

Is phimosis overdiagnosed in boys and are too many circumcisions performed in consequence?

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Summary

Thirty thousand circumcisions are performed annually in England and 70% of these are upon boys under 15 years of age. In the Mersey Region some 950 boys are circumcised each year for medical indications, the commonest being 'phimosis', which accounts for 87% of cases, of whom almost one-half are under 5 years of age. Regional practice is compared with that of our Unit, where the majority of referrals had developmentally non-retractile foreskin rather than true phimosis, where circumcisions for phimosis and for balanoposthitis occurred in almost equal numbers, and where no example of true phimosis was seen in boys under 5 years of age. It appears that in the Mersey Region many boys are circumcised for developmental non-retractability of the prepuce rather than for true phimosis and that in consequence some two-thirds of the operations are unnecessary.

Introduction

Currently, some 30 000 circumcisions are performed annually in England under the aegis of the National Health Service, 8000 on a day case basis and 22 000 as inpatients; 21 000 are upon boys under 15 years of age (1). At a cost of, say, £100 for a day case procedure, or £200 for an overnight stay (2), this represents an annual call upon Exchequer funds of the order of £5 200 000. Circumcision, it seems, is big business: but is it good business?

In the Mersey Region, approximately two-thirds of the 1500 circumcisions undertaken each year are upon boys of which 94% are for medical indications, the commonest, phimosis, accounting for 87% of cases. We suggest that many of these circumcisions are unnecessary owing to the overdiagnosis of phimosis. This hypothesis is explored.

Patients and methods

The Mersey Region has a male population of 1 166 600 of which 238 950 are boys under 15 years of age. Regional statistics relating to circumcision for the years 1984 to 1986, inclusive, were retrieved from Hospital Inpatient Enquiry data. Material from our unit for the period 1984 to 1987, inclusive, derives from personal diagnostic and operative indices, including both circumcised patients and those referred for consideration for circumcision but where this was not performed.

A diagnostic category employed by our unit is *non-retractile foreskin*, where the prepuce is wholly or partially non-retractable due to persistence of developmental adherence between glans and foreskin ('preputial adhesions' (3,4); this is often associated with a preputial orifice which, although somewhat narrow, is supple and unscarred ('physiological phimosis') (Fig. 1). This category does not feature in Regional statistics since it is not recognised by the International Classification of Diseases (5) as an entity distinct from true, pathological, phimosis, where the tip of the prepuce is scarred and indurated (Fig. 2) and has the histological features of Balanitis xerotica obliterans (6).



FIG. 1 Non-retractile foreskin: although the prepuce is only partially retractable its tip is supple and unscarred.

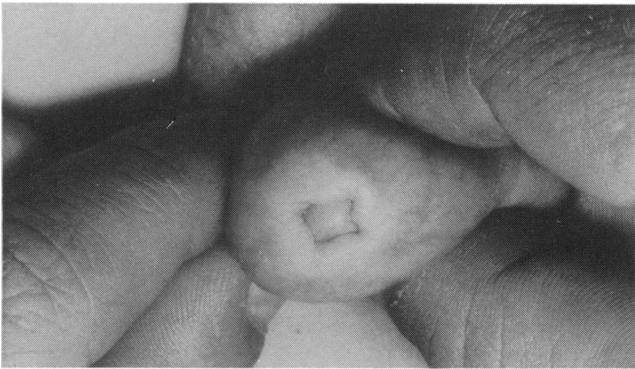


FIG. 2 True phimosis: the tip of the prepuce is grossly scarred and indurated, and histology of the circumcision specimen showed typical histological features of balanitis xerotica obliterans.

The policy of our unit is to recommend circumcision where there is true phimosis or recurrent, troublesome, episodes of acute balanoposthitis. In other cases, parents are advised that, although there is no medical reason why their son need be circumcised, we will undertake the procedure (provided there is no contraindication) if that is their wish.

Results

During the period reviewed, 4371 medically indicated circumcisions were performed in the Mersey Region, with an annual average of 948 procedures upon boys under 15 years of age. Thus, 0.4% of boys in the Region are circumcised each year and, if present practice continues, 6% will have been circumcised by their fifteenth birthday.

