



Original article

## Do men having routine circumcision need histological confirmation of the cause of their phimosis or postoperative follow-up?

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**Objective:** To assess the accuracy of pre-operative diagnosis of preputial pathology amongst urologists and general surgeons.

**Patients and Methods:** Data were collected on 460 adult patients having had circumcision performed by either a general surgeon or a urologist over a 10-year period.

**Results:** Pre-operative diagnosis was consistent with final histology in 83% of cases and further management was never altered by the histological result. Re-referral rates were 0% for general surgeons and 2.7% for urologists ( $P > 0.05$ ) and there were no cases needing further surgical intervention.

**Conclusions:** Routine submission of histological specimens for analysis and out-patient follow-up are not required following circumcision.

**Key words:** Circumcision – Histology – Pathology – Follow-up

Circumcision is one of the oldest and more frequently performed urological operations with over 35,000 being performed in England and Wales every year.<sup>1</sup> Several questions remain unanswered with regard to the management of this procedure: (i) what is the accuracy of pre-operative diagnosis compared with histological diagnosis; and (ii) does the histological diagnosis alter further management and do the patients require follow-up? Thus we retrospectively reviewed 460 consecutive patients who had a circumcision at our institution over a 10-year period.

### Patients and Methods

From 1988 to 1998, 460 patients (366 by urologists and 94 by general surgeons, mean age 40 years, range 12–89 years)

had circumcision performed at our institution for a variety of pathologies (Table 1). The clinical records were retrospectively analysed to determine the pre-operative diagnosis accuracy, frequency of histology requests and their effect on further management, and rates of follow-up. The incidence of re-referral and whether this led to surgical intervention were also assessed. For the purpose of analysis, a histological finding of non-specific inflammation or fibrosis was considered to be compatible with a pre-operative diagnosis of phimosis.

### Results

Histology specimens were sent from 81 (22%) urology cases and from 12 (13%) general surgery patients (Fisher exact test,  $P = 0.046$ , significant) with pathology

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Table 1 Distribution of indications for circumcision in general surgery and urology.

Indication	General surgery	Urology
Balanitis	8	22
Bowen's disease	0	2
BXO	3	63
Carcinoma	0	2
Corporoplasty	0	12
Paraphimosis	3	10
Phimosis	66	238
Religious	3	2
Other	2	10
Trauma	6	3
Warts	3	2
Total	94	366

distribution illustrated in Table 2. There were no cases of follow-up plans or subsequent management being altered by the histological findings.

The combined accuracy of pre-operative diagnosis was 83%. In total, 204 patients were given out-patient appointments on discharge from hospital, 66 (70%) from the general surgeons and 138 (38%) from the urologists (Fisher exact test,  $P < 0.001$ , very highly significant).

Of those invited for follow-up, 16% failed to attend any out-patient clinic, 27 on one occasion, 11 on two occasions and 4 on three occasions. A total of 162 patients attended for follow-up, 77 were discharged after satisfactory review ranging from 1–3 clinic visits, 74 were followed up further for synchronous urological pathology (mainly lower urinary tract symptoms) and one patient died of unrelated pathology prior to review. Of the remaining 9 patients, 2 were found to have haematomas at initial follow-up neither of which required intervention and both were subsequently discharged, 4 are awaiting follow-up at the time of data collection, and 3 are currently being followed up for balanitis xerotica obliterans (BXO) involving the glans penis. Only 10 patients were re-referred (Table 3) and all of these had their circumcisions done by a urologist. This represents a re-referral rate of 2.7% and is not significantly different from the 0% achieved by the general surgeons (Fisher exact test,  $P = 0.225$ ).

## Discussion

Circumcision remains one of the most practised of all operations with over 11,000 being performed on adults annually in England alone.<sup>1</sup> The current study was performed to determine the clinical usefulness of routinely sending preputial specimens for histological analysis after circumcision.

