
ORIGINAL ARTICLE

TREATMENT OF CHILDHOOD PHIMOSIS WITH A MODERATELY POTENT TOPICAL STEROID

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Background: Recently, topical steroid application has been shown by a small number of studies to be an effective alternative to circumcision for the treatment of phimosis. However, only potent or very potent corticosteroids have been more thoroughly studied in this treatment option. A prospective study was conducted to determine whether comparable results could be achieved using a weaker steroid cream.

Methods: Boys, 3–13 years of age, with non-retractable foreskin due to a tight ring at the tip were offered the regimen of twice-daily preputial retraction and topical application of 0.02% triamcinolone acetonide cream. The degree of preputial retractability was assessed at presentation and at 4 and 6 weeks of treatment. Success was defined as full retraction or free retraction up to agglutination of the foreskin to the glans.

Results: Eighty-three boys completed the treatment. Successful retraction was achieved in 48/83 (58%) patients after 4 weeks and 70/83 (84%) patients after 6 weeks of application. The overall response rate aggregated from six published series using 0.05% betamethasone was 87% at 4 weeks and 90% on completion of treatment. Thus, the results appear inferior when analysed at 4 weeks but compare favourably with those reported for a more potent steroid on completion of the full course of treatment.

Conclusions: Even though the triamcinolone cream used in the present study is less potent than the more commonly used 0.05% betamethasone valerate cream, it could effect comparable improvements in foreskin retractability after 6 weeks of treatment.

Key words: phimosis, steroid treatment, triamcinolone acetonide.

INTRODUCTION

Following the pioneering work of Kikiros *et al.* in Australia in the early 1990s,¹ several reports from various parts of the world have attested to the efficacy of topical steroid application for the non-operative management of phimosis.^{1–9} Almost all these reported studies used the very potent 0.05% clobetasol propionate or potent 0.05% betamethasone valerate cream. Generally, administration of topical corticosteroids to children should be limited to the least amount compatible with an effective therapeutic regimen because children may absorb proportionally larger amounts of topical corticosteroids and thus be more sensitive to systemic toxicity. Failing to find a substantial documentation on the use of less potent steroids for this purpose in the literature, we set out to conduct a prospective study to evaluate the efficacy of a moderately potent steroid cream to see if we can emulate the remarkable success of potent steroids. The ultimate aim is to spare children the ordeal of an operation without incurring the slightest risk.

METHODS

Boys, 3–13 years of age referred for circumcision, were carefully assessed for the suitability of topical treatment. Only boys with true phimosis were enrolled. True phimosis was defined as non-retractability of the foreskin due to a tight constricting ring at

the tip. Patients with buried penis, balanitis xerotica obliterans, current active balanoposthitis, recurrent urinary tract infection, and phimosis secondary to incomplete circumcision were excluded. Parental cooperation was also a major consideration. Grading of the degree of retractability of the foreskin on a 1–6 scale (Table 1) was recorded at presentation and during each visit.

With informed consent the parents, or the patients if they were old enough to cooperate, were instructed to retract the foreskin as much as possible without causing discomfort. After thorough cleansing a thin layer of 0.02% triamcinolone acetonide (Aristocort, Lederle, Division of Wyeth Australia Pty Ltd, NSW, Australia) was applied on the tightest part of the prepuce. This procedure was done twice a day, in the morning and evening. The boys were reviewed weekly and a chart was kept showing the variation in the grading of phimosis. The treatment was deemed successful if the prepuce was fully retractable or easily retractable to the limit imposed by congenital adhesions to the glans penis. If, by the fourth week, the treatment was successful, application of the cream was stopped; otherwise a further fortnight of treatment was offered. A final assessment of the grading was done at completion of the 6-week course.

All patients were followed up 1, 3, 6 and 12 months, respectively, after completion of treatment. During the follow up special note was taken of recurrence of balanitis and phimosis. Conscientious parents were allowed to keep a tube of the cream to be used in case the preputial tight ring started to reform.

RESULTS

Between January 2000 and December 2000 a total of 91 boys entered the prospective study and 83 were available for analysis.

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Of these 83 patients, 49 (59%) had previous symptoms, including balanitis ($n = 30$), ballooning of the prepuce at micturition ($n = 12$), or both ($n = 7$). Their mean age was 5.7 years. At initial presentation 52 patients had grade 1 phimosis, 22 had grade 2 phimosis and nine had grade 3 phimosis. Overall, successful retraction of the foreskin was achieved in 48 (58%) patients at 4 weeks. After a further 2 weeks of treatment the success rate increased to 84% (70/83). In the subgroup analysis the success rate was 73% (36/49) for symptomatic patients and 94% (32/34) for asymptomatic patients. The difference in success rate between these two subgroups was statistically significant (χ^2 ; $P = 0.01$). Children with grade 1 phimosis at presentation had a significantly lower success rate than the other groups. During a mean follow up of 8.5 months nine patients developed recurrence of phimosis; all but two of them responded to a further short course of topical steroid. No local or systemic side-effects were observed in any of the patients.

