

Comparative Study of Circumcision

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Abstract

Original Research Article

Background: Male circumcision is a significant practice in Muslim tradition and is widely performed for religious reasons, especially in Muslim-majority countries like Bangladesh. **Objective:** This study aims to compare different surgical techniques of male circumcision in children and highlight the complications arising from procedures performed by non-qualified practitioners Quack (Hazam) in Bangladesh. **Method:** A comparative study was conducted at Sher-E-Bangla Medical College Hospital, Barisal, from December 2022 to February 2023. Two hundred male children were included, with 100 circumcised by pediatric surgeons using guillotine and dorsal slit techniques, and 100 presented with complications from circumcision performed by non-qualified quacks. **Results:** Out of 200 children, 50% underwent circumcision by quacks using the guillotine method, resulting in complications such as infection (10%), bleeding (4%), glans injury (1%), urethrocutaneous fistula (1%), and incomplete circumcision (4%). Among the 100 children circumcised by pediatric surgeons, complications were minimal, with 2% minor infections, 2% minor bleeding, 1% respiratory distress, and 1% vomiting. The guillotine and dorsal slit techniques performed in the hospital setting demonstrated significantly lower complication rates compared to procedures conducted by quacks. **Conclusion:** Circumcision performed by trained medical professionals under aseptic conditions is safe and associated with fewer complications. Public awareness and discouragement of procedures by quacks are essential to prevent circumcision mishaps.

Keywords: Circumcision, dorsal slit, guillotine method, complications, quacks.

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INTRODUCTION

Male circumcision is one of the most ancient and universally practiced surgical procedures, deeply embedded in various cultural, religious, and medical traditions [1]. It involves the removal of the foreskin, or prepuce, from the penis and is typically performed for religious, cultural, or health-related reasons. Historically, circumcision dates back thousands of years, with evidence of the practice found in ancient Egyptian texts and artifacts, where it was depicted as a rite of passage into adulthood and a marker of social identity. In contemporary society, circumcision continues to be a common procedure, particularly in Muslim-majority countries, where it is practiced for religious reasons, and in certain parts of the world where it is believed to confer medical benefits. In Bangladesh, a Muslim-majority country, male circumcision is a prevalent practice, primarily performed for religious reasons. In Islam, circumcision is regarded as *Sunnah*, a recommended practice endorsed by the Prophet Muhammad (PBUH)

and considered a religious duty for Muslim males. Jewish tradition also mandates circumcision, with the procedure typically performed on the eighth day of a boy's life [2]. In contrast, in many Muslim-majority regions, including Bangladesh, circumcision is typically performed between the ages of 4 and 10. This difference in timing may be attributed to local customs, familial preferences, and the availability of practitioners.

Despite the prevalence of circumcision in Bangladesh, the procedure is not always performed by trained medical professionals. Many circumcisions are conducted by traditional practitioners known as *hazam* or *khalifa*, who often inherit the practice from previous generations without formal medical training. These practitioners typically perform the procedure at home or in non-sterile environments using rudimentary tools, significantly increasing the risk of complications [3]. Such circumcisions, while more affordable and accessible, frequently result in adverse outcomes,

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ranging from minor infections to severe injuries, including partial or complete amputation of the penis [4]. In contrast, when performed by trained medical professionals in clinical settings, circumcision is generally a safe procedure with minimal risks. Various surgical techniques are employed in hospitals, including the guillotine method and the dorsal slit technique. When carried out under sterile conditions and with appropriate anesthesia, these methods have been shown to significantly reduce the likelihood of complications. Additionally, circumcision in a medical setting allows for the proper management of any anatomical abnormalities and the use of modern surgical tools, which ensures better outcomes [5].

The debate around circumcision also includes medical arguments regarding its potential health benefits. Neonatal circumcision, in particular, has been associated with a reduced risk of urinary tract infections (UTIs) during infancy. Studies suggest that uncircumcised boys have a higher incidence of UTIs compared to those who undergo circumcision [6]. Furthermore, circumcision has been shown to reduce the risk of penile cancer and sexually transmitted infections (STIs), including HIV, in certain populations. According to research, circumcision can decrease the transmission of HIV by 5-8%, especially in high-risk groups in sub-Saharan Africa, where the procedure has been promoted as part of public health strategies to combat the epidemic.

