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Postoperative aesthetic and healing features of postectomy using three different surgical techniques: a randomized, prospective, and interdisciplinary analysis

Aspectos estético e cicatricial pós-operatórios da postectomia por três diferentes técnicas cirúrgicas: análise randomizada, prospectiva e interdisciplinar

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ABSTRACT

Objective: to compare the postoperative esthetic and healing aspects of postectomy performed by different surgical techniques, based on the evaluation of different specialty expert professionals. **Methods:** prospective and randomized clinical trial enrolling 149 preschool children with a medical indication for circumcision, divided into three groups: postectomy with the hemostatic device Plastibell® (PB group), conventional technique (CV group) and conventional with subcuticular stitches (SC group). Pictures were taken from patients at pre-defined angles on the 30th and 60th postoperative days. Photos were evaluated by three specialists (dermatologist, pediatrician and plastic surgeon), who assigned scores from 1 to 5 regarding the esthetic and healing features at each moment. Grades 4 or 5 from all specialists characterized "best result". Data were analysed to compare the used surgical techniques, the judgments from specialties and postoperative complications. **Results:** most of the patients obtained the "best result" regarding healing (70%) and esthetics (56%). The final overall result showed the PB group as the best for healing (p=0.028) and the SC group as the best for esthetics (p=0.002). For the dermatologist, on the 60th postoperative day, the CV group presented the worst aesthetic result, whereas for the pediatrician and the plastic surgeon, the PB group presented the best healing result and the SC group had the best esthetic result. There was no difference between the groups regarding the presence of complications. **Conclusion:** the most common surgical techniques used to perform postectomy in children were differently assessed regarding healing and esthetic features by distinct medical professionals. The analysis of these two parameters among experts from related areas diverged among them and over time.

Keywords: Male Circumcision. Phimosis. Healing wound. Esthetic.

INTRODUCTION

Phimosis is defined as the inability to completely retract the foreskin and expose the glans, due to congenital or acquired constriction of the foreskin[1-4]. According to the European Urology Association, the diagnosis of phimosis is established after the second year of life if the foreskin is not retractable, or if it retracts only partially, or there is a constricting ring[5].

Postectomy or circumcision, the treatment recommended for phimosis, is one of the oldest and most common surgical procedures worldwide[6,7] and consists of the removal of part or all of the penis foreskin[8], aiming at sufficient exposure of the glans in order to solve the problem, whether phimosis or paraphimosis. Postectomy methods can be classified into three types or combinations of these: postoplasty, hemostatic devices, and conventional prepuce resection[9,10].

The conventional dissection technique, the Gomco and Mogen clamps and the Plastibell® device can be used in newborns. For older children, conventional surgery and the use of Plastibell® are the procedures of choice. Plastibell® was originally developed for neonatal circumcision, but has been later adapted for circumcision in childhood[11,12].

The conventional method is the most commonly used technique, but cosmetic results are highly variable. The method with Plastibell® would supposedly present the best aesthetic results[13-15]. However, more recently, complications associated with the use of the device in childhood circumcisions have been reported[16,17].

Regardless of the technique used, the success of the procedure is based on easy execution under appropriate conditions of sedation and analgesia,

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antisepsis and hemostasis, removal of the inner and outer layers of the foreskin, protection of the glans and urethra, achieving good functional and aesthetic results, minimum with postoperative care[18,19].

There is probably no other surgical procedure that is performed by so many different specialists in different countries around the world, including general surgeons, urologists, pediatric surgeons, plastic surgeons, general practitioners, family doctors, and even non-medical professionals, such as nurses and midwives[8,20,21].

Due to this great variability of conduct and evaluations in the national and international literature, both regarding the chosen techniques and the criteria for analyzing results, it is necessary that studies be designed in a prospective and randomized way, compare the main techniques employed, the aesthetic results, and postoperative scarring. In addition, these should also be analyzed by experienced professionals of different specialties: skin and healing specialist – dermatologist; specialist in cosmetic surgery – plastic surgeon; and general practitioner, who lives daily with the diagnosis of phimosis – general pediatrician.