DISCUSSION

To our knowledge there have been no randomized studies comparing different topical steroids in the treatment of phimosis. After collecting our data we attempted to draw a comparison group from patients previously reported in the literature. In searching the English-speaking literature we could find only eight prospective studies concerned with the conservative treatment of phimosis with topical steroids.¹⁻⁸ Six of these studies used betamethasone cream.¹⁻⁶ With the singular exception of the report from Taiwan (which used 0.06% betamethasone valerate), all betamethasone studies used 0.05% betamethasone valerate cream. Of note, in the report by Wright the concentration of the half-strength Betnovate cream (Glaxo Australia Pty Ltd, Vic., Australia) was mistakenly printed as 0.5% instead of 0.05%.² In five studies the initial treatment was limited to 4 weeks^{1-3,5,6} while in the remainder a 2-week course was prescribed.⁴ In two of these six series the treatment was considered complete only

after a further course.^{2,6} The overall response rates of these six series after the initial course and on completion of treatment were 87% and 90%, respectively (Table 2). Allowing for the limitations of literature-control studies, our success rate (84%) at 6 weeks compares favourably with these aggregated results. In contrast, our success rate (58%) at 4 weeks is distinctly inferior to that of the betamethasone treatment for the same duration. Thus, it appears that triamcinolone is equally effective in the end, but it works more slowly compared to betamethasone. To achieve a reasonably good outcome, those patients not responding well to triamcinolone at 4 weeks should be given the opportunity to have 2 more weeks of treatment. This does not seem to be too much trouble to the patients because the procedure is relatively simple. In any case, retraction and cleansing as an integral part of good penile hygiene should be the routine for the rest of their lives.

In a previous study 0.05% betamethasone cream applied twice daily was documented to be safe by serum assay of cortisol levels.³ Notably, the study was limited to 4 weeks. The safety during prolonged treatment for slow responders (as in two previous studies^{2,6}) or for recurrent phimosis (as high as 16%¹) has not been conclusively proven. A total of 1 mg of triamcinolone is equivalent to 0.15 mg of betamethasone in terms of glucocorticoid activities.⁹ We believe it is safer for the patients to store triamcinolone instead of betamethasone cream at home and use it whenever the foreskin starts to become difficult to retract again.

Despite the wide variety of topical steroid preparations available commercially, besides betamethasone, only 0.05% clobetasol propionate and 1% or 2% hydrocortisone have been used in trials of steroid treatment for phimosis. The 0.05% clobetasol propionate is classified as a very potent topical steroid, 0.1% betamethasone valerate is classified as a potent topical steroid and 1% hydrocortisone acetate is classified as a mild topical steroid.¹⁰ The triamcinolone preparation we used falls into the moderately potent category. The two reported series using clobetasol cream and the singular prospective study using hydrocortisone ointment have included very few patients.^{1,7,8} Nonetheless, the preliminary success rates of 70% and 91% (after excluding three cases of lichen sclerosus et atrophicus) achieved by clobetasol cream appeared to be comparable to that following the use of betamethasone.^{7,8} Almost concurrently, Kikiros *et al.* reported an equally enviable response rate of 86% in 21 boys treated with the least potent 1% and 2% hydrocortisone ointments.¹ A suspicion was raised in a later review that weak steroids such as hydrocortisone were also effective, but the betamethasone worked more quickly.¹¹ Our unique experience with yet another steroid gives further support to this sentiment. A more definitive conclusion could be drawn only from large-scale randomized studies comparing topical steroids of varying potencies, one of which is currently underway at Yan Chai Hospital.

Table 1. Grading of prepuce retractability*

Grade	Definition
1.	Absolutely no retraction
2.	Slight retraction leaving a gap between the tip of the prepuce and the glans
3.	Retraction just sufficient to see the glandular meatus
4.	Retraction exposing part of glans
5.	Full retraction but tight
6.	Full and free retraction, or easy retraction limited only by congenital adhesions to the glans

*Modified from Kikiros *et al.*¹ and Wright²

Table 2. A collective review of response rates following topical treatment with half-strength Betnovate in reported prospective studies

Authors Year	Kikiros <i>et al.</i> ¹ 1993	Wright ² 1994	Golubovic <i>et al.</i> ³ 1996	Monsour <i>et al.</i> ⁵ 1999	Chu <i>et al.</i> ⁴ 1999	Orsola <i>et al.</i> ⁶ 2000	Overall
Responders/total patients (Response rate at 2-4 weeks)	37/42 (95%)	84/111 (76%)	19/20 (95%)	16/24 (67%)	263/276 (95%)	112/137 (82%)	531/610 (87%)
Responders/total patients (Response rate at completion)	37/42 (95%)	89/111 (80%)	19/20 (95%)	16/24 (67%)	263/276 (95%)	124/137 (90%)	548/610 (90%)

Cases of balanitis xerotica obliterans are excluded.

CONCLUSION

The present study shows that Aristocort cream applied twice daily for 6 weeks is as effective as half-strength Betnovate cream used for 4–6 weeks. Topical Aristocort application is a viable and safe option for non-operative treatment of childhood phimosis.

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