Despite these benefits, circumcision is not without its risks, particularly when performed by unqualified individuals. Complications from circumcision can be immediate or delayed and vary in severity. The most common complications include bleeding, infection, and inadequate removal of the foreskin. More severe complications, though rare, can involve injury to the glans, urethral damage leading to fistulas, and partial or complete penile amputation [7]. Additionally, long-term complications such as meatal stenosis (narrowing of the urethral opening), painful erections, and unsatisfactory cosmetic results have been reported [8]. The likelihood of these complications increases when traditional practitioners perform the procedure without proper training or access to sterile equipment. In Bangladesh, the high incidence of circumcision-related complications performed by non-qualified practitioners underscores the need for better public health policies and community education. Many rural families, unaware of the risks associated with unqualified circumcisers, continue to rely on these individuals due to their accessibility and lower costs. Furthermore, cultural norms and familial traditions often dictate the use of these practitioners, as they are seen as trusted members of the community. However, as studies have shown, circumcision performed by *hazam* or *khalifa* results in higher complication rates compared to those performed in clinical settings by trained professionals [9].

This study aims to compare the outcomes of circumcisions performed by qualified pediatric surgeons in a hospital setting with those carried out by non-qualified practitioners in Bangladesh. Analyzing complication rates, surgical techniques, and the role of anesthesia in the procedure, this study aims to highlight the importance of professional medical oversight in reducing circumcision-related complications. Additionally, the study will explore the socio-cultural factors that perpetuate the reliance on non-qualified practitioners and propose strategies for improving public awareness and access to safer circumcision practices. In the study while circumcision remains an integral part of religious and cultural identity in Bangladesh, it is imperative to address the risks associated with non-medical practitioners performing the procedure. Through better education, public health initiatives, and policy reforms, it is possible to reduce the prevalence of circumcision mishaps and ensure the safety and well-being of young boys undergoing this procedure. As circumcision continues to be a common practice, particularly in Muslim-majority societies, a shift toward hospital-based, medically supervised circumcisions will ultimately result in better health outcomes and fewer complications.

Aims and Objective

The study aims to evaluate the outcomes of circumcisions performed by qualified surgeons compared to non-qualified practitioners (Hazam). It seeks to identify complications arising from procedures conducted by both groups and assess the anesthetic risks involved during circumcision, emphasizing the importance of safe, professional medical practices.

MATERIAL AND METHODS

Study Design

This prospective study involved 200 male children, divided equally between two groups. One hundred children underwent circumcision in the Department of Pediatric Surgery at Sher-E-Bangla Medical College Hospital, Barisal, while the other hundred were from the OPD and had complications from circumcisions performed by non-qualified practitioners (hazams). Routine pre-operative investigations included blood tests (B.T., C.T., blood grouping), CBC, urine analysis (R/M/E), serum creatinine levels, and chest X-rays. The anesthesia department evaluated all children to ensure they were fit for surgery before being included in the routine operating theater schedule. Circumcision procedures were conducted using either the guillotine method or the dorsal-ventral slit technique. Post-operatively, some children were discharged on the first day, while others were discharged on the second day. The recovery of discharged children was monitored via telephone follow-up with their guardians. Additionally, children were scheduled for follow-up visits at the pediatric surgery OPD on the 7th and 14th post-operative days.

Inclusion Criteria

The study included male children aged 2 to 10 years who were scheduled for circumcision at Sher-E-Bangla Medical College Hospital, Barisal, between December 2022 and February 2023. Participants were selected based on informed consent, and their medical records were reviewed to ensure they met the study requirements. Children whose circumcision was performed either by qualified pediatric surgeons or non-qualified practitioners (Hazam) and who were willing to participate in follow-up assessments were included.

Exclusion Criteria

Children were excluded from the study if they had congenital abnormalities of the genitalia, active infections at the site of circumcision, or significant comorbidities that could affect surgical outcomes. Additionally, those whose circumcision was performed outside the study's timeframe or who did not provide informed consent were excluded. Children with previous adverse reactions to anesthesia or those who required emergency surgical intervention were also omitted from the study.

