Meatal Stenosis in Boys following Circumcision for Lichen Sclerosus (Balanitis Xerotica Obliterans)

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Abbreviations and Acronyms

LS = lichen sclerosus

nLS = nonlichen sclerosus histology

Accepted for publication June 24, 2014.

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Purpose: Of boys circumcised for penile lichen sclerosus, ie balanitis xerotica obliterans, 7% to 19% require late surgery for meatal stenosis. We review the management and outcomes of boys circumcised for lichen sclerosus.

Materials and Methods: Medical records of boys with clinical lichen sclerosus were reviewed for the period 2000 to 2010. Patients were excluded from the study if the foreskin was not submitted for histopathological analysis, circumcision was not performed at the center during the study period or medical records were unavailable. Data were compared by Fisher exact test and univariate analysis.

Results: Of 300 circumcised boys lichen sclerosus was confirmed in 250. A total of 50 patients had nonlichen sclerosus histology. Mean age was 9.0 years (range 4 to 16) in patients with lichen sclerosus and 8.3 years (2 to 15) in those with nonlichen sclerosus histology. Boys with lichen sclerosus were more likely to have the meatus described as abnormal (57 vs 4) and to have undergone a meatal procedure at circumcision (55 vs 2) or a meatal operation at a later date (49 vs 3, all $p < 0.05$). Boys with lichen sclerosus requiring later meatal procedures (meatal dilation in 25, meatotomy in 24) rarely underwent a meatal procedure at circumcision (4 of 49) and were less likely to have received preoperative topical steroids than boys not needing a later meatal procedure (2 of 49 vs 49 of 151, $p < 0.05$).

Conclusions: After circumcision for lichen sclerosus up to 1 in 5 boys requires a subsequent operation for meatal pathology. Pre-circumcision topical steroids may help decrease the rate of later meatal pathology. Submission of the foreskin for histological analysis should always be considered, as prognosis differs for lichen sclerosus vs nonlichen sclerosus histology. We recommend a care pathway for boys with lichen sclerosus.

Key Words: balanitis xerotica obliterans; child; circumcision, male; lichen sclerosus et atrophicus; urethra

Balanitis xerotica obliterans is more correctly called lichen sclerosus et atrophicus of the male genitalia. Reports of lichen sclerosus in children have flourished since it was first described in a boy by Catterall and Oates in 1962.[1] The condition is rarely recognized by the referring practitioner, and, indeed, it is not always evident to the operating surgeon.[2–6] If the diagnosis is not considered, the foreskin might not be sent for histological analysis and the disease not identified.[5] Therefore, the short and longer term outcomes for boys with lichen sclerosus are difficult to determine. Significant obstructive complications secondary to phimosis are

0022-5347/14/1926-1784/0
THE JOURNAL OF UROLOGY®

http://dx.doi.org/10.1016/j.juro.2014.06.077
Vol. 192, 1784-1788, December 2014
Printed in U.S.A.

described, as is meatal stenosis after circumcision for lichen sclerosus.[3,7,8] While lichen sclerosus rarely affects the urethra in boys and squamous cell carcinoma has not been reported, these problems are observed in men.[3,8–10] Thus, long-term data from boys treated for lichen sclerosus are essential if families are to be counselled appropriately.[9,11]

We review the management of boys undergoing circumcision for LS. During the study virtually all surgeons offered therapeutic circumcision for clinically suspected LS, although there were individual variations in practice regarding preoperative and postoperative topical steroid prescription. Recent studies have demonstrated that 7% to 19% of boys circumcised for LS require a subsequent meatal procedure.[3,4,6,12,13] Interestingly this rate may be lower in boys treated with preputioplasty and intralesional steroids.[13] Against this background outcomes for cases of LS managed by circumcision were analyzed to 1) ascertain features that could identify boys at risk for subsequent meatal stenosis and 2) devise a care pathway.