Of 420 boys referred to our unit for consideration of circumcision, the procedure was performed in 116 (28%). The majority of referrals (Table I) had non-retractile foreskin. These boys were usually asymptomatic, although some, usually in the age range of 2-4 years, had ballooning of the prepuce during micturition. Only a minority had true phimosis and ballooning of the prepuce was not a feature of these cases. General practitioners consistently overdiagnosed phimosis; no boy referred under 5 years of age had true phimosis. Of older boys, only 42% had true phimosis with the proportion rising from 15% of 5-6-year-olds to 73% of 13-14-year-olds.

In the Region, the great majority of circumcisions were performed for phimosis (Table II); circumcisions for this indication on our unit only slightly exceeded those for balanoposthitis. Among a total of 314 boys

TABLE I Diagnoses in boys referred for consideration of circumcision, Urology Department, Royal Liverpool Children's Hospital, 1984-87

	No.	(%)
Non-retractile foreskin	219	(52)
Balanoposthitis	142	(34)
Phimosis	53	(13)
Other	6	(1)
Total	420	

TABLE II Indications for circumcision in boys under 15 years of age, Department of Urology, Royal Liverpool Children's Hospital (RLCH) and Mersey Regional Health Authority (MRHA) 1984-86

	MRHA (n=2844)		RLCH (n=116)	
	No.	(%)	No.	(%)
Phimosis	2475	(87)	53	(45.5)
Balanoposthitis	321	(11)	51	(44.0)
Other	48	(2)	2	(2.0)
Parents' request	—	—	10	(8.5)

referred to us in whom we considered that there was no indication for circumcision, parents requested this procedure in only 10 (3%).

If age distribution curves (Fig. 3) of our unit's cases of non-retractile foreskin and phimosis are compared with Regional circumcisions for phimosis, two features are evident. First, the Regional curve for cases of phimosis bears strong resemblance to ours for non-retractile foreskin; second, whereas 1164 (47%) of Regional circumcisions for phimosis were upon boys under 5 years of age, our unit saw no example of true phimosis in boys so young. The age distribution curve for our cases of true phimosis is very similar to that previously recorded in another series (6).

PHIMOSIS

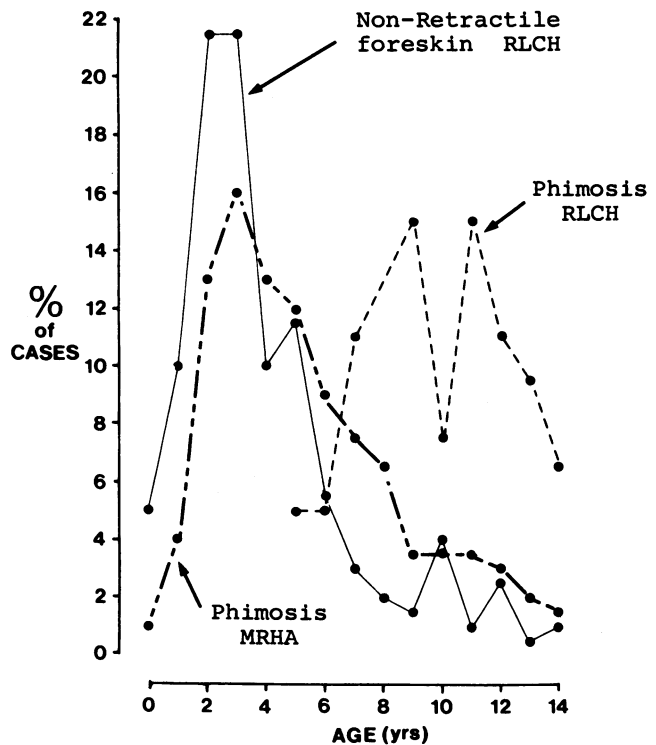


FIG. 3 Age distribution curves for cases of phimosis in Mersey Region (MRHA) (n=2475) and Urology Department, Royal Liverpool Children's Hospital (RLCH), (n=53), and of non-retractile foreskin (n=219).

Discussion

The well-rehearsed arguments favouring routine circumcision of male neonates are not germane to our hypothesis, although in passing it may be observed that the only proposition commanding universal acceptance relates to the virtual elimination of the risk of penile carcinoma, a rare disease with only some 200 new cases in England each year.

