

## A unique service in UK delivering Plastibell<sup>®</sup> circumcision: review of 9-year results

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**Abstract** Muslim infants undergo circumcision for religious reasons and Bradford has a high Muslim population. The National Health Service in UK does not provide religious circumcision, so in 1996 a nurse-delivered circumcision service led by consultant urologists was set up at a no-profit and cost-only basis. Plastibell circumcision was offered to all infants between 6 and 14 weeks old and performed under local anaesthesia. Information leaflets and videotapes about the procedure were available to parents prior to the procedure. A three monthly audit of the service was undertaken. Between July 1996 and June 2005 (9 years) 1,129 circumcisions were performed. The common complications were problems with the ring (3.6%) and bleeding (3%). Overall, there was 96% satisfaction rate among the service users. The Plastibell technique for circumcision is a simple method and can be safely performed by trained nurses with acceptable complication rates.

**Keywords** Plastibell<sup>®</sup> · Circumcision · Infant · Local anaesthesia · Nurse performed

### Introduction

The practice of circumcision is probably far older than recorded history. It is certainly older than the Biblical account of Abraham and seems to have originated in eastern Africa long before this time [1]. It is also perhaps the commonest operation in surgery. Throughout the world millions of male infants undergo circumcision for religious and cultural reasons [2]. Muslim and Jewish infants undergo circumcision for religious reasons. Bradford has a high Muslim population (~1,000 male Muslim infants are born every year in the maternity unit at Bradford Royal Infirmary).

The National Health Service (NHS) in UK does not provide for religious circumcision, so most of these circumcisions are performed by general practitioners (GPs); many of them are not adequately trained to perform the procedure. As a result, this gives rise to a number of complications, most of which are dealt by the hospital at a considerable cost to the NHS. This was also observed at the Bradford Royal Infirmary.

So in 1996, in conjunction with the religious, community leaders and Bradford Hospital's NHS Trust, it was decided that there was a need for a circumcision service in Bradford. After approval was obtained from the local ethics committee and Bradford Hospital's NHS Trust, a pioneering circumcision service was set up in July 1996 at the Bradford Royal Infirmary. This was also approved by the Royal College of Nursing, UK. It is unique in UK in the sense that this is provided by trained volunteer nurses under supervision of consultant urologists directly under NHS cover, but not funded by it. This service is run at a cost only to the patient, without any actual profit made from the service.

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The training programme for the volunteer nurses comprised background, anatomy and surgical technique and was delivered using videotapes, demonstration on dummies, interactive tutorials and practical demonstration. The trainees were then allowed to perform the procedures first by assisting the urologists and then under close supervision, before being allowed to do so with distant supervision only. A local certificate of competence was awarded after 20 procedures were performed independently, to the satisfaction of the consultant urologist. However, this service is run at hospital premises and the urology team provides help within minutes of a request. The Ethics Committee of Royal College of Nurses, UK, approved this training programme. We published initial results of the circumcision service in 1999 [3]. Here, we present the data of 9 years of Plastibell® circumcision in over a thousand infants by trained volunteer nurses at the Bradford Royal Infirmary.

### Subjects and methods

Plastibell circumcision was offered to infants between 6 and 14 weeks old. Information leaflets and videotapes about the procedure and the outcome were available to parents of all infants attending the procedure. In addition, trained nursing staffs were available to provide answers to all questions prior to and after the operation.

One per cent Lignocaine, which was used for local anaesthesia, was given as penile/ring block. The foreskin was separated from the glans by a blunt forceps, following which a dorsal slit was made until the corona glandis was visible. An appropriate size of Plastibell was then placed on the glans and the foreskin brought over it. This was then secured with a cotton thread supplied with the Plastibell. The foreskin was then trimmed and the handle of the ring snapped.

Following the Plastibell circumcision, all patients had open access to the paediatric ward and the parents were given the telephone number of a specialist nurse in case of any complication or any concern raised by the parents. Parents were provided post-procedure

advice about care of child, but no routine follow-up appointment was arranged. A trained nurse telephoned the family on the following day to enquire about any problems, and if necessary, a home visit was arranged. Respective GPs were also informed of the procedures. A three monthly audit of the service was undertaken regularly.

### Results

Between July 1996 and June 2005 (9 years) 1,129 infants had circumcisions (mean age 11 weeks) performed by volunteer nurses under only distant supervision of consultant urologists at the Bradford Royal Infirmary. Of 1,129 Plastibell circumcisions performed, 125 infants (11.1%) required some degree of follow-up (Table 1). The commonest post-procedure problem encountered was with the Plastibell ring, which occurred in about 41 patients (3.6%). This was either because of delayed separation of the ring, incomplete separation of the ring or as in eight infants, the separated ring slipping down and getting stuck on the penile shaft. The ring normally takes about 7–10 days to fall off. All infants with the stuck ring had it removed with a ring cutter. No anaesthesia was required for this, as the procedure was quick, simple and atraumatic. Bleeding during and after the procedure was the next common complication and was noted in 34 infants (3%). Twenty of these required stitching under local anaesthesia, while in other 14 infants the bleeding stopped with conservative management, occasionally with overnight observation in the paediatric ward.