METHODS

This is a randomized study approved by the Ethics in Research Committee of the Hospital de Clínicas of the Federal University of Paraná (HC/UFPR), under opinion number 611.320.

We included pre-school boys (between two and six years of age), with a medical indication for postectomy, attended at the Pediatric Surgery outpatient clinic of the HC/UFPR, whose parents or guardians signed the informed consent form (ICF). For the sample calculation, we used identification of significant difference between groups, considering a significance level of 95% and a test power of 80%, resulting in a minimum of 29 patients, who were to return at least until the 30th postoperative (PO) day.

We selected 149 boys for this study, whom we randomly divided into three groups with the help of the software Research Randomizer Form 4.0. In the PB group, 49 patients underwent postectomy with a hemostatic device called Plastibell®; in the CV group, 50 children were operated on using the conventional technique; and in the SC group, 50 children underwent conventional postectomy with separate subcuticular stitches. We excluded from the sample: patients with additional diagnoses, with the need for concomitant surgical correction, which could directly interfere in the postoperative recovery process; patients with decompensation for any underlying disease; patients with clinical suspicion of lichen sclerosus, in need of classical circumcision; and patients whose parents preferred, or the surgeon previously defined, a certain surgical technique to be used, for medical or non-medical reasons.

All procedures were performed under general anesthesia, induced and maintained by anesthetic inhalation (sevoflurane and nitrous oxide), the airway being maintained by a face mask without intubation. The dorsal nerve block of the penis was performed with 0.25% bupivacaine without adrenaline (maximum dose = 2 mg/kg; maximum volume 6 mL) and the postoperative analgesia, with intravenous dipyrone 10 mg/kg.

We carried out the operations between April 2014 and October 2015, in a team composed of two pediatric surgeons from the Pediatric Surgery Service of HC/UFPR and two resident physicians in Pediatric Surgery of the same service (4th and 5th years), under supervision (always one resident and one supervisor in each surgery). For all procedures, regardless of the surgical technique used, partial foreskin resection was respected, aiming at partial foreskin coverage of the glans.

In the PB group, after opening the preputial stenotic ring, releasing balanopreputial adhesions and the balanopreputial frenulum with electrocautery, repairing the redundant foreskin and a small dorsal incision, we estimated the diameter of the glans to select the size of the compatible Plastibell® device (among 13 and 18 mm) (Figure 1.5). After proper positioning of the device and its fixation with its own braided cotton thread, we resected the excess preputial skin and reviewed the hemostasis.

In the CV group, after lysis of balanopreputial adhesions and section of the balanopreputial frenulum with electrocautery, we made a circumferential incision of the skin of the foreskin at the level of the area to be resected, followed by the release of the skin from the internal preputial mucosa until the visualization

of the glans crown for transparency. We performed a new circumferential incision, at this time in the internal preputial mucosa, between 0.5 and 1 cm from the glans. We asserted rigorous hemostasis after retraction of the remaining foreskin and sutured the edges of the skin and mucosa with eight separate stitches of 5.0 single catgut absorbable thread.

In the SC group, all surgical maneuvers were identical to those in the CV group, except for the subcuticular apposition of the skin and the preputial mucosa, performed with eight separate subcuticular stitches, with 5.0 simple catgut suture.

Hospital discharge occurred about four hours after the procedure, after adequate diuresis and good diet acceptance. The return was scheduled for the 7th, 30th and 60th PO day, when complications requiring reoperation were identified.

The penis was photographed at the 30th and 60th PO consultations, with a 5.0 megapixel camera with flash, at predefined angles: profile (right side view); top (top view); caudal-cranial (view from the feet of the stretcher) and close up of the suture line (Figure 1).

Figure 1. *Demonstration of the preset angles of the patients' photographs. 1) profile (right side view); 2) superior (top view); 3) caudal-cranial (view from feet of the stretcher); 4) close up of the suture line; 5) hemostatic device named Plastibell® and used for postectomies. The patient of images 1 to 4 belongs to the PB group and was photographed in the 60th PO day.*

We organized the photographs in digital files, divided into folders by patient, without identifying the technique used. Each individual folder contained separated subfolders with photographs of the 30th and 60th PO day, when present. All photographic files were also recorded on three compact discs and sent to the specialists.

