

## View from Beneath: Pathology in Focus

### Verrucous carcinoma of the maxillary antrum

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#### Abstract

Verrucous carcinoma is a rare variant of squamous cell carcinoma which occurs most frequently in the oral cavity and larynx. In this article we describe a patient with verrucous carcinoma of the maxillary antrum, and present a review of the literature.

#### Introduction

In 1941, Friedell and Rosenthal described eight cases of carcinoma of the mouth with a papillary verrucoid appearance. However it was not until 1948 that Ackerman recognised its clinical significance and coined the term 'verrucous carcinoma'. These lesions had a characteristic warty appearance with little tendency to metastasise; they also had a particularly good prognosis for a well differentiated squamous cell carcinoma when treated by radical surgery (Ackerman, 1948).

Verrucous carcinoma is most commonly found in the oral cavity and also, but less frequently, in the larynx and anogenital region. Rarely, other areas of the aerodigestive tract and the extremities can give rise to this lesion, but to our knowledge there are only two other reports of maxillary sinus involvement in the English literature (Elliott *et al.*, 1973; Bacon *et al.*, 1989).

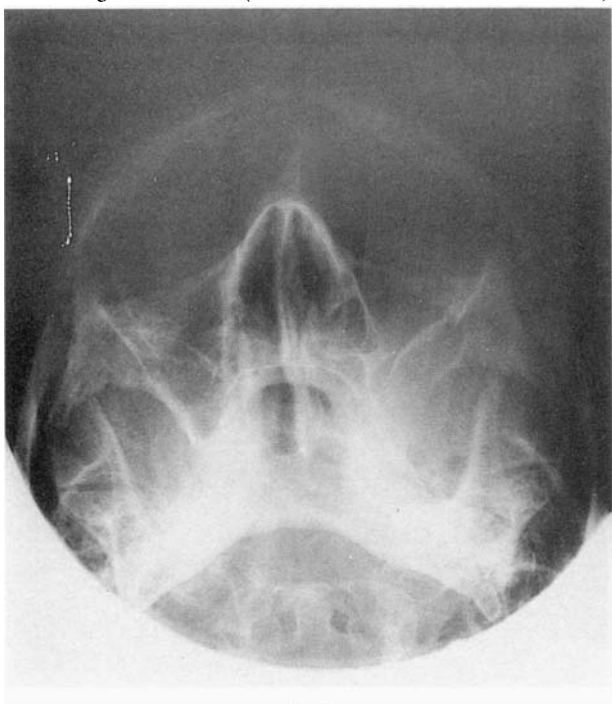


FIG. 1

Plain radiograph showing bony destruction of left maxillary antrum.

#### Case report

A 72-year-old woman presented with a history of left-sided nasal obstruction and muco-purulent rhinorrhoea for 18 months. For three weeks prior to presentation, she had noted swelling of the left cheek and an inability to fit her dentures. Examination confirmed the presence of a soft tissue mass in the left maxillary region, with distortion of the alveolar margin. On anterior rhinoscopy, a polypoidal mass was visible in the middle meatus. Plain radiographs and computerised tomography (CT) (Figs. 1 & 2) demonstrated a destructive mass in the antrum with erosion in all planes and extension into the left nasal cavity. Mucosal thickening was evident in the ipsilateral ethmoid, frontal and sphenoid sinuses.

At the initial operation, simple nasal polyps were avulsed from the nasal cavity and middle meatus. A large amount of white keratinous debris was removed piecemeal from the left antrum via an intranasal approach through the inferior meatus. Biopsies yielded no conclusive diagnosis and therefore a further exploration was carried out. An extended Caldwell-



FIG. 2

Coronal CT scan showing destructive mass in left maxillary antrum and nasal cavity.

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FIG. 3

Definitive specimen showing well differentiated thick papillomatous epithelium with large keratinocytes and a pushing lower margin. Haematoxylin and eosin  $\times 40$ .

Luc approach permitted wide, but probably incomplete, excision of the lesion. At surgery, the lesion appeared encapsulated with a well defined wall that facilitated enucleation of the entire mass.

Histological examination resulted in a diagnosis of verrucous carcinoma. Further treatment was considered, but a positive decision to withhold radiotherapy was made and the patient has declined any additional surgical intervention. Four months post-operatively, the patient is asymptomatic, and there is no evidence of residual disease.

