

# Plastic and Reconstructive Surgery

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## MALIGNANT SKIN CONDITIONS

### Aetiological factors in skin cancer

- Excessive exposure to the sun
- Past or active treatment with immunosuppressive drugs
- Past treatment with irradiation
- Past exposure, either medically or industrially, to arsenic
- Chronic exposure of skin to hydrocarbons
- A family history of skin cancer
- Chronically unhealed or unstable scars
- A history of trauma

Unlike most other examples of surgical pathology, malignant skin conditions can be diagnosed accurately from the history of the complaint combined with a thorough examination of the lesion under a good light with magnification. Skin cancer is the second most common tumour in men and women in the United Kingdom, accounting for just over 10% of all known malignancies or roughly 190 000 new cases a year.

The following symptoms may indicate malignancy: (1) a recent rapid appearance of or change in a long standing lesion; (2) a lesion that ulcerates or has periods of apparent healing fluctuating with either scabbing or ulceration; (3) itching caused by desquamation of cells; and (4) pain, which is less common but may indicate perineural infiltration.

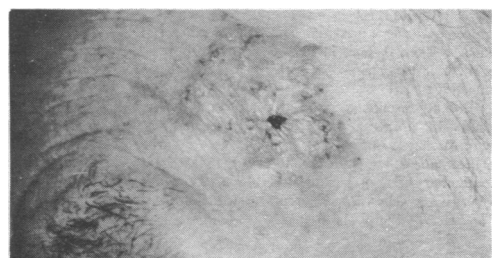
### Keratososis



Excessive exposure to the sun leads to actinic damage. The skin protects itself by producing melanin and keratin. If the melanin response is poor, as it is in people with fair skin, or there are fewer melanocytes, as in older people, hyperkeratinisation and keratosis may develop. Clinically keratosis presents as a raised, scaly, erythematous lesion. Induration around the lesion may suggest malignant change. Metastases from subsequent carcinomas are rare. Arsenic keratoses present as punctate hyperkeratoses, often found on the palms and soles. They usually arise many years after systemic or topical exposure. The keratoses themselves seldom require treatment. They may, however, become malignant, and the patient should be examined regularly for this change and also for systemic malignancies.

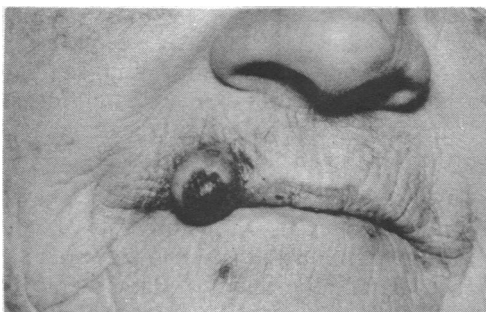
In the treatment of multiple keratoses 5-fluorouracil cream may be helpful. The patient applies the cream night and morning under close medical supervision. The reaction begins on about the fifth day, producing an erythematous crusting, sometimes with superficial ulceration. When use of the cream is stopped vaseline should be applied to the treated area.

### Bowen's disease



Bowen's disease presents as a chronic, nodular, intraepidermal plaque, which may ulcerate or become crusted. It may be associated with actinic damage or contact with arsenic. Histologically it is an intraepidermal squamous cell carcinoma that may occasionally become invasive. The diagnosis of such a lesion may be confirmed by excision biopsy. Treatment can be completed by surgical removal or, in selected cases, by cryotherapy or radiotherapy. In patients who have been excessively exposed to the sun avoidance of further actinic damage is important.

## Keratoacanthoma



This is a dome shaped, umbilicated lesion with a central crater filled with keratin. It commonly develops on an exposed site in elderly people. It begins as a nodule, which grows steadily over several weeks and involutes spontaneously within a few months, leaving a depressed scar. True keratoacanthomas can therefore be left to heal spontaneously, but some are excised for cosmetic reasons. A proportion of apparent keratoacanthomas are, however, really squamous cell carcinomas and therefore need surgical excision. The treatment of these lesions requires experience and fine judgment.

