

The Outcomes of Male Circumcision

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Rates of Adverse Events Associated With Male Circumcision in US Medical Settings, 2001 to 2010

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Study Summary

The controversy over whether boys in the United States should be circumcised is because the public health benefit, small that it might be in a developed country, may be entirely offset by adverse events. It has been difficult to identify precise frequencies of adverse events, owing to the fact that many of the studies that reported adverse events after circumcision were small or not nationally representative.

This study used claims data from a large payer dataset to evaluate the frequency of adverse events after circumcision, comparing them to rates of adverse events of all boys. The investigators also wanted to determine whether the adverse events were related to age at circumcision, so they divided their cohort into children younger than 12 months old, 1-9 years old, and 10 years old or older. The data were drawn from administrative claims encounters in 48 states and Washington, DC. Most of the children were privately insured, but approximately 10% of the children in the dataset were covered by Medicaid and 30% by Medicare.

A composite set of adverse events was predefined, and a review process was developed to determine which adverse events might be related to circumcision. The main outcomes were adverse events per million circumcisions. The researchers looked at the incident risk ratio as well as the incident rate reduction to determine whether infants who were circumcised experienced a higher frequency of adverse events than those who were not circumcised.

Study Findings

The dataset included 1.3 million boys who had experienced a circumcision and 1.0 million who did not. The investigators identified 41 possible circumcision-related types of adverse events. Six types of adverse events occurred only in circumcised newborns: penile amputation; replantation of the penis; lysis of postcircumcision adhesions; revision of incomplete circumcision; strictures of male organs; and artery suture. After adjustment for the background frequency of adverse events, the adverse event rate in circumcised boys was 0.23% (95% confidence interval, 0.21%-0.24%). Infants who were circumcised were more likely to experience wounds, require correctional procedures, and experience inflammation or bleeding. They also had a lower overall risk for surgical procedures, penile disorders, gangrene, and other infections. The following serious adverse event rates and outcomes were associated with newborn circumcision:

- No cases of complete penile amputation;
- One case (per million) of a stricture;
- Three cases (per million) of partial penile amputation;
- Four cases (per million) of replantation of the penis; and
- 16 cases (per million) of infants requiring suturing of penile arteries.

By comparison, the frequency of bleeding as an adverse event was 1889 per million, and the need for some sort of correctional procedure was 3281 per million. Among all circumcised boys, 95.3% were circumcised before

they turned 12 months of age, 2% were circumcised at age 1-9 years, and 2.7% were circumcised at age 10 years or older. Adverse events were much less likely if circumcision was completed during infancy (0.4%) compared with at age 1-9 (9%) or age 10 and older (5.3%). The investigators concluded that the incidence of adverse events after male circumcision is low, and the rate is much lower for individuals circumcised in infancy compared with older ages.

Viewpoint

Among circumcised males, most adverse events were bleeding, needing reduction of adhesions, or needing revision of incomplete circumcision. The reason that some adverse event rates are higher in uncircumcised infants, such as infections or the need for reconstruction, is likely because children with urogenital abnormalities do not typically undergo circumcision. The take-home message for pediatric practitioners is that the overall adverse event rate is in the range of 1 per 200 boys, and many of the adverse events are related to the procedure and its sequelae, with very few catastrophic adverse events.

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