Table 2 Histological diagnoses of prepuce specimens sent for analysis following circumcision

Histology	General surgery	Urology
Balanitis	0	5
Bowen's disease	0	1
BXO	3	37
Carcinoma	0	4
Lichen planus	1	4
Normal	2	9
Warts	0	3
Other	6	17
Total	12	81

The most common indication for circumcision was phimosis at 66%, which is slightly lower than Rickwood's minimum estimate of 79%.<sup>2</sup> BXO accounts for 16% of circumcisions with only three being performed by non-urologists and in none of these was the foreskin sent for histological analysis. BXO is a well-defined clinical entity and, when confined to the prepuce circumcision, is curative.<sup>3</sup> Of those suspected as having BXO by urologists and sent for analysis, only two were inaccurate. One was found to be fibrosis and the other carcinoma with clear margins requiring no further intervention to date.

Only five circumcisions were performed for religious reasons which reflects the fact that, in most faiths practising circumcision, the procedure takes place in early childhood ranging from 8 days in Judaism<sup>4</sup> to any time up to 7 years in Islam.<sup>5</sup> None of the prepuces removed for religious reasons were pathologically assessed.

Of the patients, 91 (20%), had their foreskin histologically assessed. The most common indication was phimosis (44) and 11 of these were histologically normal. This represents 25% and is in contradiction with Clemmensen *et al.* who found that of 78 consecutive circumcisions performed for phimosis, 46% had histologically normal tissue removed.<sup>6</sup> There were four carcinomas found histologically, two of these were diagnosed pre-operatively, one was initially thought to be BXO and the other Bowen's disease. The three cases of pathological BXO found in general surgical specimens all had a pre-operative diagnosis of phimosis.

The very highly significant difference in rates of follow-up between the specialities is difficult to explain and may be secondary to the differing degrees of exposure to varying preputial pathologies between the two specialities. In addition, a great number of patients are followed up for synchronous urological pathology and it would seem logical that, in light of this, circumcisions should be done solely by urologists. Since none of the patients attending pre-arranged follow-up underwent subsequent treatment and only 10 patients sought consultation following discharge (Table 3), it follows that the vast majority of

Table 3 Details of patients re-referred following circumcision

Age (years)	Pre-operative diagnosis	Histology	Complaint	Action
66	Phimosis	None	? Infection	Clinic review – DNA*2
28	Phimosis	None	Anxiety	Discharged
17	Redundant prepuce	None	Cosmesis	Re-assured
24	Phimosis	None	Anxiety	Discharged
28	Phimosis	None	Haemorrhage	Discharged
27	Phimosis	None	Pain	Clinic review – DNA
47	BXO	BXO	Tight frenulum	Frenuloplasty
22	Phimosis	None	Cosmesis	Re-assured
29	Phimosis	None	Tight frenulum	Discharged
30	Phimosis	None	Haemorrhage	Discharged

patients are happy following circumcision and do not require or want routine follow-up. Premalignant lesions (*e.g.* leukoplakia) do require follow-up which we feel could be arranged once in possession of a formal histological report

There are only three case reports in the literature suggesting an association between BXO and squamous cell carcinoma of the penis,<sup>7-9</sup> and one report of an association with adenocarcinoma.<sup>10</sup> BXO cannot, therefore, be considered to be premalignant. However, we would recommend follow-up in cases of BXO of the glans penis and, in particular, the external urethral meatus as these patients commonly require meatal dilatation and even formal meatoplasty.

Given that there are at least 11,000 circumcisions performed on adults in England per year<sup>1</sup> and, on the basis of this study, 20% of circumcision specimens are histologically assessed at a rate of £34.33 (Department of Pathology, Manchester Royal Infirmary, personal communication) this represents a cost to the NHS in excess of £75,000 a year. In addition to this is the potential cost saving of avoiding routine post-circumcision out-patient clinic follow-up.

### Conclusions

Routine follow-up and sending of circumcision specimens for pathological assessment is not required and does not

alter clinical management. Most circumcisions should be performed by urologists if possible, particularly in the current climate with increasing practice appraisal and clinical governance.

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