## Leukoplakia



Leukoplakia is a condition of the mouth commonly occurring in middle aged and elderly patients. It especially affects smokers and those who have had chronic irritation of the mouth, often produced by ill fitting dentures. Clinically an area of the mucosa is covered with white raised multiple plaques. Those that are indurated and have fissures may progress to squamous cell carcinoma. The diagnosis should be confirmed histologically; treatment is then by either surgical excision or physical ablation, using the laser or cryoprobe, and correction of any predisposing factor. A similar pathological condition may affect the glans penis and vulva.

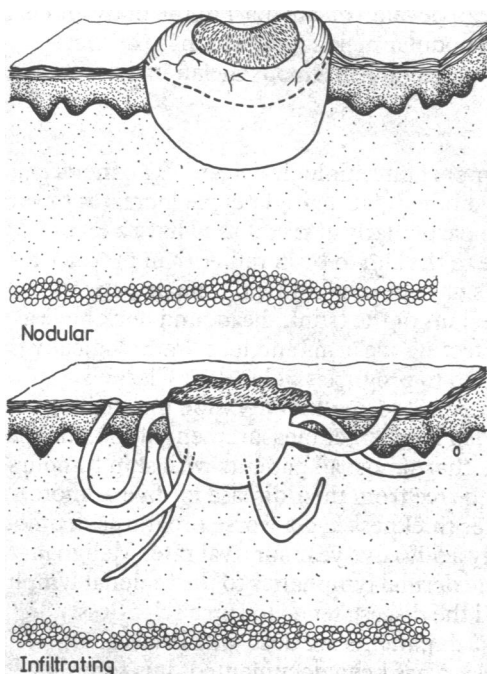
## Hutchinson's melanotic freckle



This lesion characteristically occurs on the face but may also be seen on the neck, back, or elsewhere on the body. The lesion is usually an irregular pigmented flat macule that grows slowly over 10 to 15 years. The lesion may proceed to a superficial malignant melanoma, which can present clinically as thickening of the lesion, a change in pigmentation, or itching. Prophylactic excision is the best treatment as it also permits histological examination.

## Malignant conditions

Clinical types of basal cell carcinoma



### BASAL CELL CARCINOMA

Basal cell carcinoma (or rodent ulcer) usually develops on hair bearing skin, mainly on the exposed areas of the head and neck. Roughly 30% of cases are multiple. A typical lesion is the nodular basal cell carcinoma, which has a pearly edge in which superficial blood vessels are visible. This well circumscribed tumour can be treated by surgical excision, radiotherapy, or other physical means of ablation such as laser or cryoprobe. Whatever method is used, the cure rate is extremely high at 95% or better.

Less common presentations of basal cell carcinoma may occur and include: the pigmented basal cell carcinoma, which can be confused with malignant melanoma; field fire lesion, a form of rodent ulcer that destroys a large area of skin in a short time and presents a major reconstructive problem after excision; and the more infiltrating type of tumour, the edge of which tends to be indistinct and the irradiation of which may be incomplete or difficult because of diffuse dissemination through the local tissues. Treatment of this sort of tumour, particularly when situated around the eye, ear, or nose, may result in mutilating excisions. For the plastic surgeon, however, surgical reconstruction is easier when there has not been previous radiotherapy in these areas.

Most rodent ulcers do not metastasise, remaining a purely local problem. It is not possible to be dogmatic about whether they are best treated by surgery or radiotherapy. Before any particular form of treatment is decided on consideration should be given to the age and fitness of the patient, the type and site of basal cell carcinoma, and the local resources that are available to treat the patient.



### SQUAMOUS CELL CARCINOMA

Squamous cell carcinomas are less common than rodent ulcers. Clinically they can present as: a hyperkeratosis with induration; an ulcer beneath a crusting surface; a persistent ulcer of the skin; an extension from a carcinoma of a deeper structure, such as a fungating maxillary sinus carcinoma; or a Marjolin ulcer (develops in an old, unstable scar).

*Treatment* again revolves around either surgery or radiotherapy. In general, excision of the squamous cell carcinoma should have a wider margin than that for less malignant basal cell carcinoma. Radiotherapy is of particular importance as an adjunct to surgery when there has been incomplete clearance, recurrence, or perineural spread of the tumour. These tumours do metastasise to the lymph nodes, but the incidence of such behaviour is low, being about 5% in actinic induced tumours but rising to about 15% in the Marjolin type ulcer. The treatment of the regional lymph nodes is usually by surgical excision, although in old and infirm patients radiotherapy may be preferred. The prognosis is related to the length of time the lesion has been present and its depth of invasion into the dermis; the deeper the invasion the more likely the tumour will be to metastasise.