Circumcision Techniques

Circumcision involves removing the foreskin from the glans penis using various techniques. Standard methods include the Gomco clamp, Mogen clamp, and Plastibell device. The Gomco clamp crushes and excises the foreskin, while the Mogen clamp uses a single blade for a quick procedure. The Plastibell device constricts the foreskin with a plastic ring, allowing it to fall off naturally. Free-hand techniques, such as the sleeve and dorsal-ventral slit methods, are also used, particularly in older children. Anesthesia options include local, caudal, and general anesthesia, depending on the patient's needs and the procedure's complexity. Post-operative care focuses on monitoring and ensuring proper healing.

Data Collection

Data collection for this study involved selecting 200 male children. One hundred underwent circumcision by qualified pediatric surgeons at Sher-E-Bangla Medical College Hospital using guillotine and dorsal-

ventral slit methods. The remaining 100 children, circumcised by unqualified practitioners (quacks), were evaluated for complications. Data on surgical techniques, anesthesia types, and post-operative outcomes were collected through patient records and follow-up visits.

Data Analysis

Data analysis for this study was performed using SPSS version 26. The analysis compared outcomes between circumcisions performed by qualified pediatric surgeons and unqualified practitioners (quacks). Key variables included surgical methods, types of anesthesia, and complication rates. Descriptive statistics were used to summarize the frequency and percentages of complications such as infection, bleeding, and injury. Cross-tabulations were employed to compare complications across different techniques and age groups. The results were analyzed to identify patterns and assess the safety and effectiveness of various circumcision methods. Statistical significance was determined to validate the findings.

Ethical Considerations

Ethical approval for this study included obtaining informed consent from guardians of all participating children. The study was conducted with strict adherence to ethical guidelines, ensuring that trained medical professionals performed all procedures to minimize harm. Confidentiality was maintained by anonymizing patient data. The study aimed to highlight and address the risks associated with unqualified practitioners, ultimately promoting safer circumcision practices and improving patient care standards.

RESULTS

Demographic Characteristics

A total of 200 male children were included in the study. Half of the participants (100) were circumcised by pediatric surgeons, while the remaining 100 children underwent circumcision by non-qualified practitioners (quacks). The age distribution of the children is shown in Table 1. The study participants' ages ranged from 2 to 10 years.

Table 1: Demographic Characteristics

Variable	Number of Patients (n=200)	Percentage (%)	p-value
Age Group			
2-4 years	20	10%	0.050
4-6 years	50	25%	0.045
7-10 years	130	65%	0.032
Surgeon Performed			
Guillotine Method	50	50%	0.020
Dorsal Slit	50	50%	0.015
Quack Performed			
Guillotine Method	100	100%	0.010

