DOI: 10.7860/JCDR/2026/88645.23581

Case Report

Oncology Section

Verrucous Carcinoma of the Scalp: A Rare Case Report

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ABSTRACT

Verrucous carcinoma is a rare tumour with locally aggressive behaviour. These tumours are composed of well-differentiated squamous cells with minimal metastatic potential. These tumours are commonly reported in the oral cavity and anogenital region. Involvement of the scalp in verrucous carcinoma is uncommon. Verrucous carcinoma might appear benign on histopathological assessment and result in delayed or misdiagnosis, which in turn might result in unfavourable outcomes. This 31-year-old male presented with a long-standing ulcero-proliferative lesion over the posterior scalp. It was associated with cervical lymphadenopathy. Initial biopsy suggested verrucous hyperplasia without any malignancy. The Contrast Enhanced Computed Tomography (CECT) of the brain and neck was carried out to understand the extent of the lesion followed by wedge biopsy done to confirm the diagnosis along with Fine Needle Aspiration Cytology (FNAC) of the lymph node. The patient underwent a wide local excision, and the histopathological analysis confirmed the diagnosis of verrucous squamous cell carcinoma. He was surgically managed by negative margins and flap reconstruction with favourable postoperative outcomes. This case report underscores the uncommon presentation of the verrucous carcinoma over the scalp which is commonly observed over oral and ano-genital regions. This clinical presentation underscores the importance of complete surgical excision and histopathological analysis for diagnosis confirmation, with long-term follow-up to keep a check on recurrence.

Keywords: Aggressive tumours, Scalp tumours, Squamous cell carcinoma, Surgical management, Ulceroproliferative lesion

CASE REPORT

A 31-year-old male presented with a progressively enlarging swelling over the posterior aspect of the scalp for eight months, which gradually developed into an ulceroproliferative lesion. It was associated with serous discharge and persistent itching for the last seven months, and occasional bleeding on touch. There was no associated history of any trauma, fever, loss of appetite, weight loss, or any other such lesions in any part of the body, except a painless swelling over the right posterior triangle of the neck, which the patient had noticed four months back. The patient had no known comorbidities or any significant personal/ family history. There were no associated habits of any tobacco consumption. He was alcoholic for last six years. General examination showed him conscious, oriented, afebrile, and haemodynamically stable without any pallor, icterus, clubbing, or generalised lymphadenopathy. Local examination of the scalp revealed a solitary ulceroproliferative growth measuring approximately 3.0×3.0 cm over the posterior region of his scalp between the parietal prominences. The lesion had a thickened base with exuberant granulation tissue on the floor, everted edges, and serous discharge. The rest of the surrounding skin appeared normal. On palpation, the lesion was non-tender without active bleeding [Table/Fig-1].

[Table/Fig-1]: Clinical image of the lesion showing cauliflower-like mass.

Clinical examination of the neck revealed a firm, mobile, non-tender lymph node measuring 3.0×2.0 cm in the right posterior triangle.

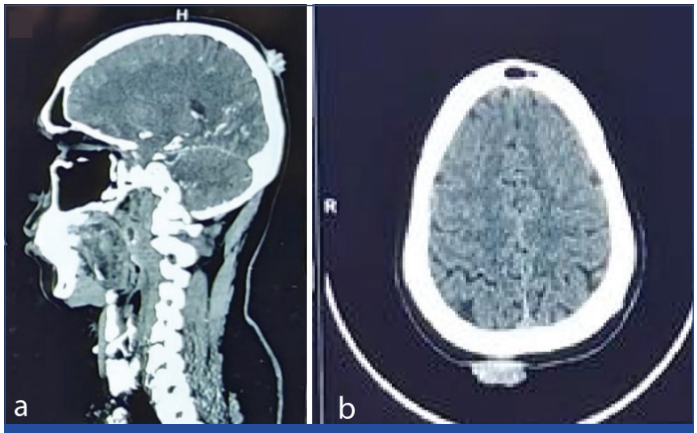
Routine laboratory investigations (Haemoglobin, Liver Function Test (LFT), Renal Function Test (RFT), and blood sugar levels) were carried out and mentioned in [Table/Fig-2]. LFT was deranged because patient was alcoholic for last six years. RBS and HbA1c

Parameters	Patient value	Normal range (Male)
Haemoglobin	16.7	12.0-17.0 g/dL
Packed cell volume	49.2	37-53%
Total cell count	9.72	4000-11000/µL
Total platelet count	261	130000-400000/µL
LFT		
Total bilirubin	0.16	0.3-1.2 mg/dL
Direct bilirubin	0.20	0-0.3 mg/dL
Indirect bilirubin	0.5	0.1-0.9 mg/dL
SGOT	42.0	10-40 U/L
SGPT	70.9	7-56 U/L
Gamma-glutamyl transferase	87.0	<50 U/L
Total protein	7.8	6.0-8.3 g/dL
Albumin	4.7	3.5-5.0 g/dL
RFT		
Urea	25	15-40 mg/dL
Uric acid	5.8	3.5-7.2 mg/dL
Sodium	137.4	135-145 mmol/L
Potassium	4.7	3.5-5.0 mmol/L
Chlorides	100.1	98-106 mmol/L
Prothrombin time	12.2	~11-13 sec
INR	1.06	0.8-1.2
HbA1c	5.92	<5.7%
Random blood sugar	145	<140 mg/dL

[Table/Fig-2]: Laboratory profile of the patient.
LFT: Liver function test; SGOT: Serum glutamic oxaloacetic transaminase; SGPT: Serum glutamic pyruvic transaminase; RFT: Renal function test

were mildly elevated for which Medicine opinion was taken and diabetic diet was initiated. HIV, HCV and HbsAg were negative. Wart was considered as clinical provisional diagnosis.