#### Pathology

The initial biopsy showed inflammatory polyps from the nasal cavity and keratinous debris admixed with strips of variably attenuated keratinising stratified squamous epithelium from the antrum. There was no obvious evidence of malignancy and it was suggested that the lesion could be an epidermoid cyst.

The definitive specimen included mucosa, bone, inflamed granulation tissue, necrotic and keratinous debris, as well as multiple strips of tissue lined by keratinising stratified squamous epithelium. Some of these were attenuated but elsewhere the epithelium was much thicker with papillomatosis and a bulbous, expanding deep margin (Fig. 3). In these areas many of the keratinocytes were of the order of 35 microns across with nuclei 12 microns in diameter. In almost all areas the epithelium was very well differentiated, with only isolated foci showing any appreciable atypia. Mitotic figures were rare: one per ten high power fields was counted. In one area fragments of eroded bone were seen within formations of well differentiated squamous epithelium (Fig. 4). A diagnosis of verrucous squamous cell carcinoma was made.

#### Discussion

Malignant neoplasms of the nose and paranasal sinuses com-

prise only 3 per cent of all head and neck tumours, and less than 1 per cent of all malignancies (Cheesman, 1987). Approximately 55 per cent of paranasal sinus neoplasms arise in the maxillary sinus. Possible aetiological factors include nickel and hydrocarbon exposure. There is also epidemiological evidence of an increased risk of sinus cancer in woodworkers, boot and shoe workers, furniture makers, and following prolonged use of African snuff (DeSanto, 1986). There was no identifiable predisposing factor in our patient.

Since the recognition of verrucous carcinoma as a distinct entity (Friedell and Rosenthal, 1941), it has been reported originating in the maxillary antrum on only two occasions (Elliott *et al.*, 1973; Bacon *et al.*, 1989). There are a few reports of nasal cavity involvement (Kraus and Perez-Mesa, 1966; Duncavage *et al.*, 1983; Hanna and Ali, 1987), and only one definite recorded case involving the frontal sinus in the English literature (Newman *et al.*, 1983).

The management of verrucous carcinoma is not clearly defined. Clinically it exhibits the characteristics of a slow-growing invasive tumour, but histologically it lacks the conventional features of invasive squamous cell carcinoma. Diagnosis from a small or superficial biopsy may be impossible, with only hyperkeratosis, acanthosis and apparently benign papillomatosis in evidence. An increased keratinocyte and nuclear area may be the only clue to malignancy (Michaels *et al.*, 1984). In this study mean cell and nuclear areas were significantly higher in verrucous carcinoma than in squamous papilloma; verrucous carcinoma cells gave a mean cell area of above 300 square micrometres. In our case the cells were clearly in the malignant range according to this criterion.

In one fifth of cases foci of typical squamous carcinoma may occur within a tumour otherwise exclusively verrucous. This subgroup has a higher recurrence rate (Medina *et al.*, 1984). In our patient, the first biopsy consisted mostly of keratin and bland epithelial strips, but when further material was obtained