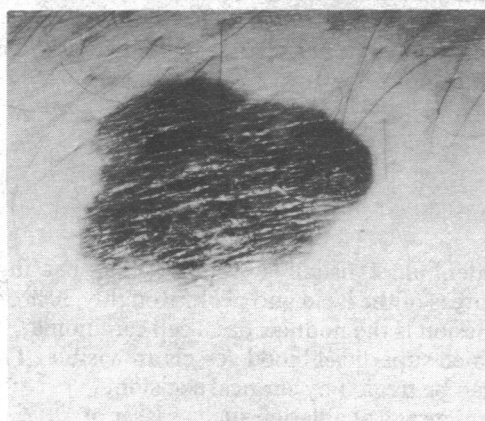


### MALIGNANT MELANOMA

Malignant melanoma is the most serious of skin cancers and often affects young adults. Its incidence has doubled in the past 20 years in the United Kingdom, and roughly 2000 new cases now develop annually. Three quarters of all cases can be diagnosed clinically. Any pigmented lesion or mole that has recently appeared or changed must be considered suspicious. Particular attention should be given to any change in size or colour or to the development of itching or bleeding. The presence or absence of hair in the lesion is not important, but the loss of hair from a previously hairy mole may be relevant.

*Presentation*—Clinically there are four forms of presentation: a melanoma arising in a Hutchinson's melanotic freckle; a superficial spreading melanoma, which can develop on any part of the body and is the most common presentation; a nodular melanoma, which is the most malignant form; and the far rarer acral lentiginous melanoma occurring on plantar and palmar skin.

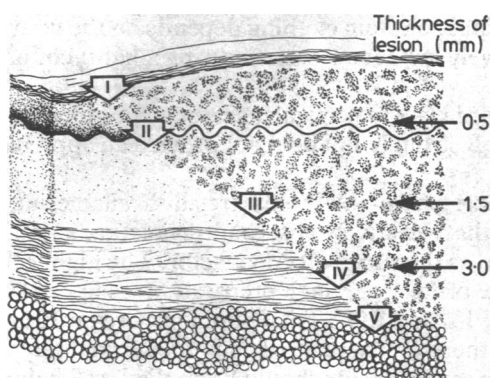
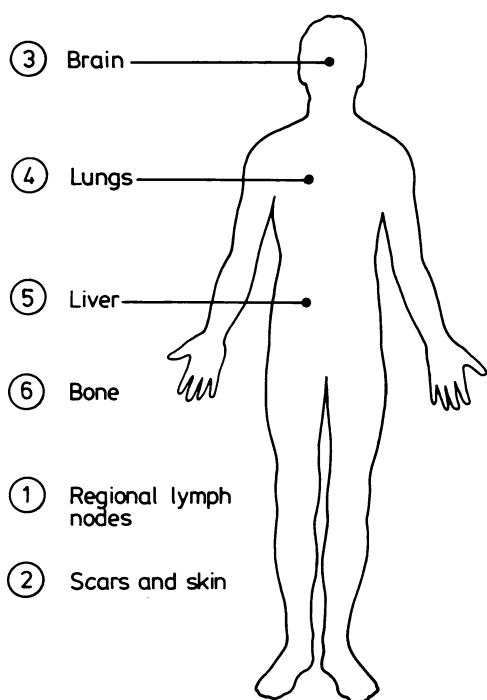
*Prognosis*—Sunlight is an important aetiological agent. The incidence of malignant melanoma in light skinned, fair haired people increases towards the equator. These people are particularly at risk if they have a lot of freckles and tend on exposure to the sun to burn rather than produce a tan. Several prognostic factors have been identified. Female patients survive longer than males. Lesions of the trunk, head, and neck have a worse prognosis than those affecting the arms and legs. Pathologically the depth of invasion may be related to prognosis. The older Clarke's classification, which related survival to depth of invasion into the layers of the dermis, has been superseded by a direct measurement of the thickness of the tumour. Breslow found that almost all patients with skin tumours thinner than 0.75 mm survived free from their disease for five or more years whereas lesions of greater thickness had a worse prognosis. Tumours thicker than 4.5 mm have only a 50% five year survival rate. Malignant melanoma disseminates via the dermal lymphatics to the regional lymph nodes. Once this has occurred the disease tends to run a relentlessly progressive course, and half such patients are dead within a year. Although spontaneous regression has been documented, it is rare.



