

# Complications of Circumcision

With any procedure, it is important to know what complications are possible. Not only does this knowledge guide technique (to minimize the possibility of a poor outcome), but it also allows for a more informed discussion with parents who are considering circumcision for their son and permits improved recognition of problems if and when they occur.

Menu 

## Bleeding

Bleeding is the most commonly encountered complication of circumcision. The expected blood loss during neonatal circumcision is just a few drops (easily handled with one 4 x 4 " gauze pad), so bleeding that exceeds this expectation is a complication.

Fortunately, almost all cases of bleeding with neonatal circumcision are very mild. In many cases, bleeding can be controlled by applying direct pressure to the site for a minute or two. At times, the addition of a Gelfoam® wrap can speed clot formation and stop the cut edge from oozing. (Gelfoam® is an absorbable gelatin sponge that promotes blood clot formation).

In rare cases when the frenular artery is bleeding, pressure and gel foam may not be sufficient and a small "figure of eight" suture may be required. Because of the close proximity of the urethra to the ventral surface of the penis, great care must be taken with any clamping or suturing in this area. Too

aggressive measures can lead to necrosis of the fragile tissue and the creation of a urethrocutaneous fistula.

The most devastating reports of bleeding (leading to blood transfusion or death) during or after circumcision occur in boys who have underlying blood dyscrasias, so it is critical to inquire **specifically** about a family history of bleeding disorders before considering the procedure.

Of the three commonly used techniques (Gomco, Mogen, and Plastibell), the Plastibell has the lowest incidence of bleeding as the suture remains in place for a few days after the procedure. With both clamp devices (Gomco and Mogen), hemostasis is dependent on the adequacy of the crush injury.

It should be noted that tissue edema puts increased stress on a crushed edge and can lead to oozing, so care should be taken during the procedure to minimize trauma of the sensitive foreskin. Keeping the instrument used to remove adhesions in the plane of tissue between the glans and the foreskin and avoiding rubbing against the underside of the skin is one useful way to minimize edema.

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## Infection

Infection is an infrequent complication of circumcision when done under sterile conditions. In the most common scenario, the yellowish scabs that may form on the glans where adhesions were removed or around the cut edge are confused with infection, but are actually part of the normal healing process.

The risk of actual infection is thought to be increased with use of the Plastibell device, likely due primarily to the presence of a foreign body at the surgical site. When infection does occur, it should be recognized and treated promptly. Because newborns are relatively immunocompromised, infections in this age group can become serious problems. Although rare, meningitis, necrotizing fasciitis, gangrene, and sepsis have all been reported as complications of infected circumcision sites.

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## Insufficient Foreskin Removed

Normally a circumcision removes the foreskin to the level where the glans is completely exposed. When too little skin is removed, the resulting appearance may be unacceptable to the parents or the child and may necessitate a trip to the operating room for revision.

A more problematic situation can occur if the redundant foreskin slides back over the glans and scars down, creating a phimosis. In this case, surgical repair is necessary. Conditions that increase the likelihood of the skin recovering the glans (e.g. buried penis, webbed penis, or large hydroceles or inguinal hernias that encroach on the penile shaft) are contraindications to routine neonatal circumcision for this reason.

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## Excessive Foreskin Removed

Because the foreskin is attached to the glans on the inner surface, it is possible to draw skin from the penile shaft up into a circumcision device and remove too much. In most cases the denuded area will epithelialize spontaneously and give a satisfactory end result, but the initial appearance can be quite distressing to both parents and practitioner.

One technique that can help prevent this problem is to make sure that when the clamps are initially placed on the distal edge of the foreskin they are, in fact, on the edge -- the junction of skin and mucosa. In its natural position, the foreskin may be perfectly aligned with the edges of both skin and mucosal surfaces meeting at the tip of the glans, or the mucosal surface may lie well proximal to the apparent "edge". If the circumcision is started at this point, with the clamps positioned on a fold of skin, the practitioner may inadvertently remove much more skin than planned.

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## Adhesions / Skin Bridges

Adhesions refer to areas of foreskin that are stuck to the glans. When a boy is born, it is normal for there to be adhesions between the glans and the foreskin -- separation is a developmental process that may take 3 years or more. (In some boys this process is not complete until sexual maturity.) During the process of circumcision, these adhesions need to be lysed in order for the foreskin to be completely removed. If adhesions are not completely removed, the circumcised edge of the foreskin may be drawn up over one section of the corona and create an asymmetric appearance.

Skin bridges are areas of skin that extend from the circumcision edge back onto the glans. They are thought to arise from areas of minor injury on the edge of the glans that become abnormally adhered to the circumcision edge. Because the area under the bridge is unattached, debris can collect underneath and create a problem with hygiene. Excision may be required.