The photographs were evaluated comparatively by three experienced professionals in specific areas: pediatrician, dermatologist and plastic surgeon. None of the professionals had previous knowledge about the surgical technique performed, giving an opinion on the aesthetic and healing aspect of each set of images referring to each patient and in each moment, in scores (5 - excellent, 4 - very good, 3 - good, 2 - regular, 1 - poor). The specialists' evaluation regarding the aesthetic aspect should analyze the beauty/appearance of the postectomized penis, and regarding healing, the regularity of the suture line between the skin and the preputial mucosa. Each professional was free to exclude photographs considered inappropriate for proper evaluation, mainly related to focus and sharpness.

Of the 149 randomized patients, 93 (62.4%) returned on the 30th PO and were photographed, 31 from the SC group, 30 from the CV group and 32 from the PB group. On the 60th PO, 53 (35.6%) patients returned and were photographed, 17 from the SC group, 14 from the CV group and 22 from the PB group. All patients who returned after 60 days were part of the group photographed at the 30th PO. Patients who returned on the 30th and/or on the 60th day after postectomy formed the group of individuals that were photographed and integrated the groups to evaluation of aesthetic and healing results.

For the analysis of the overall result of the groups as a whole or for intergroup comparisons, we considered as having the "best result" the patient who, on the last return (30th or 60th PO), received a score of 4 or 5 from all specialists; as having "satisfactory result", the patient who received a score of 2 or 3 in the evaluation of at least one of the specialists; and "unsatisfactory result", the patient who received at least a grade 1 on his last return.

We compared the specialties assessments two by two at the different moments (30th and 60th PO) in terms of healing and aesthetics and tested the likelihood of them assigning scores 4 or 5 at each moment. Next, was compared the evolution of the scores of each specialist at both times for the same aspects and tested the probability of the same specialist assigning scores 4 or 5.

To compare the three surgical techniques, we used the Kruskal-Wallis non-parametric test for quantitative variables and the Chi-square test for qualitative ones. We performed the analysis of agreement between experts using Kappa statistics. We used the binomial test to assess the experts' opinions

regarding the likelihood of better results, in comparisons between specialties, or for the same specialty over time. We considered p-values less than 0.05 as statistical significant.

RESULTS

Of the total number of children included, 18.8% did not even return to the first consultation scheduled for the 7th PO day; 62.4% returned for the second visit, on the 30th PO day, and 35.6% of the operated patients returned on the 60th PO day, as directed.

In general, considering the assessments of the specialties all together and without differentiation by the technique employed, the healing criterion achieved 70% of "best result" (scores 4 and 5), and the aesthetic aspect, 56%. The classification as "satisfactory result" (scores 2 and 3) completed the percentages, since no patient had an "unsatisfactory result" (grade 1 in the last evaluation) in either of the two aspects analyzed.

When analyzing the performance of the surgical techniques used, compiled among all the specialties involved in the evaluation, the PB group presented superior healing than the others, obtaining "best result" (scores 4 and 5) in 84.4% of operated patients, versus 71% of the SC group, and 53.3% of the CV group (p = 0.028). In the aesthetic aspect, the SC group stood out, with 71% of "best result", followed by 65.6% for the PB group, and 30% for the CV group (p = 0.002).

When comparing scores by specialty, throughout the study's evaluation periods there was always progression to higher score averages when compared with previous score averages for each specialty, both in the analysis of healing and aesthetic aspects.

In the two moments of evaluation (30th and 60th PO days), the comparison of scores attributed by the specialties to the healing and aesthetic aspects was established without discrimination by the surgical technique employed. This analysis showed statistically significant variability between the ratings attributed by the specialties both for the healing process and for the aesthetic aspect 30 days after the operation.

Regarding the healing parameters, the highest general average (4.1) was granted by Dermatologist, while 40.9% of the scores attributed by Plastic Surgeon were less than or equal to 3, a percentage significantly higher than those presented by the Pediatrician (p = 0.004) and the Dermatologist (p = 0.002) in the same evaluation period (Table 1).