Superficial spreading melanoma

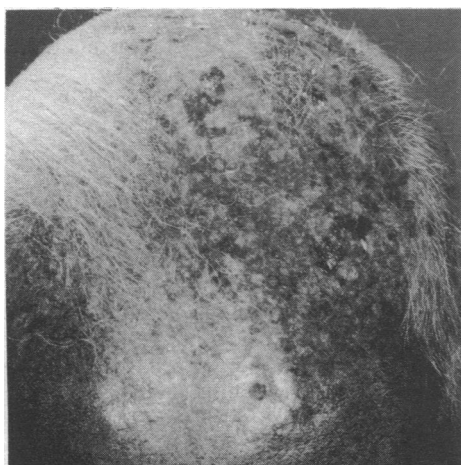


Nodular melanoma

Clark's classification by depth of invasionSites of metastases (in order presented)

**Treatment** of malignant melanoma has recently undergone reappraisal. The classic treatment by wide excision and skin grafting for all melanomas was based on the evidence of a paper written over 50 years ago describing the treatment of a single case of recurrent melanoma in the groin rather than the treatment of a primary tumour. Any suspicious skin lesion should be excised with a clearance of at least 0.5 cm of normal skin and preferably by the widest possible skin margin consistent with primary skin closure. There is no evidence that an excision biopsy alters the prognosis and it allows an accurate histological diagnosis including measurement of the thickness of the tumour. Some surgeons now consider that for thin tumours (less than 0.75 mm) no further surgery is required and only the thicker tumours require the more classic wide excision, which includes a circumference of at least 5 cm of normal skin. Wide excisions may influence local recurrence, with an incidence of up to 10% for the thick lesions, but it probably does not influence the ultimate survival. Prophylactic dissection of lymph nodes is not generally undertaken in this country, but there may be an indication for it in thicker tumours on the arms and legs where the lesion is adjacent to the regional lymph nodes. Block dissections of the regional lymph nodes are otherwise undertaken only when these are clinically affected.

**Advanced disseminated disease**—In advanced disseminated disease other forms of treatment may help. Immunotherapy, and particularly the use of BCG vaccine, has not been of any overall, systemic benefit but intralesionally it may effect some control of dermal metastases. More recently, it has become evident that radiotherapy can provide good palliation, particularly in inoperable metastatic lymph nodes, symptomatic deposits in bone, or localised cerebral metastases. Chemotherapy can be used in two ways. Firstly, by regional perfusion for locally disseminated disease in an arm or leg and its regional lymph nodes. Its effect can be enhanced by hyperthermia. Such treatment can help to control local disease but has no effect on the overall survival and in some cases has been associated with a high incidence of complications. Secondly, systemic chemotherapy has been used. A single agent, in particular (DTIC (dimethyl triazine imidazole carboxemide) can induce remission in about 20% of cases, but this effect is usually short lived. More recently, other agents, particularly vindesine and cisplatin, have been tried either alone or in combination. As a generalisation, chemotherapy, while remaining the only hope for widespread disseminated disease, remains objectively unsubstantiated as a treatment especially when the serious side effects of the treatment and the low response rate are taken into consideration. It may be that chemotherapy should be used earlier in the disease in those patients who have a bad prognosis but no clinical evidence of dissemination.

**Actinic damage and its treatment**

There is little doubt that repeated exposure to sunlight is a major factor in the development of many skin cancers. The skin's natural protection is to increase the thickness of the stratum corneum and produce pigment. Black skin is 10 times better than white skin at stopping ultraviolet light penetrating the full thickness of the epidermis. Ultraviolet B light (320-280 nm) is the wavelength of light that is responsible for producing tumours by a direct action on the basal layer cells of the epidermis. Ultraviolet A light (400-320 nm) is responsible for producing a tan by stimulating the melanocytes; this provides only limited protection to the basal layer from ultraviolet B.

