The impact of Improving Outcomes Guidance on the management and outcomes of patients with carcinoma of the penis

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ABSTRACT

INTRODUCTION The Improving Outcomes Guidance (IOG) for patients with carcinoma of the penis states that treatment should be provided supraregionally to populations of 4 million or greater who treat over 25 cases of penis cancer each year. This study assesses the impact of this guidance on the management and outcomes of patients with the disease in our region.

PATIENTS AND METHODS We retrospectively compared the records of 44 patients with carcinoma of the penis treated in our institution between 1969 and 1990 with 101 patients treated between 2002 and 2006, *i.e.* after supraregional centralisation of the service.

RESULTS There was no significant change in the stage or grade of the tumours. However, the results show that, in modern times, there was a significant increase in the amount of penis-preserving and nodal surgery as well as a fall in mortality. The improved survival is greatest in patients with poorly-differentiated disease who may, therefore, have benefited from aggressive nodal surgery.

CONCLUSIONS The centralisation of surgery for carcinoma of the penis results in improved outcomes both in terms of penis preservation and improved survival and this supports the IOG guidance.

KEYWORDS

Improving Outcomes Guidance – Penis cancer – Penis preservation – Survival

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Carcinoma of the penis is a relatively uncommon tumour with an incidence of approximately 1 in 100,000 of the population. The *Improving Outcomes from Cancer* guidelines¹ (IOG) suggest that the management of penile cancer be centralised with several networks combining to serve a population of at least 4 million and treating at least 25 cases of penis cancer each year. The move to centralise services for penile cancer in the Anglian region started in 1995 but took several years to complete with the number of new cases seen centrally not exceeding 20 until 2002. At this time, the supraregional population for the service was 3.1 million. This paper describes the effects of IOG on the management and mortality of patients with penis cancer.

Patients and Methods

We compared the records of 44 patients with invasive carcinoma of the penis treated in the Norfolk & Norwich Hospital between 1969 and 1990 (Group 1) with a cohort of 101 patients treated during the 5-year period from 2002 to 2006 (Group 2). There were 112 patients treated in the second period but 11 had inadequate follow-up. A further 17 patients in this second group

had *in situ* disease only and were excluded leaving 84 patients with invasive tumours for analysis. The stage and grade of the tumours in each group is shown in Table 1. Mean follow-up was 65 ± 14 months for Group 1 and 27 ± 9 months for Group 2. All patients had a minimum of 12 months of follow-up.

Before 1990, palpable inguinal nodes were treated either by block dissection or radiotherapy. From 1995, it has been our practice to perform inguinal block dissections for men with palpable nodes and to perform a limited open sampling of nodes in patients with impalpable disease considered to be at significant risk of having micrometastatic spread of their tumours (T1 G3, T2–4). Where micrometastases were detected, a formal block dissection was subsequently recommended.

Results

The mean age of patients in Group 1 was 68 ± 11 years and in Group 2 66 ± 11 years (NS). The primary operations performed are shown in Table 2. In Group 1, only two (4.5%) patients underwent conservative surgery; in Group 2, a penis-preserving procedure was performed in 45 men (58.3%; $P < 0.01$).

Table 1 Stage and grade of tumours treated pre 1990 (Group 1) and post 2002 (Group 2)

	Group 1			Group 2		
	G1	G2	G3	G1	G2	G3
T1	0	12	0	10	11	8
T2	0	12	5	4	10	27
T3	0	0	15	0	5	9
T4	0	0	0	0	0	0

Before 1990, the only groin node surgery performed was a block dissection in six cases (13.6%). From 2002–2006, of the 59 patients with high-risk disease, 16 underwent immediate inguinal block dissections due to the presence of palpable nodal disease (7 bilateral, 9 unilateral). Bilateral limited groin node sampling was performed in 40 men making a total of 89 limited groin dissections in Group 2. The remaining three patients had no groin surgery (2 unfit, 1 declined further treatment).

Following limited sampling, positive nodes were found in 10 groin cases (8 patients) and six of these eight men underwent subsequent block dissection. Two patients refused further surgery. One of these developed inguinal and pelvic nodes within 6 months and subsequently died of his disease. The other remains well at 24 months of follow-up.

There were nine deaths in both groups giving a mortality of 20.5% for Group 1 and 10.7% for Group 2 ($P < 0.05$). In both groups, eight of the deaths occurred in patients with G3 disease. Following definitive treatment, there was local recurrence of tumour in 11 patients in group 1 (25%) but only in four (4.8%) patients in Group 2 (including the patient who refused treatment).

Discussion

Because carcinoma of the penis is a rare tumour, even large UK district hospitals rarely see more than 5–8 cases per year from their own catchment area. Historically, the standard treatment has been to offer radical surgery or radiotherapy for the primary tumour and only to treat inguinal nodes when they become palpable.

Our group of patients treated between 1969 and 1990 represent approximately one-third of the total number treated in Norwich during that period – they were selected as they were the only patients for whom we were able to obtain adequate follow-up data.

Most deaths occurred in men with poorly-differentiated (G3) disease. However, these patients showed a substantial fall in mortality from 40% in Group 1 to 18.2% in Group 2. Given that we now know that at least 40% of men with G3 disease have micrometastatic inguinal node disease, this suggests that our

Table 2 Primary operations in patients presenting with penis carcinoma

Operation	Group 1	Group 2
Patients (n)	44	84
Local excision	0	9
Circumcision	2	20
Glansectomy and reconstruction	0	20
Partial amputation	31	29
Total amputation	11	6

more aggressive approach to surgical management of these nodes has improved survival. Had surgery of high-risk groins not been performed, micrometastases would not have been found in eight patients potentially resulting in another seven deaths (one patient in this group having died from recurrence). Had these patients died of recurrent disease, the mortality in Group 2 would have been 34.1%, *i.e.* not significantly different from the early cohort. This apparent improvement in survival is in keeping with the reported benefits of early node surgery in high-risk cases.^{2,3}

The Improving Outcomes Guidance states that penis cancer should be treated in a supraregional centre serving a population of at least 4 million and treating 25 or more cases per year. Our referral population reached 3.1 million in 2005 and, at that time, we were referred an average of 20 patients annually. Interestingly, our population has now fallen to 2.9 million but we now see an average of 25 new cases per year. Our results show that mortality is significantly improved by centralisation of the service and suggest that this improvement is achievable in units treating over 20 cases of penis cancer per year.

Conclusions

Centralisation of surgery for carcinoma of the penis has resulted in improved outcomes, both in terms of penis preservation and improved survival. This supports the adoption of Improving Outcomes Guidance, although the improved results were obtained in a unit treating an annual average of 20 patients and a population of approximately 3 million.

References

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