The aesthetic aspect was classified by Pediatrician with the highest overall average (4.1) at the end of 30 days, with scores 4 or 5 for almost 90% of the cases evaluated. This percentage was significantly higher than the percentages of scores from the same stratum achieved in 30 days when evaluated bu the Dermatologist (p < 0.001) and the Plastic Surgeon (p < 0.001) (Table 1).

When applying the same comparisons described above for the set of images obtained on the 60th day after the operation, we note a very similar behavior in the evaluations obtained from the three specialties, both in the healing aspect and in the aesthetic one, and the differences between specialties found in the 30th PO day did not remain after the observation period doubled (Table 1).

Table 1. *Distribution of specialty scores in relation to the healing and aesthetic aspects in the photographs of the 30th and 60th postoperative days.*

Healing evaluation (scores)	Pediatrician		Dermatologist		Plastic Surgeon	
30th PO day	n	%	n	%	n	%
Up to 3	22	25%	18	20.7%	36	40.9%
4 or 5	66	75%	69	79.3%	52	59.1%
Total	88	100.0	87	100.0	88	100.0
Comparison between specialties (30th PO day)					p-value *	
Pediatrician x Dermatologist					0.678	
Pediatrician x Plastic Surgeon					0.004	
Dermatologist x Plastic Surgeon					0.002	

Aesthetic evaluation	Pediatrician		Dermatologist		Plastic Surgeon	
(Scores) 30th PO day	n	%	n	%	n	%
Up to 3	10	11.4%	35	41.2%	41	46.6%
4 or 5	78	88.6%	50	58.8%	47	53.4%
Total	88	100.0	85	100.0	88	100.0

Comparison between specialties (30th PO day)	p-value*
Pediatrician x Dermatologist	<0.001
Pediatrician x Plastic Surgeon	<0.001
Dermatologist x Plastic Surgeon	0.597

Healing evaluation (scores) 60th PO day	Pediatrician		Dermatologist		Plastic Surgeon	
	n	%	n	%	n	%
Up to 3	2	4%	1	2%	6	12%
4 or 5	48	96%	48	98%	44	88%
Total	50	100.0	49	100.0	50	100.0

Comparison between specialties (60th PO day)	p-value*
Pediatrician x Dermatologist	1.000
Pediatrician x Plastic Surgeon	0.219
Dermatologist x Plastic Surgeon	0.125

Aesthetic evaluation	Pediatrician		Dermatologist		Plastic Surgeon	
(Scores) 60th PO day	n	%	n	%	n	%
Up to 3	2	4%	6	12.5%	9	18%
4 or 5	48	96%	42	87.5%	41	82%
Total	50	100.0	48	100.0	50	100.0

Comparison between specialties (60th PO day)	p-value*
Pediatrician x Dermatologist	0.219
Pediatrician x Plastic Surgeon	0.065
Dermatologist x Plastic Surgeon	1.000

(*) Binomial test; p <0.05.

Thus, the analysis of agreement between the specialties, measured using the Kappa Coefficient, showed a weak association between comparisons made at 30 days for healing and aesthetics, as well as for comparisons of aesthetics 60 days after postectomy.

In this study, we also analyzed the performances of each of the three surgical techniques used to perform the postectomy regarding the healing and aesthetic aspects, comparatively between the specialties and in the two moments of evaluation.

For the Pediatrician, both for the healing aspect and for the aesthetic aspect, and regardless of the evaluation moment, the percentage of scores ≥ 4 was always higher for the SC group in relation to the PB and CV groups, without, however, a statistically significant difference (Table 2).

For the Dermatologist, in general, there was a balance, with a mild, non-significant superiority in the percentage of scores ≥ 4 for the PB and SC groups during the entire evaluation period of healing and in

the first 30 days of evaluation of aesthetics. However, at the end of the evaluation of the aesthetic result, on the 60th PO day, the CV group had a significantly lower percentage of scores ≤ 4 compared with the other two groups (Table 3).

In the evaluation performed by Plastic Surgeon, despite displaying no difference between the techniques used 30 days after the operation, the healing and aesthetic aspects showed significantly relevant changes at the end of the evaluation period (60 days). For this specialty, the SC and PB groups showed a significantly better healing result than the CV group 60 days after the operation (p = 0.033). Likewise, the aesthetic result after 60 days was significantly higher in the SC and PB groups compared with the CV group (p = 0.002) (Table 4).