The relative amount of ultraviolet B in the sun's rays is lessened by increases in the amount of atmospheric ozone. Thus less ultraviolet light traverses the atmosphere in the early and late parts of the day, when the rays pass obliquely through the atmosphere, compared with at midday, when the sun is overhead and the rays pass perpendicularly through the atmosphere. Clouds in the sky disrupt more of the ultraviolet A than the ultraviolet B and therefore give a false sense of security.



Protection from the sun's rays can be achieved by:

(1) *Clothing*—A hat provides cover for the face only down to the level of the nose and is usually worn by people who have already sustained actinic damage. The amount of protection from clothing depends on the weave of the fabric and will be relatively low for a woman wearing a light, cotton dress.

(2) *Glass and plastic*—Hard glass in particular acts as a poor filter. Perspex absorbs ultraviolet B strongly but does not provide an appreciable barrier to ultraviolet A.

(3) *Ultraviolet absorbent sun screens*—All commercially available sun screens contain substances that selectively absorb ultraviolet radiation. Their efficiency is expressed as the sun protection factor. The higher the factor number the better the protection. Such preparations as Spectraban 15, Coppertone Supershade 15, and ROC Total Sunblock Cream 10 are regarded as drugs and may therefore be prescribed in the normal way for certain skin conditions. Sun screen agents should be applied well before the start of perspiration. Unavoidable inaccuracy in application will lead to some areas being better protected than others. The liberal use of a poor sun screen is better than the conservative use of a powerful one spread thinly.

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## Philosophical Medical Ethics

### Medical oaths, declarations, and codes

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A common response to the new fangled concept of philosophical medical ethics is that it is unnecessary. Medicine has had its own scheme of ethics for at least 2500 years, and, although the moral rules of the Hippocratic Oath<sup>1</sup> have undergone considerable development and modification, much of modern medical practice is at least officially ethically inspired by its modern successors, the World Medical Association's declarations, including those of Geneva, London (the international code of medical ethics), Helsinki, Lisbon, Sydney, Oslo, Tokyo, Hawaii, and Venice.<sup>1</sup>

#### Declarations of the World Medical Association

*The Declaration of Geneva* (1948, revised 1968 and 1983) is a sort of updated version of the Hippocratic Oath. It requires the doctor to consecrate his life to the service of humanity; to make "the health of my patient" his first consideration; to respect his patient's secrets (even after the patient's death); to prevent "considerations of religion, nationality, race, party politics, or social standing [intervening] between my duty and my patient"; to "maintain utmost respect for human life from its beginning" (until 1983 the wording

of this clause required "utmost respect for human life from the time of conception"); and not to use his medical knowledge "contrary to the laws of humanity."<sup>1</sup>

*The World Medical Association's international code of medical ethics*, adopted in London in 1949 and revised in 1968 and 1983, requires, among other things, adherence to the Declaration of Geneva, the highest professional standards, clinical decisions uninfluenced by the profit motive, honesty with patients and colleagues, and exposure of incompetent and immoral colleagues. It states that "a physician shall owe his patients complete loyalty and all the resources of his science"; and it says that "a physician shall preserve absolute confidentiality on all he knows about his patient even after the patient has died."<sup>1</sup>

*The Declaration of Helsinki* (1964, revised 1975 and 1983) governs biomedical research in human subjects, and among its many principles is the stipulation that "the interests of the subject must always prevail over the interests of science and society."<sup>1</sup> It also requires that in any research the doctor should "obtain the subject's freely given informed consent."

*The Declaration of Lisbon* (1981) concerns the rights of the patient. These are declared to include the rights to choose his or her physician freely; to be cared for by a doctor whose clinical and ethical judgments are free from outside interference; to accept or refuse treatment after receiving adequate information; to have his or her confidences respected; to die in dignity; and to receive or decline spiritual and moral comfort including the help of a minister of an appropriate religion.<sup>1</sup>

*The Declaration of Sydney* (1968, revised 1983), on death, states

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