THE MANAGEMENT OF RODENT ULCERS

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This paper presents an analysis of basal cell carcinomata which were handled at the Plastic Surgery Unit, Odstock Hospital, Salisbury, England, from the time that this Unit was transferred there from Basingstoke in December 1949, up to December 1960. There follows an evaluation of the part played by surgery in the management of rodent ulcers.

The total number of patients recorded was 178, presenting 198 ulcers for treatment. Of those, 105 were males (about 60%), and 73 were females (about 40%).

The age distribution followed the usual pattern for rodent ulcers. It is worthy of note that the youngest patient was aged 19 years (Table I).

TABLE I. AGE DISTRIBUTION (IN YEARS)

	No.	%
Under 20	1†	0.5
20 — 30	7	4.0
30 — 40	19	11.0
40 — 50	31	20.0
50 — 60	49	25.5
60 — 70	43	25.0
Over 70	28	14.0

†Aged 19 years.

The regional distribution (Table II) also followed the usual distribution of basal cell carcinomata with the majority of lesions occurring superior to a line drawn from the angle of the mouth to the lobule of the ear. Of the 6 ulcers treated on the body and limbs, 3 occurred on the same patient in regions that had been burnt by mustard gas during the 1914—18 war.

TABLE II. REGIONAL DISTRIBUTION

	No.
Nose	62
Cheek	22
Outer canthus	22
Forehead	20
Ears	20
Lower eyelid	16
Inner canthus	11
Temporal area	11
Upper lip	10
Scalp	9
Lower lip	8
Body and limbs	6
Upper eyelid	1

Clinico-pathological Classification[1,7]

Considering the clinico-pathological aspect of this disease, there is strong evidence that rodent ulcers are caused by sensitivity to the actinic rays of the sun in fair-skinned persons. This means that one would expect the whole of the exposed area of skin in these patients to be at risk, but the vast majority of lesions are found on the head. There may be other factors involved such as previous X-ray therapy, and some chemical compounds, eg. bitumen.

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Clinically basal cell carcinomata are usually classified into 5 types on their macroscopic appearance:

(a) *Small typical rodent ulcers* with rolled translucent margins, showing superficial veins running across the margins. These are most often seen around the eyes and on the nose.

(b) *Cystic tumours,* which often are only differentiated by histological examination from epidermoid cysts and moles. Ulceration usually occurs late. These are most commonly found round the lips and chin. Because of the difficult clinical diagnosis of this group, the necessity for adequate excision and routine histological examination of all cystic tumours removed from the face should be emphasized.

(c) *Large shallow ulcers* with ill-defined edges and a marked tendency for the central epithelium to heal, then break down again. These are more often found on the forehead and nose, particularly in fair-skinned persons exposed to the sun.

(d) *Cutaneous plaques,* which resemble a localized area of chronic excema which does not often ulcerate. These are usually found on the neck, limbs, and trunk, again especially in fair-skinned persons who have been exposed to the sun.

The above 4 groups may be regarded as relatively slow-growing benign lesions which respond well to either surgical excision or radiotherapy.

(e) The highly invasive ulcer, which advances more rapidly in depth than on the surface, and constitutes less than 10% of all rodent ulcers. In the early stages there are no characteristic histological features, so that this group is usually only diagnosed on clinical progress. This group should be considered always when a rodent ulcer recurs after excision or radiotherapy. These are the ulcers that support the truth of the saying that 'once a rodent ulcer recurs after treatment, it will always win in the end'.[2]

THE MANAGEMENT OF RODENT ULCERS IN THIS SERIES

Of the 178 patients reviewed, 105 had received some form of previous treatment for their rodent ulcers, then, after a variable interval, had had a local recurrence for which they were seen in this unit. As shown in Fig. 1 the proportion of patients being referred by dermatologists for primary surgical treatment has increased sharply in more recent years.