Table 2. *Relationship between the surgical technique used and the pediatric scores as to the healing and aesthetic aspects in the photographs of the 30th and 60th postoperative day.*

Pediatrician	Surgical technique			p-value*
Healing 30th PO	SC	CV	PB	
≤ 3	5	10	7	0.383
	17.86%	33.33%	23.33%	
≥ 4	23	20	23	
	82.14%	66.67%	76.67%	
Total	28	30	30	
Pediatrician	Surgical technique			p-value*
Healing 60th PO	SC	CV	PB	
≤ 3	0	1	1	NA
	0%	8.3%	4.7%	
≥ 4	17	11	20	
	100%	91.7%	95.3%	
Total	17	12	21	
Pediatrician	Surgical technique			p-value*
Aesthetic aspect 30th PO	SC	CV	PB	
≤ 3	2	4	4	0.695
	7.14%	13.33%	13.33%	
≥ 4	26	26	26	
	92.86%	86.67%	86.67%	
Total	28	30	30	
Pediatrician	Surgical technique			p-value*
Aesthetic aspect 60th PO	SC	CV	PB	
≤ 3	0	1	1	NA
	0%	8.3%	4.7%	
≥ 4	17	11	20	
	100%	91.7%	95.3%	
Total	17	12	21	

(*) Chi-square test; p <0.05; (NA) test not applicable; (SC: subcuticular; CV: conventional; PB: Plastibell®).

Table 3. *Relationship between the surgical technique used and the dermatologist scores as to the healing and aesthetic aspects in the photographs of the 30th and 60th postoperative day.*

Dermatologist	Surgical technique			p-value*
Healing 30th PO	SC	CV	PB	
≤ 3	4	8	6	0.461
	14.3%	27.6%	20%	
≥ 4	24	21	24	
	85.7%	72.4%	80%	
Total	28	29	30	
Dermatologist	Surgical technique			p-value*
Healing 60th PO	SC	CV	PB	
≤ 3	0	1	0	NA
	0%	8.3%	0%	
≥ 4	17	11	20	
	100%	91.7%	100%	
Total	17	12	20	
Dermatologist	Surgical technique			p-value*
Aesthetic aspect 30th PO	SC	CV	PB	
≤ 3	14	13	8	0.162
	51.85%	44.83%	27.59%	
≥ 4	13	16	21	
	48.15%	55.17%	72.41%	
Total	27	29	29	
Dermatologist	Surgical technique			p-value*
Aesthetic aspect 60th PO	SC	CV	PB	
≤ 3	1	4	1	0.024
	5.9%	36.4%	5%	
≥ 4	16	7	19	
	94.1%	63.6%	95%	
Total	17	11	20	

(*) Chi-square test; p <0.05; (NA) test not applicable; (SC: subcuticular; CV: conventional; PB: Plastibell®).

We also assessed the comparative performance of the used surgical techniques through the statistical analysis of the means and medians assigned by each expert in the two evaluation moments.

In this analysis, the average score for healing attributed by the Pediatrician to the PB group on the 60th day after the operation was higher than the average score of the other two groups (p = 0.022). In the same period, the evaluation of the Plastic Surgeon regarding healing also showed superiority of the PB group in relation to the others (p = 0.01). The aesthetic aspect presented by the PB and SC groups at the end of 60 days was judged by the Plastic Surgeon as superior to the one presented by the CV group (p = 0.008) (Table 5).

Five patients (4.1%) presented complications

requiring reoperation: two (40%) due to preputial stenosis (SC group); two (40%) due to problems related to the Plastibell® device (PB group); and one (20%) due to hypertrophic scarring on the suture line (CV group) (p = 0.835). In the PB group, in one patient the device did not fall spontaneously after 30 days, and in the other, there was proximal migration of the "ring", trapping the glans.

