



CASE REPORT

Cellulitis Following Newborn Circumcision

Daniel M. Avery Jr., MD
 Daniel M. Avery, III, MD
 John T. McDonald, Jr., MD
 Joseph C. Wallace, MD

An obstetrics fellow performed a circumcision using a Plastibell® Circumcision Device on a healthy, term newborn male without incident several hours before discharge. The parents returned with the infant to the hospital emergency department because of a “bubble at the end of his penis the size of a grape.” The child was visibly distressed and crying, but this stopped when the “bubble” burst. An emergency medicine attending and a family medicine resident covering OB/GYN and pediatrics examined the newborn. Several diagnoses were entertained including an allergic reaction. Both physicians thought that the findings were not serious, and the child was discharged home with follow up the next day in the pediatric clinic.

The child was seen in the pediatric clinic the following afternoon for a routine bilirubin check. Although the parents thought that the baby was improving, the penis was erythematous and swollen. The examining pediatrician diagnosed cellulitis of the penis, and the child was taken to The Children’s Hospital for further assessment and consultation with a pediatric urologist. Admitting diagnosis was cellulitis of the penis and scrotum associated with circumcision. The child was started on triple antibiotic therapy following a septic workup. The only positive culture was the cerebrospinal fluid culture which grew alpha hemolytic streptococcus on day three and was considered contamination.

The erythema and edema resolved by hospital day number two. Of interest, the attending pediatrician reported that he had never seen a penis become infected following circumcision. The child was discharged after six days of intravenous antibiotics on Augmentin® orally at home. The cellulitis resolved completely without sequelae.

Introduction

Circumcision is the excision of the foreskin of the penis.^{1,2} It is one of the oldest known surgical procedures dating back to the Bible.^{3,4} Newborn circumcision is one of the most common surgical procedures performed.^{3,5-9} Most males in the United States have been circumcised.^{2,3,10} The Jewish faith dictates newborn circumcision; medical indications for performing circumcisions are debatable.¹⁰⁻¹⁶ Circumcision is thought to reduce the transmission of the HIV virus and reduce the incidence of carcinoma of the penis.^{4,17,18} Female circumcision is not considered in this paper; however, it not considered part of modern medicine.¹⁹ There are social reasons for performing circumcisions, such as circumcising a newborn male when there are older brothers who have already been circumcised. Interest in circumcision seems to wax and wane over time.

Who Performs Circumcisions?

There is significant variation in exactly who performs circumcisions. Obstetricians have traditionally performed circumcisions as part of global obstetrical care. Today, many pediatricians have learned the technique and offer the procedure to parents of male newborns. In many large cities, pediatricians do not even go to the hospital any longer, and newborn care is a service of neonatologists who perform circumcisions. In teaching institutions, medical students and residents may perform circumcisions under the supervision of attending physicians and fellows. Pediatricians usually follow up circumcisions as part of outpatient newborn care and, along with pediatric urologists, manage complications of circumcisions. Many OB/GYN train-

ing programs no longer teach circumcision and have delegated that responsibility to the pediatricians and urologists. Circumcisions in the Jewish faith are performed by mohels who are usually not physicians.¹¹ In other countries, circumcisions may be performed by nurses, midwives, surgical aides, low skilled medical personnel, or traditional circumcisers.⁴

Complications of Circumcision

There are complications of any surgical procedure, and circumcision is no exception. Fortunately, most are rare and almost always self-limited.^{2, 4-6, 11, 12, 14, 17, 18, 20, 21} Bleeding, infection, and surgical trauma are the most common complications of circumcision.^{1, 3, 4, 6, 9, 10, 11, 16, 18, 21} Bleeding is the most common complication encountered in hospital-performed circumcisions today. The most serious complications of circumcision are infectious in origin. Trainees learning the procedure will occasionally remove too much foreskin. The risk of complication following circumcision ranges from 0 to 50.1%.^{2, 4, 6, 17, 22} The risk of serious complication following circumcision is about 1 in 500.⁹

Postoperative Infections

An infected circumcision is usually diagnosed by redness and swelling of the penis and scrotum and/or pus in the wound.²² Infections following circumcision have been reported with any type of practitioner performing the procedure. The raw surface of a circumcision may serve as a site of entry for infectious organisms, even when the site appears uninfected.⁵ While an attempt is usually made for sterile technique in hospital and physician offices, ritual circumcisions suggest that aseptic technique may not be necessary.⁷ The most serious infectious complications are necrotizing fasciitis, Fournier's Syndrome, sepsis, osteomyelitis, meningitis, and even death.^{8, 11, 20, 23-25} Necrotizing fasciitis and Fournier's Syndrome (penile gangrene) may have devastating results and require extensive surgery and debridement.²⁶ The mortality for Fournier's Syndrome is high.²⁶

Several organisms have been reported to infect the circumcised penis including aerobic and anaerobic bacteria, herpes, tuberculosis, syphilis and diphtheria.^{5, 6, 9, 16, 22, 23, 27-29} Methicillin-resistant Staphylococcus Aureus is the most commonly isolated organism.²¹ Infectious complications may be increased in preterm or sick infants.⁸ Kirkpatrick and Eitzman reported cases of septicemia due to Proteus and Staphylococcus aureus in preterm infants following circumcision.⁸ It is a general practice in most hospitals to forego circumcision in sick and/or premature infants until they are ready for discharge. Infection following circumcision is more common with the Plastibell® device than other devices.⁹

Gesundheit et al reported several cases of Herpes Simplex Virus-1 infection following the traditional practice of circumcision in which the circumciser orally suctions the blood from the incised foreskin with subsequent oral-genital contact.²⁸ Tuberculosis, syphilis, and diphtheria have also been reported to complicate circumcision by oral-genital contact of the mohel.¹⁶

Annobil et al reported a case of tuberculosis complicating circumcision following a circumcision by a "local barber" who presumably had pulmonary tuberculosis.¹⁶

According to Woodside, infected circumcisions are more serious than they appear on the surface and are usually the result of multiple aerobic and anaerobic organisms requiring broad spectrum antibiotic coverage and early debridement.²⁷ Plastibell® circumcision effects circumcision by strangulation of tissue with subsequent necrosis and sloughing of the foreskin.²⁵ This crush injury may increase the risk of wound infection.²⁵ While some swelling and redness at the incision line is common, erythema should not involve the entire penis and scrotum. Erythema of the shaft of the penis should raise suspicion of infection.²⁶ While topical antibiotic cream is routinely used after circumcision, prophylactic antibiotics have not been recommended.³⁰

Summary

Circumcision is one of the most common surgical procedures performed today. Although the risk is low, complications do occur. Most complications are minimal and self-limiting, but they can be devastating and even fatal. Because circumcisions are very common, fairly quick to perform with experience, and often done in bulk, they are often taken for granted. They are nevertheless a surgical procedure with risks requiring consent. Informed consent must be obtained from the parents by the person performing the procedure including a discussion of the risks.

Daniel M. Avery, Jr., MD, is Professor and Chair of OB/GYN, University of Alabama School of Medicine, Tuscaloosa.

Daniel M. Avery, III, MD, is Resident in Orthopedic Surgery, St. Luke's Hospital and Health Network, Bethlehem, PA.

John T. McDonald, Jr., MD, is Assistant Professor of OB/GYN, University of Alabama School of Medicine, Tuscaloosa.

Joseph C. Wallace, MD, Associate Professor and Chair of Surgery, University of Alabama School of Medicine, Tuscaloosa.

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