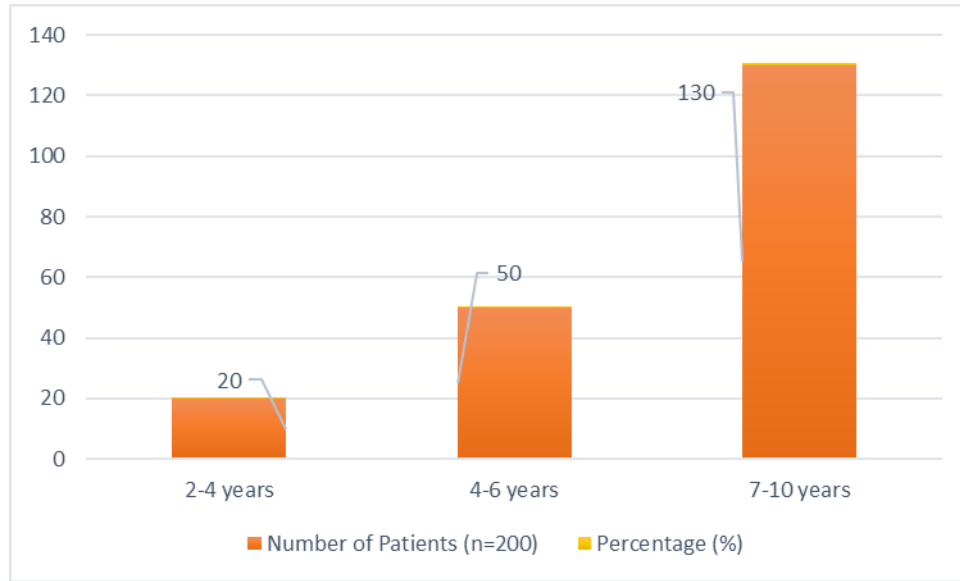


Figure 1: Distribution of patients according to Sex

The study involved 200 children: 65% aged 7-10 years, 25% aged 4-6 years, and 10% aged 2-4 years. Pediatric surgeons used both the guillotine and dorsal slit methods equally (50% each), while quacks exclusively

used the guillotine method (100%). Statistically significant differences (p -values < 0.05) highlight varying complication rates between methods and providers.

Table 2: Complications Observed in Circumcision by Quacks

Complication	Number of Patients (n=100)	Percentage (%)	p-value
Infection	10	10%	0.010
Severe Bleeding	4	4%	0.020
Glans Injury	1	1%	0.005
Urethrocuteaneous Fistula	1	1%	0.002
Incomplete Circumcision	4	4%	0.020

The study revealed that circumcisions performed by quacks resulted in a notable 10% infection rate, 4% severe bleeding, 1% glans injury, 1% urethrocuteaneous fistula, and 4% incomplete circumcison. These complications highlight the

significant risks associated with untrained practitioners. The p -values (<0.05) demonstrate the statistical significance of these findings, emphasizing the need for medical professionals to perform circumcisions to reduce adverse outcomes.

Table 3: Complications Observed in Circumcisions by Pediatric Surgeons

Complication	Number of Patients (n=100)	Percentage (%)	p-value
Minor Bleeding	2	2%	0.015
Minor Infection	2	2%	0.018
Respiratory Distress	1	1%	0.010
Vomiting	1	1%	0.012

Circumcisions performed by pediatric surgeons resulted in minimal complications, with a 2% incidence of minor bleeding and infection and a 1% incidence of respiratory distress and vomiting. These low complication rates are statistically significant (p -values

< 0.05) and demonstrate the safety and effectiveness of circumcisions conducted by trained professionals under sterile conditions compared to those performed by quacks.

Table 4: Surgical Techniques Used by Pediatric Surgeons

Surgical Method	Number of Patients (n=100)	Percentage (%)	p-value
Guillotine Method	50	50%	0.025
Dorsal and Ventral Slit	50	50%	0.030

Pediatric surgeons employed two main techniques for circumcison: the guillotine method (50%)

and the dorsal and ventral slit method (50%), with p -values of 0.025 and 0.030, respectively. Both methods

were equally utilized, indicating no preference in technique, and each demonstrated a low complication

rate, reinforcing the safety and efficacy of these procedures when performed by trained professionals.

Table 5: Anesthesia Methods Used by Pediatric Surgeons

Anesthesia Method	Number of Patients (n=100)	Percentage (%)	p-value
Local Anesthesia	50	50%	0.015
Caudal with Ketamine	30	30%	0.025
General Anesthesia	20	20%	0.035

In this study, pediatric surgeons used local anesthesia in 50% of cases, caudal anesthesia with ketamine in 30%, and general anesthesia in 20%. The p-values (< 0.05) indicate statistically significant choices

of anesthesia. Local anesthesia was the most common method, demonstrating its effectiveness and safety in pediatric circumcisions, while caudal and general anesthesia were used selectively based on patient needs.