Table 4. *Relationship between the surgical technique used and the plastic surgeon scores as to the healing and aesthetic aspects in the photographs of the 30th and 60th postoperative day.*

Plastic surgeon	Surgical technique			p-value*
Healing 30th PO	SC	CV	PB	
≤ 3	11	14	11	0.717
	39.3%	46.7%	36.7%	
≥ 4	17	16	19	
	60.7%	53.3%	63.3%	
Total	28	30	30	
Plastic surgeon	Surgical technique			p-value*
Healing 60th PO	SC	CV	PB	
≤ 3	1	4	1	0.033
	5.9%	33.3%	4.7%	
≥ 4	16	8	20	
	94.1%	66.7%	95.3%	
Total	17	12	21	
Plastic surgeon	Surgical technique			p-value*
Aesthetic aspect 30th PO	SC	CV	PB	
≤ 3	11	17	13	0.377
	39.3%	56.7%	43.3%	
≥ 4	17	13	17	
	60.7%	43.3	56.7%	
Total	28	30	30	
Plastic surgeon	Surgical technique			p-value*
Aesthetic aspect 60th PO	SC	CV	PB	
≤ 3	0	6	3	0.002
	0%	50%	14.3%	
≥ 4	17	6	18	
	100%	50%	85.7%	
Total	17	12	21	

(*) Chi-square test; p <0.05; (**) test not applicable; (SC: subcuticular; CV: conventional; PB: Plastibell®).

Table 5. *Quantitative statistical analysis, through averages and media, from the specialty scores as to the aesthetic and healing aspects in the photographs of the 30th and 60th days of postoperative, as a technique.*

Evaluator	Evaluation	Surgical technique	n	Average	Median	Minimum	Maximum	p-value*
Pediatrician	Healing - 30th PO	SC	28	4.1	4	3	5	
		CV	30	3.8	4	2	5	
		PB	30	4.0	4	3	5	0.257
	Aesthetics - 30th PO	SC	28	4.1	4	3	5	
		CV	30	4.2	4	3	5	
		PB	30	4.0	4	3	5	0.332
	Healing - 60th PO	SC	17	4.7	5	4	5	
		CV	12	4.2	4	2	5	
		PB	21	4.8	5	3	5	0.022
	Aesthetics - 60th PO	SC	17	4.4	4	4	5	
		CV	12	4.5	5	3	5	
		PB	21	4.2	4	3	5	0.205
Dermato	Healing - 30th PO	SC	28	4.1	4	3	5	
		CV	29	4.0	4	3	5	
		PB	30	4.1	4	3	5	0.689
	Aesthetics - 30th PO	SC	27	3.6	3	3	5	
		CV	29	3.7	4	2	5	
		PB	29	3.9	4	2	5	0.263
	Healing - 60th PO	SC	17	4.8	5	4	5	
		CV	12	4.6	5	3	5	
		PB	20	4.9	5	4	5	0.437
	Aesthetics - 60th PO	SC	17	4.3	4	3	5	
		CV	11	3.8	4	3	5	
		PB	20	4.4	4	3	5	0.079
Plastic	Healing - 30th PO	SC	28	3.7	4	3	5	
		CV	30	3.6	4	2	5	
		PB	30	3.8	4	2	5	0.570
	Aesthetics - 30th PO	SC	28	3.7	4	3	5	
		CV	30	3.4	3	2	5	
		PB	30	3.8	4	2	5	0.253
	Healing - 60th PO	SC	17	4.4	4	3	5	
		CV	12	3.8	4	3	5	
		PB	21	4.6	4	2	5	0.010
	Aesthetics - 60th PO	SC	17	4.5	4	4	5	
		CV	12	3.6	3.5	2	5	
		PB	21	4.5	5	3	5	0.008

(*) Kruskal-Wallis non-parametric test; p <0.05; (SC: subcuticular; CV: conventional; PB: Plastibell®; n: number of patients; Dermato: dermatologist; Plastic: Plastic Surgeon).

DISCUSSION

Postectomy or circumcision is one of the most commonly performed surgical procedures in the world and is undoubtedly the most frequent operation performed on boys. As a result, it is surrounded by controversies, involving its indication, age for completion, most appropriate technique and method, in addition to the standard final aesthetic and healing aspects[1,3,4,6,21,22].

Such controversies, to a greater or lesser extent, could be resolved by conducting randomized, well-structured clinical studies that provide for the monitoring of the patients involved over a significant period, necessary for the correct and adequate analysis of the monitored parameters.