An edge wedge biopsy performed outside the institution showed verrucous hyperplasia without any signs of malignancy. Contrast-Enhanced Computed Tomography (CECT) of the brain and neck revealed a heterogeneously enhancing lesion in the right high parietal scalp extending into the subgaleal plane, abutting the periosteum, with enlarged right occipital and level V-cervical lymph nodes. No intracranial extension or bony erosion was identified [Table/Fig-3].



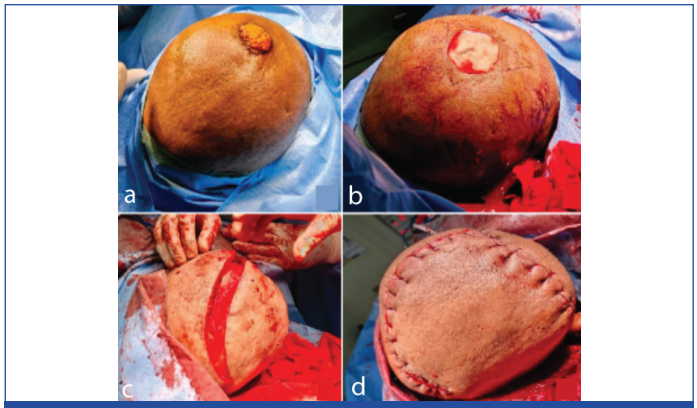
[Table/Fig-3]: Contrast Enhanced Computed Tomography (CECT) showing heterogeneously enhancing solid lesion with extension into subgaleal plane (Yellow box): a) Sagittal view of CECT shows heterogeneously enhancing solid lesion in the parietal scalp; b) Axial view showing solid lesion with extension into subgaleal plane and abutment of the parietal periosteum.

Clinical presentation was noted as 'wart of viral/ bacterial origin'. FNAC of the cervical lymph node was reported as atypia of undetermined significance (Sydney classification category III) [Table/Fig-4] [1].

Category	Cytological features	Malignancy level	Management
I	Poor cellularity, necrosis without cells	Inadequate	Repeat FNAC
II	Polymorphous lymphoid, no atypia	Benign	Clinical follow-up
III	Mild-moderate atypia	Atypical/ Suspicious	Repeat FNAC/ Biopsy
IV	Strong atypia, not definitive	Suspicious for malignancy	Excisional biopsy
V	Monomorphic cell	Malignant	Definitive oncologic management

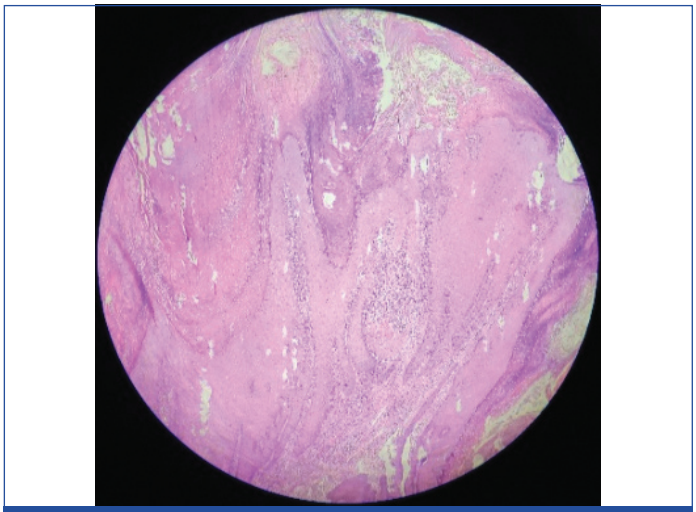
[Table/Fig-4]: Sydney classification category.

The patient was surgically managed by wide local excision of the scalp lesion with a 1.0 cm margin under general anaesthesia as per the standard guidelines. Intraoperative findings showed frozen section confirming the tumour-free margins. The resulting defect was reconstructed using a rotational scalp flap [Table/Fig-5].



[Table/Fig-5]: Intraoperative image showing rotational scalp flap carried out for the management of verrucous carcinoma of the scalp; a) Image showing scalp swelling, large, exophytic lesion over vertex region; b) Intraoperative view of the defect after excision margin clearance of 1.0 cm; c) Rotational scalp flap; d) Post reconstruction defect covered with scalp flap.

