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Case Report

Nodular Basal Cell Carcinoma with Adenoid Differentiation of the Cheek: A Rare Histopathological Variant and its Surgical Management

Dr. Gandeti Kiran Kumar, M.S[1]*, Dr. Aithagani Aruna, M.S[2], Dr. NuukalaGeethika[3], Dr. Nammi Bhagya Sree[4], Dr. Kale Prem Samuel[5]

[1]Professor, Department of General Surgery, Guntur Medical College, Guntur, Andhra Pradesh, India
[2]Assistant Professor, Department of General Surgery, Guntur Medical College, Guntur, Andhra Pradesh, India
[3]Assistant Professor, Department of General Surgery, Guntur Medical College, Guntur, Andhra Pradesh, India
[4]Post Graduate, Department of General Surgery, Guntur Medical College, Guntur, Andhra Pradesh, India
[5]Post Graduate, Department of General Surgery, Guntur Medical College, Guntur, Andhra Pradesh, India

***Corresponding Author:** Dr. Gandeti Kiran Kumar
Professor, Department of General Surgery, Guntur Medical College, Guntur, Andhra Pradesh, India

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Abstract: ***Background***: Basal cell carcinoma (BCC) is the most frequent non-melanoma skin malignancy globally, typically characterized by slow, locally invasive growth with a low propensity for distant metastasis. Among its distinct histopathological variants, the adenoid variant of nodular BCC is a relatively uncommon presentation that can mimic glandular structures or other cutaneous adnexal tumors. ***Case Presentation*:** We present the case of a 53-year-old female who presented with a blackish, warty, nodular, ulcero-proliferative growth measuring 2.2 x 2cm, located 2 cm lateral to the right angle of the mouth, evolving over 2 years. The patient had a relevant medical history of long-standing epilepsy and recently diagnosed diabetes mellitus. Local examination revealed classic BCC features, including central depression, a beaded appearance, and rolled-out edges. A wide local excision was performed via a curvilinear elliptical incision aligned with the right nasolabial fold, achieving clear surgical margins. Histopathological evaluation confirmed a nodular basal cell carcinoma with prominent adenoid (cribriform and cystic) differentiation, characterized by peripheral palisading and retraction clefts. The postoperative period was uneventful, and primary closure yielded excellent cosmetic results. ***Conclusion***: The adenoid variant of nodular BCC represents a unique histopathological subtype. Wide local excision with adequate oncological margins remains the cornerstone of treatment, providing excellent long-term prognosis and exceptional local control.

Keywords: Nodular Basal Cell Carcinoma, Adenoid Variant, Wide Local Excision, Nasolabial Fold, Case Report.

1. INTRODUCTION

Basal cell carcinoma (BCC) represents the most common non-melanoma skin cancer worldwide, accounting for the vast majority of cutaneous malignancies. It is a slow-growing, locally invasive neoplasm that rarely metastasizes. The estimated global incidence ranges widely between 1.5 and 15.7 cases per 100,000 population, demonstrating a higher prevalence in males and individuals with significant sun exposure. BCC arises from the pluripotent epithelial cells within the basal layer of the epidermis or outer root sheath of follicular structures.

Anatomically, it predominantly affects sun-exposed regions, particularly the head and neck (typically distributed above the line joining the angle of the mouth and the lobe of the ear, historically referred to as Onghren's line) and the upper back, while mucosal surfaces are strictly spared. The primary etiology centers on ultraviolet radiation (UV-B being more carcinogenic than UV-A), alongside other risk factors such as ionizing radiation, chronic arsenic exposure, and genetic predispositions.

Histologically, BCC is highly heterogeneous and categorized into nodular, pigmented, superficial,

morpheaform (sclerosing), and keratotic types. The nodular variant is the most common subtype. Within this class, the adenoid variant is an uncommon architectural pattern characterized by a reticulated, cribriform, or glandular arrangement that can pose a diagnostic challenge. We present a rare case of an adenoid variant of nodular BCC on the right cheek of a 53-year-old female, successfully managed via wide local surgical excision.

2. CASE PRESENTATION

2.1 Clinical History

A 53-year-old female presented to the outpatient clinic of the Department of General Surgery, Guntur Medical College, with a chief complaint of a black-colored, warty skin growth on the right side of her face for the past two years. The lesion began as a small hyperpigmented macule and gradually progressed to its current size. There was no history of significant spontaneous bleeding, rapid increase in size, or regional paresthesia.

The patient's medical history was significant for epilepsy diagnosed 27 years ago, for which she remains compliant with regular anti-epileptic medication. She was also diagnosed with Type 2 Diabetes Mellitus 5 months prior, managing it with irregular oral hypoglycemic therapy.