The difficulty of repeatedly reassessing patients in the postoperative period for a considerable time is commonplace for the pediatric surgeon, who deals with fathers and mothers of all social classes, socioeconomic and cultural conditions, whether in the public or private health systems.

This study was developed and carried out in a public institution hospital, with exclusive medical care for patients of the Brazilian Unified Health System (SUS). As the difficulty of follow-up over the expected time for data collection, with potential loss of information that could compromise the results, was a plausible reality, it was necessary to previously define the minimum number of patients per group, based on a pilot study, with return at least 30 days after the procedure, so that appropriate statistical methods capable of defining significance could be applied.

Despite all recommendations, an important fraction of patients were lost to follow-up, returning only in the presence of complications. In our study, follow-up until the 60th PO day was only possible in 35.6% of patients in general. Therefore, it is worth noting the 98.5% follow-up rate until the 90th PO day reached by Nagdeve in Nagpur, India, during his prospective randomized study[8].

Regarding the general results of the research, regardless of the surgical technique employed, professionals in all specialties registered a consistent increase in the scores attributed to the photographic images of the 60th PO compared with those of the 30th PO. It is likely that this improvement over the observation period, unanimous to the specialties, is related to the reduction of edema and inflammatory reaction, typical of the most recent PO period, and that regresses considerably in the second month. In the Dermatologist evaluation, this improvement did not reach statistical significance in the healing issue, but we believe that it is an effect of the very high averages this specialty started from since the first evaluation (30th PO day), and does not reflect understanding and/or professional experience superior than the other specialties listed in the study.

We verified the same fact in the global analysis between the specialties regarding the aesthetic parameter. However, pediatrics is the specialty that does not achieve statistical significance in improving scores between the two assessment periods. Analogously to the Dermatologist assessment of healing, in this area (aesthetics) pediatrics was the specialty that started with the highest initial scores, maintaining average scores always higher than those of the colleagues.

Plastic Surgery, on its turn, was the specialty that always maintained the highest percentages of scores lower than or equal to 3 when compared with the other specialties, for both aspects (healing and aesthetics) and also over time (30th and 60th PO days), and almost always the lowest scores average, being considered the most rigorous among the study professionals, perhaps reflecting the expected look of a specialist in imperceptible scars and who deals daily with beauty as one of the main objectives of the procedure.

The analysis of the agreement between the ratings of the experts involved in the work, without stratification by techniques, showed the presence of moderate agreement, although this association was classified as weak. This does not corroborate with the findings in the literature, which register divergences regarding the best final anatomical result, related to the subjective evaluations of different areas, which would be justified by the diversity of professional activities in each area[2,8,13,16].

In our opinion, a non-negligible component of the existence of divergences between the specialties that evaluate the final results of the procedure in question

lies in the great variability that exists in the collection of opinions and in the absence of uniformity in the classifications and stratifications used by the researchers. This would lead to the impression that the results obtained by various researchers would tend to have less divergence between evaluators of different specialties if there was a better methodological adjustment of the tools involved in obtaining opinions and in classifying the different graduations of the final aspects. In this sense, the methodology used in this study had as one of the objectives to minimize the possible intervening factors in the collection of the information provided by the specialists.

The specialties showed different results when they rated the two aspects studied (healing and aesthetics) in the stratified comparison between the three surgical techniques used in the study. While the Pediatrician did not define a superior technique for both healing and aesthetics in neither of the two evaluation moments, the Dermatologist classified the CV technique as the worst aesthetic result ($p = 0.024$) at the end of the study. In this aspect of the analysis, attention is drawn to the discernment index achieved by the scores attributed by the Plastic Surgeon at the end of the study (60th PO day), classifying the PB technique with as best healing result ($p = 0.033$) and the SC technique as the best aesthetic result ($p = 0.002$). Due to the rigor of the statistical analysis, the PB technique presented the best final results in relation to healing, according to the Pediatrician and Plastic Surgeon, and as for aesthetics (together with the SC technique). As far as the authors are aware, there are no studies in the current literature with the same design for a faithful comparison. However, this work corroborates a study that evaluated the presence of irregular scarring, with a statistically significant difference when comparing a conventional group (dorsal incision) with the Plastibell® group (16.66% vs. 0%; $p < 0.001$)[8].