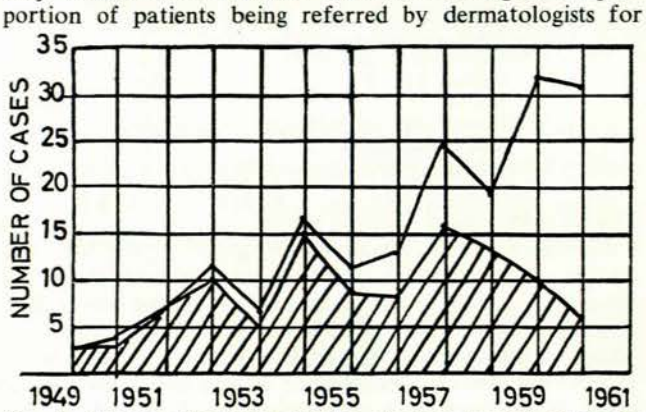

Fig. 1. Showing the total number of cases treated surgically *per annum.* The shaded area shows the number of cases sent for surgery with a local recurrence after treatment elsewhere.

The patients in this series will be considered under two different group headings:

1. Those patients who have received some form of primary therapy before being referred for surgery.
2. Those patients whose management has been by surgery from the beginning.

1. *Those patients who have received some form of Primary Therapy before being referred for Surgery*

In this group there were 105 patients as stated above, of which 81 had radiotherapy alone, 9 had surgery followed by radiotherapy, 7 had surgery alone elsewhere, 4 had diathermy only, and 4 had carbon-dioxide snow only.

Following this primary treatment at a latent interval varying from 3 months to 10 years (Table III), the patients presented

TABLE III. THE LATENT INTERVAL*

Under 3 months	2
3 — 6 months	4
6 — 12 months	6
12 — 24 months	5
2 — 3 years	8
3 — 4 years	6
4 — 5 years	8
5 — 6 years	7
6 — 7 years	5
7 — 8 years	5
8 — 9 years	4
9 — 10 years	9
Over 10 years	6
Not recorded	6

*The number of patients presenting at varying intervals between the primary treatment, usually radiotherapy, and the recurrence treated by surgery, are shown.

a further lesion that was diagnosed as a local recurrence for which they were referred to the plastic unit. This latent interval that sometimes extends for years supports the hypothesis that following radiotherapy, islands of basal carcinomata cells may be left viable, but surrounded by a wall of fibrous tissue; these islands of cells may subsequently develop into a florid lesion. Because of this danger of recurrence following radiotherapy, and because this disease is due to 'unstable' basal-cell pathology in the skin, in the Odstock Unit it is policy to follow up for life every patient treated.

In all operations carried out in this unit the rodent ulcer was widely excised, together with what appeared to be an adequate margin (½cm.—1cm.) of healthy tissue both marginally and in depth. Because of the damage done by radiotherapy to a fairly extensive area, simple excision and closure was rarely possible in this group, necessitating a more complicated form of repair using, in order of preference, split-skin grafts, full-thickness free grafts (Wolffe) or rarely some form of flap repair.

Histological examination was carried out on all specimens excised. Although pathologists were always requested to examine the specimen to ascertain that the edge of section was well clear of tumour tissue, the records show that the pathology reports have not always been adequate. Of a total of 166 reports, in 43 instances the condition of edge of the specimen was not reported.

Of the 105 patients treated by surgery for a recurrence following previous treatment, there were 16 local recurrences following surgery, an incidence of about 16%. In these cases the type of surgical repair carried out when first seen for surgery was:

Excision and direct closure — 1
Excision and split-skin graft — 7
Excision and Wolffe graft — 4
Excision and flap repair — 4

The histological reports for these 16 specimens excised for local recurrences showed that the line of section was clear of tumour in 5 cases and was not clear of tumour in 6 cases. In 5 specimens the condition of the edge was not reported.

There was a variable interval, extending from 1 month to 120 months, between the excision of the above local recurrence (after radiotherapy, etc.) and a further local recurrence following surgery, with an average period of 26·5 months. In those cases where the histological examination showed the edge not to be clear of tumour, the growth recurred within a period of 12 months.

These further recurrences following surgery were treated by further excision and direct closure for 2 cases of marginal recurrence; further excision and split-skin graft in 4 patients; further excision and Wolffe graft in 3 patients; and further excision and flap repair in 7 patients. One patient was given palliative X-ray therapy, and he was the only patient who succumbed to his disease in this series. Associated multifocal lesions occurred in 3 of the 16 patients at intervals of between 48 months and 120 months.

The total follow-up period averages 62·8 months with the shortest being 12 months, and the longest being 137 months.