PATIENTS AND METHODS

The study was registered with the hospital audit department (No. 3420). Boys with ICD10 coding for LS between January 2000 and December 2010 were identified. A retrospective chart review was performed, collecting data relating to demographics, presentation, preoperative and postoperative steroid therapy, histopathology findings, followup and subsequent meatal procedures. Operative notes were carefully reviewed for description of the urethral meatus and details of meatal procedures. Patients were excluded from the study if the foreskin was not sent for histopathological analysis, circumcision was not performed at the center during the study period or medical records were unavailable. It is noteworthy that 13% of boys had nLS, despite the ICD10 coding of LS. These cases were used as controls since their management was comparable to boys with confirmed LS. Statistical analysis was performed with SPSS® using the Fisher exact test and univariate analysis.

RESULTS

A total of 377 patients were identified, of whom 77 were excluded from the study. LS was confirmed by histopathology of the foreskin in 250 boys (66%). A total of 50 boys (13%) had other histological findings such as fibrosis and chronic balanitis. Mean age was 9.0 years (range 4 to 16) in boys with LS, with males 8 to 9 years old most commonly affected (fig. 1). Mean age was 8.3 years (range 2 to 15) in the nLS group.

Lichen Sclerosus vs Nonlichen Sclerosus

Symptom duration and preoperative topical steroid treatment rates were similar between boys with LS and those with nLS (table 1). Boys with LS were significantly more likely to have a meatus described as abnormal at circumcision, and to undergo an additional surgical procedure of the meatus at circumcision or a meatal operation at a later date. Patients with LS were more likely to present emergently but the difference was not significant. Followup was planned for 228 boys with LS, of whom 199 were followed for a median of 3 months (range 1 to 50), and for 41 boys with nLS, of whom 37 were followed for a median of 3 months (1 to 24).

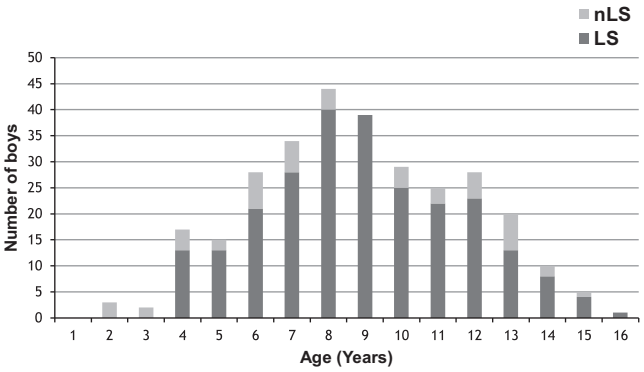

Figure 1. Age distribution of boys with LS (dark gray bars) and nLS (light gray bars).

Lichen Sclerosus

In 57 boys with LS the meatus was described as abnormal or affected by LS at circumcision (table 1). A total of 55 boys underwent a meatal procedure at circumcision (meatal dilation in 50, meatotomy in 5). A total of 49 boys (20%) required subsequent meatal procedures (meatal dilation in 25, meatotomy in 24) at a median of 12 weeks (range 2 to 192) after circumcision. Later meatal procedures were performed within 6 months of circumcision in 74% of cases. Of the 49 boys who underwent a subsequent meatal procedure only 4 had also undergone a meatal intervention at circumcision. In 15 of these boys the meatus was described as abnormal at circumcision (table 2). Neither an abnormal meatus nor

Table 1. *Patient characteristics*

	LS	nLS
No. pts (%)	250 (83)	50 (17)
Median symptom duration (mean, range)	7 Wks (16 wks, 1 day—1.5 yrs)	6 Wks (13 wks, 1 day—2 yrs)
No. receiving preop topical steroids (%)	51 (20)	13 (24)
Median wks duration preop steroids (range)	7 (2—52)	8 (6—16)
No. requiring emergency surgery (%)	17 (7)	2 (4)
No. meatus abnormal at circumcision (%)*	57 (23)	4 (8)
No. meatal procedure at circumcision (%)*	55 (22)	2 (4)
No. receiving postop steroids (%)	111 (44)	16 (32)
No. later meatal procedure (%)*	49 (20)	3 (6)
Median wks to later procedure (range)	12 (2—192)	8 (2—8)
Median mos followup (mean, range)	3 (7, 1—50)	3 (4, 1—24)

* $p < 0.05$.