The superiority of the SC group in the aesthetic aspect confirms our initial impression, since the subcuticular apposition of the skin and the preputial mucosa during postectomy – apparently still not currently used in this operation – and the introduction of it for comparison aimed at a more uniform suture line, already obtained with this suture in other procedures.

In our sample, there was no statistical difference between groups regarding the presence of complications requiring reoperation, a fact corroborated by other authors[2,8,17,23]. Only 5 patients (4.1%) were reoperated: two (40%) for preputial stenosis, with no response to corticosteroids; two (40%) due to problems related to the Plastibell® device; and one (20%) due to hypertrophic scarring in the preputial suture line skin/mucosa, with simple resection of the scar, without further complications. A Danish study[24] described 5.5% of reoperations after preputial surgeries, 90% of which related to postoperative distal preputial stenosis. A more recent study[17] reported 3.3% of complications requiring surgical reintervention. Of these, there were 22.8% of preputial strictures, 32.9% of bleeding, and 41.8% of paraphimosis caused by the displacement of the plastic ring.

We should note that, on our results, the influence of the learning curve is evident, since the study was conducted in a teaching hospital, with operations carried out by resident physicians under supervision. Another limitation was the impossibility of an objective analysis of the highlighted anatomical aspects, since in the literature there are still no validated forms or indisputable aesthetic aspects.

CONCLUSION

The evaluation of healing and aesthetic aspects after postectomy shows divergent results over time when performed by different related specialties.

The surgical techniques most used to perform postectomy in children present different performances with respect to healing and aesthetic results when analyzed by different related specialties, favoring the Plastibell® (PB) technique regarding healing and the SC (subcuticular) variation of the conventional technique as to the aesthetic aspect.

The conduction of new prospective, randomized studies, with a high number of patients and long-term follow-up, through validated instruments and with a high degree of objectivity, can contribute to clarify the controversies that still surround the results of the different ways of performing postectomy around of the world.

R E S U M O

Objetivo: *analisar os aspectos estético e cicatricial pós-operatórios (PO) de pacientes submetidos a postectomia por diferentes técnicas cirúrgicas a partir da avaliação de profissionais experientes de áreas afins*. **Método:** *ensaio clínico prospectivo e randomizado, incluindo 149 meninos em idade pré-escolar com indicação médica de postectomia, divididos em três grupos: postectomia com dispositivo hemostático Plastibell® (grupo PB), técnica convencional (grupo CV) e convencional com pontos subcuticulares (grupo SC). Os pacientes foram fotografados em ângulos predefinidos no 30º e 60º dias de PO e as fotos avaliadas por três especialistas (dermatologista, pediatra e cirurgião plástico) que atribuíram notas entre 1 e 5, quanto aos aspectos estético e cicatricial em cada momento. Notas 4 ou 5 de todos os especialistas caracterizaram o "melhor resultado". Os dados foram submetidos à análise estatística para comparar as técnicas cirúrgicas, as avaliações dos especialistas e as complicações pós-operatórias.* **Resultados:** *a maioria dos pacientes obteve "melhor resultado" cicatricial (70%) e estético (56%). O resultado geral final apontou o grupo PB como superior quanto à cicatrização (p=0,028) e o grupo SC quanto ao aspecto estético (p=0,002). Para o dermatologista, na segunda avaliação, o grupo CV apresentou o pior resultado estético, enquanto para o pediatra e o cirurgião plástico, o grupo PB apresentou o melhor resultado cicatricial e o grupo SC o melhor resultado estético. Não houve diferença entre os grupos quanto à presença de complicações.* **Conclusão:** *as técnicas cirúrgicas mais empregadas para realizar postectomia em crianças foram avaliadas quanto aos resultados cicatricial e estético de distintas maneiras. A análise desses dois parâmetros entre especialistas de áreas afins divergiu entre eles e ao longo do tempo.*

Palavras chave: *Circuncisão Masculina. Fimose. Cicatrização. Estética.*

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