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## Inclusion Cysts

As the circumcision site is healing, inclusion cysts may form along the cut edge. These cysts are thought to either result from smegma accumulating in the incision or from the epidermis rolling in at the time of the procedure. Inclusion cysts may be asymptomatic or may become infected. If size or infection are problematic, surgical excision may be necessary.

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## Abnormal Healing

As with any wound, the possibility for abnormal healing is present with circumcision. Although an unusual occurrence, granulomas along the cut edge and keloid formation have been reported. If the patient has any condition that might increase the risk of abnormal healing, circumcision may be contraindicated.

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## Meatitis

When the urethral opening becomes red and inflamed, the condition is known as meatitis. This is typically a self-limited condition which resolves as the epithelial surface of the glans thickens post-procedure. Dressing the circumcision site with an emollient (petroleum jelly or antibiotic ointment) after circumcision is a way to minimize irritation and prevent this problem. When meatitis is a late-onset finding, it is thought to be caused by chronic exposure to urine and irritation associated with wearing diapers.

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## Meatal Stenosis

Meatal stenosis, a narrowing of the urethral opening, is an uncommon complication of circumcision that usually does not require treatment. It is thought to result either from chronic meatitis that leads to scarring or from mild ischemia of the glans during circumcision. In either case, the meatus is normally placed, but the lower surface of the meatus adheres to itself, causing the opening to be smaller and less oval than is normal. In more severely affected boys, in whom deflection of the urinary stream, dribbling of urine, dysuria, or urinary frequency are related to the stenosis, meatomy may be recommended.

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## Urinary Retention

While not a complication of circumcision itself, the application of a tight circular bandage may create an obstruction to urine flow and cause urinary retention. Removal of the bandage is curative. In most cases, a circumcision site is adequately dressed when covered with a petroleum jelly coated gauze pad without any taping or circumferential pressure.

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## Phimosis

In the uncircumcised newborn, phimosis (an inability to retract the foreskin) is physiologically normal. When phimosis is pathologic and causes symptoms, circumcision may be medically necessary. However, circumcision can also be the cause of pathologic phimosis. When circumcision is performed on a boy with penile web or buried penis, the circumferential edge can pull together in a purse-string fashion and result in the penis being trapped under circumcision site, creating a secondary phimosis. In some cases, good outcomes have been reported with watchful waiting, but surgical correction may be necessary.

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## Chordee

When present as a congenital finding, chordee (a ventral curvature of the penis) is a contraindication to routine circumcision. When chordee is not present at birth but develops as a complication of circumcision, it is thought to be due to uneven amounts of foreskin removal from the ventral and dorsal surfaces. In this case, the corporal bodies are normally formed -- unlike "true chordee" -- but the healing of the asymmetric edge causes the glans to deviate. Surgical correction may be necessary.

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## Hypospadias

Hypospadias, a condition in which the urethral opening is located on the ventral side of the penis instead of at the tip, is another congenital condition which presents a contraindication for routine neonatal circumcision. When not present at birth and noted as a complication of circumcision, it is thought to be related to injury from a clamp device that results in avulsion or splitting of the ventral glans. Surgical correction may be necessary.

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## Epispadias

Epispadias occurs when the urethral meatus opens on the dorsal surface of the glans. As a congenital finding, it is rare. As a complication of circumcision, it is also rare but is possible if the device used to create a dorsal slit in the foreskin is inserted into the urethra inadvertently. Surgical correction may be necessary.

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## Urethrocutaneous Fistula

The creation of a fistula between the urethra and the skin is another rare complication of circumcision. It occurs when there is injury to the urethra. This is thought to be most likely if there is aggressive clamping or suturing on the ventral surface of the glans or penile shaft as the urethra lies quite close to the skin in this area. Surgical correction is necessary.

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## Necrosis of the Penis

Necrosis is also a rare complication, but it has been reported as a complication of circumcision in the setting of infection or injudicious use of an electrocautery device to control bleeding.

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## Amputation of the Glans

This is a rare but devastating complication of circumcision which has been reported with inappropriate placement of the Mogen clamp. The clamp is designed to allow the device to open only enough to allow the foreskin, and nothing else, into the area of compression, but if placed incorrectly with all or part of the glans admitted into this area, amputation will occur.

If recognized promptly with both the amputated piece (in a saline-soaked sponge) and the patient transported immediately to a pediatric urologist, successful reattachment of the glans may be possible.

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## Death

Given the extraordinarily high numbers of circumcisions done each year (some estimate that 20% of all human males have been circumcised), death is an extremely unlikely complication of neonatal circumcision, but it has been reported.

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