As for immediate medical indications for circumcision of boys, the major issue clearly turns upon what is, and what is not, phimosis. The Greek derivation (φίμοσις, muzzling) allows application whenever the foreskin cannot be fully retracted, but such all-embracing usage is misconceived as it implies the existence of pathology where very often there is none. In reality, there is a clear-cut distinction between true, pathological, phimosis (6), for which circumcision is unquestionably indicated, and partial or non-retractability of the foreskin caused by persistence of developmental adhesions between glans and prepuce. Almost 40 years ago, Gairdner (3) demonstrated this state to be both normal and self-limiting in boys. Perhaps it was unfortunate that he followed his patients only to 5 years of age, at which time the foreskin is still wholly non-retractable in some boys while many more retain preputial adhesions (4). As a result, there remains misconception that persistence of either condition beyond this age requires action, be it 'preputial stretching', 'freeing of adhesions' or even circumcision. Oster's (4) study, involving almost 2000 schoolboys followed to physical maturity, showed otherwise; by the age of 17 years, and without any form of intervention, the foreskin had become fully and easily retractable in all boys except in 1% who had developed true phimosis as a secondary phenomenon. The non-retractile foreskin is asymptomatic except, on occasion, for ballooning during micturition, which is a harmless and transient phenomenon and, by virtue of its natural history, requires no treatment, least of all circumcision.

Once the distinction between non-retractile foreskin and true phimosis is clear, it becomes evident that few, if any, of the 390 or so boys under 5 years of age circumcised annually in the Mersey Region for 'phimosis' can have had this condition in reality and very probably the same applies to a number of older boys. Although the proportion cannot be calculated with any precision, available data provides strong *prima facie* evidence for our hypothesis that phimosis is much overdiagnosed and that many unnecessary circumcisions are performed in consequence. An idea of the somewhat arbitrary nature of this process may be gleaned from the fact that the annual rate of circumcision of boys, for medical indications, varies among health districts in the Region from as low as 0.3% in some to as high as 0.9% in others.

What proportion of operations would be unlikely to survive critical scrutiny? Perhaps the simplest approach is to estimate the requirement for circumcision of boys

and to compare this with the number actually performed. True, pathological, phimosis is the one absolute indication for circumcision, and in Oster's large series (4) occurred in 1% of boys by their seventeenth birthday. Analysis of data from a series of cases reported from Sheffield (6) suggests a somewhat similar incidence, 0.9% by 15 years of age. Balanoposthitis affects not more than 3% of boys (7) and here indications for circumcision are less certain. Some consider that the operation can be entirely avoided by lysing preputial adhesions so as to allow retraction of the foreskin, and by giving appropriate attention to preputial hygiene (8). We advise circumcision in the event of multiple recurrences and this occurs in less than one-third of cases (7). Since other indications for circumcision involve negligible numbers (3), at a generous estimate not more than 2% of boys require the operation, and perhaps as few as 1%. It is therefore likely that if 6% of boys in the Mersey Region have indeed been circumcised for medical indications by their fifteenth birthday then two out of every three operations were unnecessary.

Practice in this Region appears to reflect that in England as a whole, where the population of boys under 15 years of age is of the order of 4 500 000. If the proportion of religious circumcisions (6%) in the Mersey Region is typical, then some 19 750 boyhood circumcisions nationally are medically indicated, giving a circumcision rate of 0.44% of boys annually, and cumulatively 6.6% by 15 years of age. On this basis about 13 750 circumcisions each year would lack justification. Any claim that an appreciable number are performed at parental insistence runs counter to our experience, namely that initiative for circumcision almost always comes from the health care industry (general practitioner, health visitor, school medical officer, etc); parents, we find, are usually delighted to be informed that their son does not need circumcising.

References

- 1 Hospital In-Patient Enquiry, Department of Health and Social Security, 1984, 1985.
- 2 Treasurer's Department, Mersey Regional Health Authority. Estimated cost of day case and in-patient circumcision, 1988.
- 3 Gairdner D. The fate of the foreskin. *Br Med J* 1949;2:1433-7.
- 4 Oster J. Further fate of the foreskin. *Arch Dis Child* 1968;43:200-204.
- 5 International Classification of Diseases (Vol 1). Geneva: World Health Organisation, 1975:339.
- 6 Rickwood AMK, Hemalatha V, Batcup G, Spitz L. Phimosis in boys. *Br J Urol* 1980;52:147-50.
- 7 Escala JM, Rickwood AMK. Balanitis. *Br J Urol* 1989;63:196-7.
- 8 MacKinley GA. Save the prepuce. Painless separation of preputial adhesions in the out-patient department. *Br Med J* 1988;297:590-1.

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