2. *Those Patients whose Management has been by Surgery from the Beginning*

In this group there were 73 patients treated primarily by surgery, in whom there were 4 local recurrences, an incidence of 5%. One of these recurrences was in the case of an old lupus scar. If this patient is removed from the series the percentage of recurrences in cases treated primarily by surgery closely approximates the figure of 3% presented by Hayes.[5]

Considering further these 3 cases of local recurrence after surgery: The first patient was treated for a rodent ulcer of the lower eyelid by excision and Wolffe graft. The histology showed the edge to be clear of tumour, then 60 months later there was a further recurrence on the eyelid which required a full-thickness excision of the lower eyelid, and repair. This patient also developed lesions on the nose and cheek 120 months after he was first seen.

The second patient was treated for a rodent ulcer of the alar nasi by excision and a local flap repair; the edge of the specimen was clear of tumour on histological examination. At 12 months there was a marginal recurrence which was treated by further excision and direct closure of the wound.

The third patient had a small rodent ulcer of his nose excised; the edge of the specimen was clear of tumour on histological examination, but at an interval of 12 months a further marginal nodule was excised with direct closure of the wound. The histology of this specimen was indefinite, with a possibility that it was a recurrence, or else only scar tissue.

Multifocal lesions. The records show that of the 178 patients handled, 20 patients (11%) presented over the years with multifocal lesions. The shortest period before the additional lesion was diagnosed was 3 months, and the longest period was 128 months. These lesions were managed as new, primary lesions.

CONCLUSIONS

Basal cell carcinomata may occur at any time of adult life, but the highest incidence is in the age group of 40—70 years.

The basal cells of the skin become 'unstable' and may undergo uncontrolled proliferation with subsequent infiltration of surrounding tissues. Although metastatic spread of basal cell carcinomata has been reported,[3-6] they characteristically remain a localized lesion. However, as the surrounding skin has been affected by the sensitizing agent, which is usually the actinic rays of the sun, but may be previous X-ray treatment, or chemical agents, such as mustard gas or coal-tar products, the patient should have a regular follow-up for life.

The treatment is either by some form of radiotherapy or by surgical excision of the lesion together with an adequate margin of healthy tissue. In the Odstock Unit it is felt that the primary choice of treatment should be surgical operations, the reasons for which opinion are listed below.

1. In small lesions, excision biopsy both confirms the diagnosis, and cures the lesion.

2. For many lesions the surgical procedure is carried out under local anaesthetic in the outpatient department.

3. With correct planning of the incisions the resultant scar is minimal, and very acceptable to the patient.

4. For many patients, the late cosmetic results following radiotherapy, where the treatment leaves a white atrophic patch of skin with telangiectatic vessels, is highly unsatisfactory.

5. The danger of developing radionecrosis in lesions adjacent to cartilage or bone, is very real following radiotherapy. In addition, in cases of lesions near to the eye, there is always the danger of development of cataract of the lens.

6. There is increasing evidence that in many rodent ulcers treated by radiotherapy, basal carcinomata cells may remain viable within pockets of surrounding fibrous tissue. These cells may erupt into active growth many years after the primary radiotherapy.

7. It is shown that figures presented in this paper agree with those from East Grinstead Hospital that the recurrence rate of those lesions treated primarily by surgery is about 3%.

Choice of Treatment

All ulcers not responding to, or recurring after, radiotherapy, must have a wide excision, and usually a complicated form of repair.

However, radiotherapy would be advisable for the following: (*a*) patients refusing operation; (*b*) in rare cases where the patient, for some other reason, is considered unfit for operation; and (*c*) as part of the palliative treatment of an advanced growth — probably preceding a further surgical excision.

SUMMARY

Patients with rodent ulcers presenting at the Plastic Surgery Unit, Odstock Hospital, Salisbury, England, for the period December 1949—December 1960, have been reviewed. This group of patients is selected mainly by the regional dermatologists and radiotherapeutists.

The management of these patients is analysed and the point is made that an increasing number of rodent ulcers are being treated primarily by surgery. Primary surgery is often simple and usually gives a very acceptable cosmetic result, whereas surgery following radiotherapy is usually complicated, requiring a larger area of excision and often involving delayed healing.

All patients with the disease should be followed-up for life, as there is a chance of about 10% of local recurrence, and another 10% chance that they will develop multifocal lesions.

My thanks are due to Mr. J. N. Barron and Mr. J. Ellsworth-Laing, consultants to the Unit, for allowing me access to their records, and for their help and encouragement. My thanks are also due to Mr. J. B. Cuthbert, for valuable assistance in the preparation of this paper.

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