Thirty-two infants (2.8%) had follow-up, because of parental anxiety without any objective evidence of a significant complication. There were 17 infants who were given antibiotics mostly by their GPs because of suspected wound infection; however, none had any culture-proven infection. In our opinion, most of the antibiotics were prescribed to reduce parental anxiety, due to the slough around the healing wound and the Plastibell ring that was mistaken for pus and a sign of clinical infection. Among the infants, there were two who suffered postoperative pyrexia, diarrhoea and

**Table 1** Plastibell® circumcision: 9 years result in 1,129 babies

Post-procedure bleeding requiring stitch	Post-procedure bleeding requiring conservative management	Antibiotics for (suspected) wound infection/postoperative diarrhoea	Ring removed for migration/incomplete/delayed separation	Follow-up for reassurance	Excess foreskin removed resulting in plastic operation
20 (1.7%)	14 (1.24%)	17 (1.5%)	41 (3.6%)	32 (2.8%)	1 (0.1%)

vomiting, which were deemed to be due to causes unrelated to the procedure. Both these infants required antibiotics. In one patient, slightly excess foreskin was removed, so a review was sought from a plastic surgeon. The patient is awaiting a plastic procedure to release the scar and to prevent the tethering of the penis. All 125 patients who suffered complications were followed up in clinic 3 months after the procedure.

A satisfaction survey carried out at the same time as follow-up showed a 96% satisfaction among the service users. Of the dissatisfied families, six (0.5%) complained of inadequate foreskin removal. This was mostly due to incorrect interpretation of the expected result and required reassurance, as these were found to be both cosmetically and religiously satisfactory on follow-up. Most other causes of dissatisfaction were related with administrative nature or minor post-procedure problems.

## Discussion

Neonatal circumcision continues to attract lot of attention and opinions are divided for and against it. Regardless of all arguments, it cannot be denied that millions of infants worldwide will need circumcision for religious reasons (about 30,000 circumcisions are performed annually in UK) [4, 5]. In the UK, NHS does not provide circumcision for religious reasons, so the demand is privately met mostly by the GPs.

Several of these practitioners are not adequately trained and lack the necessary skills and competence to perform the procedure. Consequently, the NHS is burdened with costs and extra work to attend to the high-complication rates resulting from these procedures.

Many studies report complications like late onset of meatal stenosis, coronal fistula, sepsis, amputation, phimosis and fascitis [6, 7]. These reports are alarming, but appear to be biased as pointed out by Manji [8]. He noted only 3% complications in 368 infants who underwent circumcision by the Plastibell method. These were mostly minor and none of the more serious complications was noted. In our study too none of these major complications were seen.

The results of our three monthly audits show an acceptable complication rate. A randomised trial [9] comparing Plastibell circumcision to dissection suturing method in infants (mean age 4.7 years) showed that general discomfort and infection were slightly less common after Plastibell circumcision than the open method of circumcision. Cosmetic results were similar for both methods [9]. In another study by Duncan et al. [10] cosmetic results after Plastibell circumcision in

newborns met with unanimous parental acceptance. Analysing the results of our study, not surprisingly, most of the complications were noticed during the early periods of service, when the operators were less experienced and going through the learning curve. As experience accumulated, the complication rate dropped. At present, we have four trained nurses, who work in pairs to provide the service.

Regular audit and feedback have helped us in reducing the complication rate over time. Selecting the correct ring size can reduce the most common complication of ring retention associated with this procedure. The Plastibell size is selected by observational estimate of the glans penis girth; therefore, it only gets better with practice and experience. Slippage of the detached Plastibell down the shaft can be troublesome and again is usually the result of incorrect selection of the ring size or excessive traction on the foreskin. Bleeding, which is the next common problem, was identified to be usually related to two causes: one because the string was not tied around the bell properly and the other because of tearing of frenulum during traction or ring insertion. The first problem was identified during the early years of the service and was reduced with proper sustained pressure during tying of the string over the bell. The second problem was discussed with the operators, and as a result more care and attention were given at counter traction and ring insertion to prevent tear of the frenulum.

Parents are provided with adequate information about post-procedure care with leaflets, videotapes and verbal explanation, which includes the problem of partially separated ring, but still it will be difficult to completely eradicate parental anxiety, which sometimes result in visits to GPs and often unnecessary prescription of antibiotics. The true rate of wound infection was difficult to determine, but even if all patients with antibiotics were counted as infection, the numbers are still low. More education of parents and GPs is needed to improve this. Overall, 45 patients' families were dissatisfied, but only six of these were not satisfied with the cosmetic appearance. After 1 year of follow-up, the parents were eventually reassured.

The Plastibell circumcision is a simple and satisfactory procedure that can be taught and learned easily [11]. The low complication rates and the simplicity of the procedure were the reasons for us to utilise it in this pioneering nurse-delivered service in UK.

The service is unique, as nurses have been trained to perform the procedure, thereby relieving (more precious) time for hospital doctors, as well as it fulfils a major need of the community. This service has been so popular that GPs from all over England are now reg-

ularly trained. It is performed under NHS cover, but is not funded by the NHS and is provided on a no-profit and cost-only basis. In the USA, community nurse midwives regularly perform neonatal circumcisions [12].

### Conclusion

Plastibell technique is a safe and simple method to learn and perform neonatal circumcision. Trained volunteer nurses under urological supervision can reliably and effectively deliver it. Since the procedure is performed under NHS cover and in hospital premises, it provides a great reassurance to parents. Last but not least, we believe it provides a great service to the needs of the community.

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