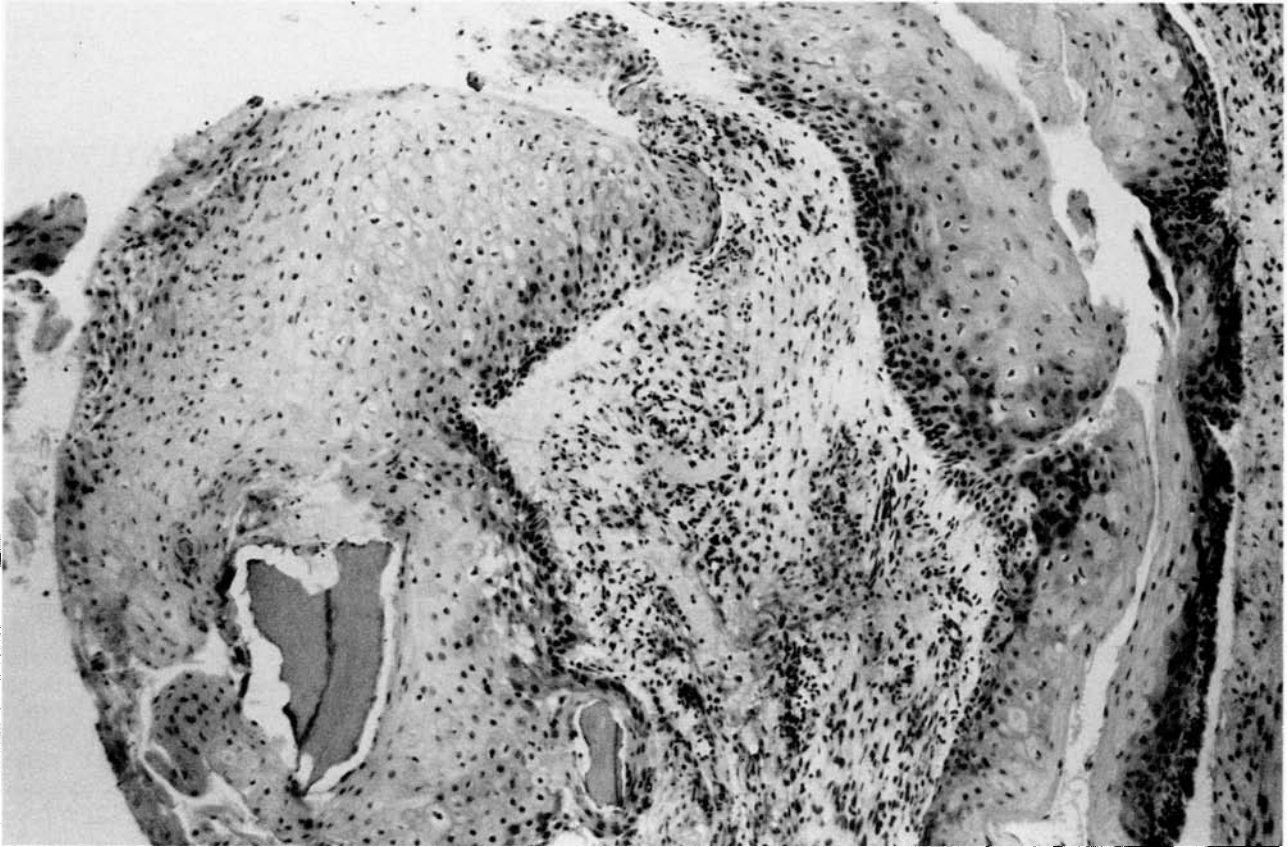


Fig. 4

Well differentiated squamous formations containing fragments of eroded bone. Note large size of tumour cells. Haematoxylin and eosin  $\times 85$ .

it then became possible to make the diagnosis of verrucous carcinoma. The surgeon must provide the pathologist not only with a detailed history but also an ample representative or excisional biopsy to ensure an accurate diagnosis.

Controversy exists regarding the correct treatment modality for this tumour. Radiotherapy is the treatment of choice for many squamous cell carcinomas of the head and neck, but irradiation of a verrucous carcinoma has often resulted in recurrence as an aggressive anaplastic carcinoma: surgical treatment is therefore generally recommended (Perez *et al.*, 1966; Biller *et al.*, 1971; Ryan *et al.*, 1977; Ferlito and Recher, 1980). In spite of these reports of anaplastic change, however, a curative response to radiotherapy has been documented (Schwade *et al.*, 1976; Burns *et al.*, 1976). There appears to be no place for routine radical neck dissection in operative management since it rarely metastasizes (Ferlito, 1985).

Of the two previously reported cases arising in the maxillary antrum, one patient received post-operative radiotherapy and was alive and well after five years (Elliott *et al.*, 1973). In Bacon *et al.*'s case (1989) the patient was treated by hemimaxillectomy and ethmoidectomy but no follow-up details were given.

In our patient the lesion was resected by enucleation, on the basis of the initial histological report and it is unlikely that total clearance was achieved. The decision to withhold radiotherapy was made on the basis that the tumour is of low-grade malignancy and that there is a significant risk of anaplastic change. This may, however, be a treatment option if the lesion recurs.

In conclusion, at the present time, there is insufficient knowledge of this tumour within the paranasal sinuses to advocate a specific management for this site. Until this information is available, the rationale of treatment is based on the behaviour of verrucous carcinoma in other sites in the head and neck. The consensus of opinion is that radiotherapy is contraindicated and surgery probably represents the treatment of choice in this condition.

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