Pseudoepitheliomatous hyperplastic was considered as histopathological differential diagnosis, where there is hyper plastic epithelium with elongated but pointed rete ridges in the dermis. Final histopathological examination of the excised section revealed exophytic, verrucous architecture with bulbous rete pegs pushing into the stroma with broad and smooth borders without jagged invasion suggestive of a well-differentiated verrucous squamous cell carcinoma, without lymphovascular or perineural invasion [Table/Fig-6].



[Table/Fig-6]: Haematoxylin and eosin-stained slide showing exophytic, verrucous architecture with bulbous rete pegs pushing into the stroma with broad and smooth borders (40x magnification).

At the time of discharge {5th Postoperative Day (POD)}, the right posterior triangle lymph node had subsided following antibiotic therapy. Oncosurgical consultation recommended against any intervention at the moment and an advice for annual follow-up surveillance. Follow-up at 1st month showed clinical improvements with no fresh complaints.

All resection margins were free of tumour. Postoperative recovery was uneventful, and the cervical lymph node resolved with a course of antibiotics. The patient was discharged on the 5th POD. A follow-up at POD 17 showed a good wound recovery, and there were no signs of any infection at the suture site [Table/Fig-7].

[Table/Fig-7]: Postoperative image on POD 17 after suture removal.

DISCUSSION

Verrucous carcinoma is a rare type of squamous cell carcinoma with an incidence of <1% [2]. It has been commonly noted in the oral cavity, cervix, vagina, bladder, and anogenital regions [2,3]. These slow-growing, locally aggressive tumours are unlikely to metastasise [2]. It appears as a painless, thick, white plaque and a cauliflower-like growth. The aetiology of verrucous carcinoma remains elusive. Though verrucous carcinoma of the oral cavity has been strongly

linked to poor oral hygiene, tobacco consumption in any form, betelnut chewing, and alcohol. It has also been linked to chronic inflammatory conditions [4,5]. However, human papillomavirus infection has also been reported with verrucous carcinoma of the oral cavity, foot, and the genito-anal region [6,7].

Verrucous carcinoma is extremely challenging to recognise on small or superficial biopsies, as the hallmark invasive component typically extends deep into the underlying stroma, whereas the overlying epithelium frequently appears histologically bland and warty. This vertical distribution of the lesion accounts for the frequent reporting of such biopsies as "benign-appearing" or their misinterpretation as verrucous hyperplasia, pseudoepitheliomatous hyperplasia, or even conventional squamous cell carcinoma [8-10]. Verrucous carcinoma may be initially diagnosed as verrucous hyperplasia, which often progresses to verrucous carcinoma or squamous cell carcinoma [10]. On the contrary, FNAC from the lymph node diagnosed the lesion as 'atypia' of undetermined significance and the edge wedge biopsy of the lesion marked it as 'verrucous hyperplasia'. The final diagnosis of 'verrucous carcinoma' was confirmed by histological assessment of the excised tissue in this case. Radiological assessment modalities such as computed tomography and magnetic resonance imaging can provide valuable insights into invasion of surrounding structures and regional lymph nodes [5]. Histopathological presentations include thick, well-differentiated, keratinised squamous epithelium, seen as filiform projections composed of basal cell layers, multiplied, voluminous spinous cells lacking cytological atypia, invading the underlying stroma, and a well-defined pushing margin [10,11]. Verrucous carcinoma presents with deceptively benign histological features, characterised by broad-based rete ridges, pushing margins, and minimal atypia, which often leads to false-negative results on superficial biopsies [5]. This highlights the importance of adequate, deep tissue sampling, especially in long-standing, non-healing ulceroproliferative lesions.

Verrucous carcinoma of the scalp is rare. A case report of a 23-year-old female was reported from the Punjab region, India, where a similar outgrowth was noted on the scalp [10], except that it was present on the scalp by birth, as compared to this case, where the lesion has a progressive growth, which was observed in the last eight months. Verrucous carcinoma of the scalp has been associated with chronic irritation, poor hygiene, repeated trauma, and long-standing inflammatory conditions [6]. Another case report of an eight-year-old boy also described an asymptomatic yellow-brown scalp growth present since birth, which gradually progressed to its current dimensions of 6.0×4.0 cm in the left parieto-occipital region [12]. Surgical management by wide local excision with clear margins remains the first-line treatment. Incomplete surgical margins may accelerate tumour growth, leading to anaplastic transformation and difficult reconstruction [13]. Timely diagnosis and management result in a good prognosis, although long-term follow-up is advised attributed to local recurrence risk.

CONCLUSION(S)

Verrucous carcinoma of the scalp is an uncommon malignancy that mimics benign or inflammatory lesions and poses a diagnostic challenge. Superficial biopsies may lead to misdiagnosis, requiring a high index of suspicion and thorough histopathological evaluation. Early recognition and appropriate management are crucial to prevent local morbidity.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Mar 15, 2026
- Manual Googling: Apr 17, 2026
- iThenticate Software: Apr 20, 2026 (2%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Mar 04, 2026**
Date of Peer Review: **Mar 20, 2026**
Date of Acceptance: **Apr 22, 2026**
Date of Publishing: **Jun 01, 2026**