Finally, there are ethical concerns given that the child is unable to provide consent for this elective procedure that will result in permanent alterations of his body.

One of Kyle's parents responds: "Okay, that's all very helpful and gives us something to think about. Are there any reasons why Kyle absolutely should or should not have a circumcision?"

On the short list of medical indications for this procedure, pathological phimosis refractory to steroid cream requires circumcision. Pathological phimosis occurs when the foreskin cannot be retracted over the glans penis due to prepuce scarring, unlike physiological phimosis, where retraction is possible.<sup>13</sup> This can occur at any time during a male's life.

There are, however, several contraindications to be aware of. Absolute contraindications to circumcision are primarily related to congenital penile abnormalities. Children with hypospadias, chordee, dorsal hood deformities, webbed penis,

micropenis, buried penis, or the presence of a large hydrocele or hernia should not be circumcised until these issues have been otherwise resolved. Additionally, circumcision should be delayed in unstable or premature infants until they are cleared for discharge home. Finally, a relative contraindication to elective circumcision is a newborn with a blood disorder or a family history of blood disorders. For patients that fall under this category, you must ensure that clotting factors, such as vitamin K, are replaced prior to surgery.<sup>14</sup>

Kyle's parents thank you for the information. "We do have a few more questions though. What about cost?"

It is important to note that the cost of *elective* circumcision is not covered by provincial medical funding. The direct cost to families of a circumcision varies between provinces, cities, and even clinics, but will usually be in the range of several hundred dollars to thousands of dollars, as costs escalate with age.<sup>15-18</sup>

They respond: "Well, that is a fair amount of money. So if we choose not to circumcise Kyle, is there anything specific we need to know or do?"

Counselling parents on care for the uncircumcised penis is an important part of the discussion. For newborns, no special care is needed other than routine hygiene and bathing. Parents should also ensure that diapers are frequently changed to avoid rash and skin irritation. Most importantly, instruct parents and caregivers to avoid forcible retraction of the foreskin as it may cause scarring, which leads to adhesions.<sup>13</sup> It should be noted that 90% of uncircumcised boys will have fully retractable foreskins by the age of 3, with 8% non-retractable by age 6 and only 1% non-retractable at age 16.<sup>13</sup> As previously mentioned, phimosis is one common concern associated with the foreskin. There are two kinds of phimosis to think about: physiologic and pathologic. Physiologic phimosis is normal and present at birth. The foreskin is non retractile and there are congenital adhesions between the glans and foreskin which will, in 99% of cases, eventually loosen and resolve by the time the boy enters his teenage years.<sup>19</sup> Pathological phimosis, however, is problematic. Infection and inflammation can cause distal scarring of the foreskin (also known as prepuce), leading to a nonretractile foreskin. First line treatment is a topical steroid applied twice daily followed by circumcision if this is unsuccessful. For physiological phimosis, educating parents (and subsequently their children as they grow) to gently retract to wash in the bath and during and after toilet training is all that is necessary.<sup>20</sup>

Finally, Kyle's parents ask: "So what do you think doc, should we do it?"

As a physician, it may not be appropriate to provide a definitive "yes" or "no" to this question. Both the Canadian Pediatric Society and the American Academy of Pediatrics recommend against routine neonatal circumcision.<sup>21, 22</sup> Both statements also stress that it is critical that parents be educated about all the known risks and benefits so that they may make the decision they believe is best for their child. It should also be noted that

circumcision is an important part of many religions, cultures, and ethnic practices. At the end of the appointment, Kyle's parents thank you for your counselling, and you wish them well. They have not made a decision at this time but they plan to give it some thought.

Alright, let's summarize what we've learned.

Circumcision is a largely elective procedure that is not currently recommended as a regular intervention in Canada. The major benefits of the procedure are prevention of paraphimosis, reduced rates of pathologic phimosis, HIV, balanitis, and penile cancer, and an additional potential reduction in rates of cervical cancer and vaginal infections in female partners. There are several risks for this surgical procedure including infection, bleeding, and permanent anatomic damage to the penis. The procedure is indicated in patients with pathologic phimosis refractory to steroid cream, but is not recommended when there are congenital anatomical issues such as hypospadias. The procedure is expensive and not covered by Provincial health care. It is important that when a boy is not circumcised they learn how to clean their penis and retract and replace the foreskin during urination to prevent problems in the future. Finally, the official statement from the Canadian Pediatric Society is that, quote, "the CPS does not recommend the routine circumcision of every newborn male." The CPS also asks that physicians stay informed about the procedure and be able to fully educate parents about its risks and benefits so that they may make an informed decision.<sup>22</sup>

Thank you for listening to this Peds Case on neonatal circumcision!

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