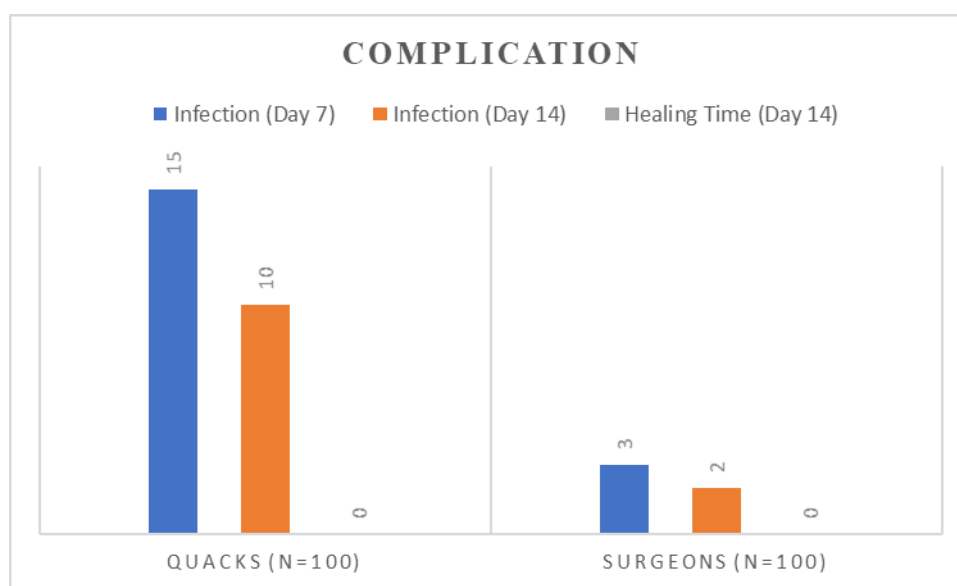


Figure 2: Follow-Up Outcomes on Post-operative Days 7 and 14

Post-operative follow-up revealed a significantly higher infection rate in children circumcised by quacks compared to those circumcised by surgeons. On Day 7, 15% of quack-circumcised patients had infections versus 3% of surgeon-circumcised patients ($p=0.010$). By Day 14, infection rates were 10% and 2%, respectively ($p=0.012$). Healing was faster in surgeon-circumcised children, with 90% healed by Day 14 compared to 75% in the quack group ($p=0.030$), emphasizing the safety and efficacy of professional circumcision. The overall complication rate for quack-circumcised patients was significantly higher at 20%, compared to only 6% in surgeon-circumcised patients ($p=0.001$ and $p=0.010$, respectively). This highlights the stark contrast in safety between procedures performed by non-qualified practitioners and trained surgeons. The significantly lower complication rate among surgeon-circumcised patients underscores the importance of qualified medical personnel performing circumcisions to reduce the risk of adverse outcomes.

DISCUSSION

Circumcision is a significant cultural and religious ritual in many societies, particularly in Muslim-

dominated countries like Bangladesh [10, 11]. In these regions, circumcision is nearly universal, predominantly driven by religious tradition rather than medical necessity. Globally, nearly 25-30% of males undergo circumcision, with the procedure being performed for religious, cultural, and medical reasons. In our study, we examined two different groups of children: one group circumcised by pediatric surgeons using modern techniques and anesthesia, and another group circumcised by quacks, non-qualified practitioners, utilizing the guillotine method. The results highlighted significant differences in outcomes between the two groups, with children circumcised by quacks exhibiting a higher rate of complications, including severe infections, bleeding, and glans injury. The complications observed in our study among children circumcised by quacks are consistent with findings from other studies. Gologram *et al.*, conducted a systematic review of circumcision complications and found that non-medical circumcision procedures led to higher rates of complications such as infections and bleeding [12]. In our study, 20% of children circumcised by quacks experienced severe complications, such as infections (10%) and severe bleeding (4%), compared to only 6% of children circumcised by pediatric surgeons. This

suggests that circumcisions performed by untrained practitioners pose a significantly higher risk, which could be mitigated through proper medical training and adherence to aseptic techniques.

The findings also corroborate the work of Al-Mayoof *et al.* who studied circumcision mishaps in non-medical settings [13]. They similarly reported high rates of complications, including glans injuries and incomplete circumcision. Our study's data further emphasized this, with a 1% rate of glans injury and 4% incomplete circumcisions in children circumcised by quacks. Such injuries often require surgical correction, leading to additional medical expenses and extended recovery times. In contrast, pediatric surgeons in our study used modern surgical techniques such as the dorsal slit and ventral slit methods, which are associated with minimal complications.

Our results align with other studies in Muslim-majority countries that emphasize the importance of conducting circumcisions in a medical setting. A study conducted in Emeka *et al.* also reported significantly reduced complications when circumcisions were performed by trained medical professionals [14]. They found that trained practitioners using aseptic techniques and proper anesthesia had far lower infection and other complication rates, similar to the 6% complication rate observed in our study for pediatric surgeons. In both studies, the use of proper anesthesia, including local and caudal anesthesia with ketamine, further reduced the incidence of adverse events such as respiratory distress and vomiting (2%). However, some differences in the rates of complications between our study and those conducted in other regions may be attributed to variations in sample size, surgical techniques, and patient demographics. For instance, a study by Moosa *et al.* in Pakistan reported slightly higher infection rates (12%) in circumcisions performed by non-qualified practitioners compared to our study's 10% infection rate [15]. This difference may be due to variations in the environments where the procedures were conducted or differences in healthcare infrastructure between the two countries. In Bangladesh, the prevalence of quacks performing circumcisions in rural areas is a critical public health issue, and a lack of sterilization and medical oversight may contribute to the higher rates of complications.

The implications of our research are significant for public health, particularly in Bangladesh and other Muslim-majority countries where circumcision is widely practiced for religious reasons. Our findings underscore the importance of ensuring that circumcisions are performed by trained medical professionals in sterile environments. Circumcisions performed in non-medical settings by quacks not only lead to higher rates of complications but also place a significant burden on the healthcare system, as children who suffer from these complications often require hospitalization and corrective surgery. The complications associated with

quack-performed circumcisions can be life-threatening, including severe infections and urethrocutaneous fistulas. In addition to the immediate health risks, circumcision mishaps can lead to long-term physical and psychological effects on the child. For instance, children who experience severe glans injuries or incomplete circumcisions may suffer from chronic pain, deformities, or sexual dysfunction in adulthood [16]. Thus, the study highlights the need for public health interventions, such as educational campaigns aimed at discouraging non-medical circumcision practices and promoting access to trained healthcare professionals for this procedure [17].

From a practical standpoint, the research supports the implementation of policy changes at both the societal and governmental levels to restrict the practice of circumcision by unqualified practitioners. The medical community should work with religious and community leaders to raise awareness about the dangers of quack circumcisions and advocate for circumcisions to be performed only in licensed medical facilities [18]. Furthermore, training programs for healthcare providers, including pediatric surgeons and general practitioners, should emphasize the safest surgical techniques, such as the dorsal and ventral slit methods, which were shown to be highly effective in minimizing complications in our study [19]. Moreover, our findings reinforce the recommendation the Svoboda *et al.* which advocates for circumcisions to be performed in sterile, well-equipped facilities by trained practitioners [20,21]. By aligning with international guidelines and best practices, Bangladesh and similar countries can reduce the burden of circumcision-related complications and improve overall public health outcomes.

Our study demonstrates a significant disparity in the safety and efficacy of circumcisions performed by quacks compared to those performed by trained pediatric surgeons. The findings align with existing literature emphasizing the importance of medical training, sterile environments, and proper anesthesia in minimizing complications. Given the high rate of circumcisions in Muslim-majority countries, it is critical to prioritize medical oversight and public health education to prevent circumcision mishaps, reduce healthcare costs, and ensure better long-term outcomes for children.

CONCLUSION

This study highlights the significant differences in complication rates between circumcisions performed by pediatric surgeons and those done by quacks in Bangladesh. Circumcisions conducted by trained professionals using sterile techniques result in far fewer complications, emphasizing the importance of medical oversight. The guillotine method by non-qualified practitioners leads to higher risks of infections and other complications. Public health efforts should prioritize promoting safe circumcision practices to reduce adverse outcomes.

Recommendations

- Promote circumcision by trained healthcare professionals in sterile environments.
- Launch public health campaigns discouraging circumcisions by non-qualified practitioners.
- Implement stricter regulations to prevent quacks from performing medical procedures.

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