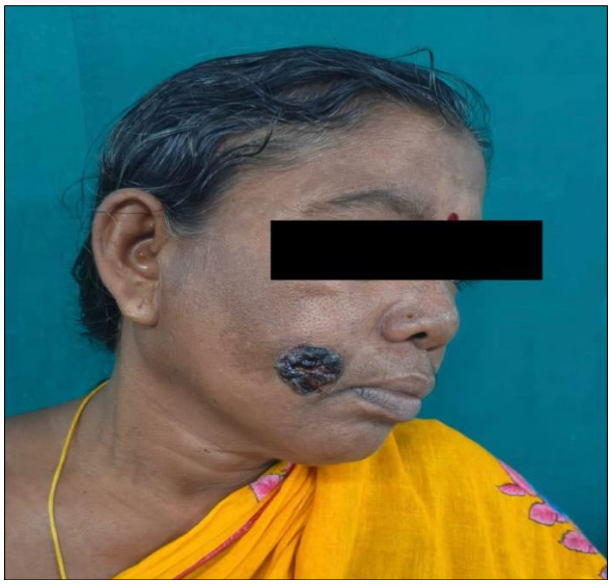
2.2 Local and Physical Examination

Upon physical examination, the patient was hemodynamically stable. Local examination of the face revealed a well-defined, 2.2 x 2 cm blackish, nodular, ulcero-proliferative growth located on the right cheek. Anatomically, the lesion was situated 2 cm laterally from the right angle of the mouth, 8 cm anterior to the right tragus, and 4 cm superior to the inferior border of the mandible.

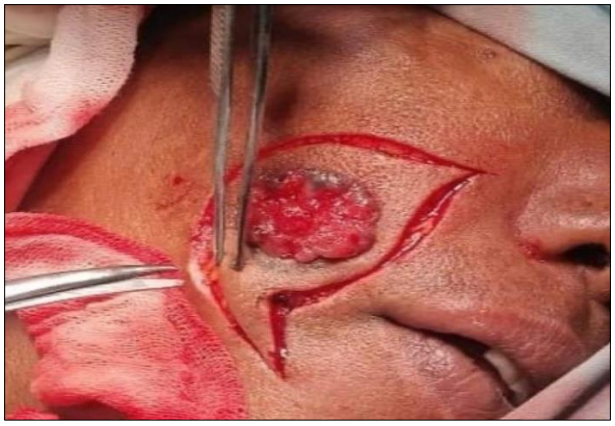
On palpation, the lesion exhibited a characteristic central depression, an ill-defined margin with a classic pearly/beaded appearance, and rolled-out edges. The tumor was firm in consistency and entirely confined to the cutis and subcutaneous tissues, demonstrating no fixation to the underlying facial musculature or bone. No regional lymphadenopathy (submental, submandibular, or cervical) was clinically palpable.

2.3 Management and Surgical Procedure

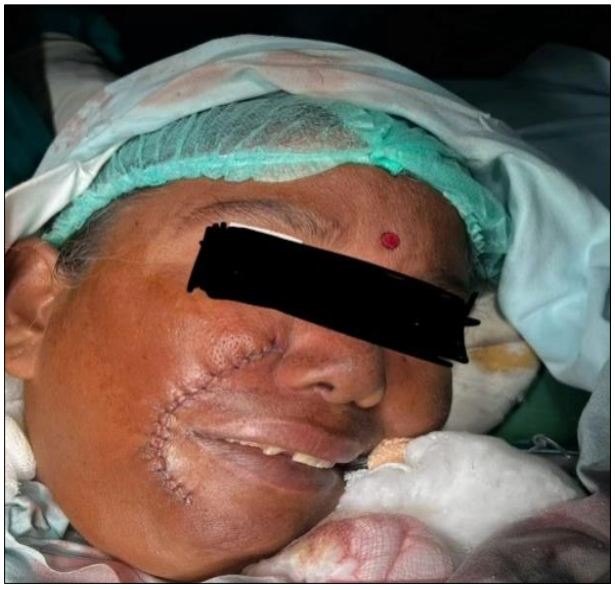
Routine hematological and biochemical investigations, including blood glucose levels, were optimized preoperatively. The patient was scheduled for a wide local excision under general anesthesia.



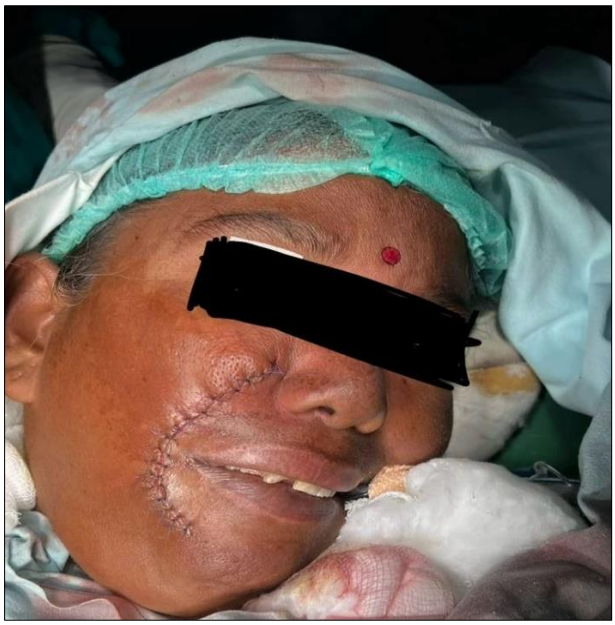
Clinical presentation



Intraoperative marking/excision along the naso-labial fold



Immediate post-operative primary closure



Late-stage healing

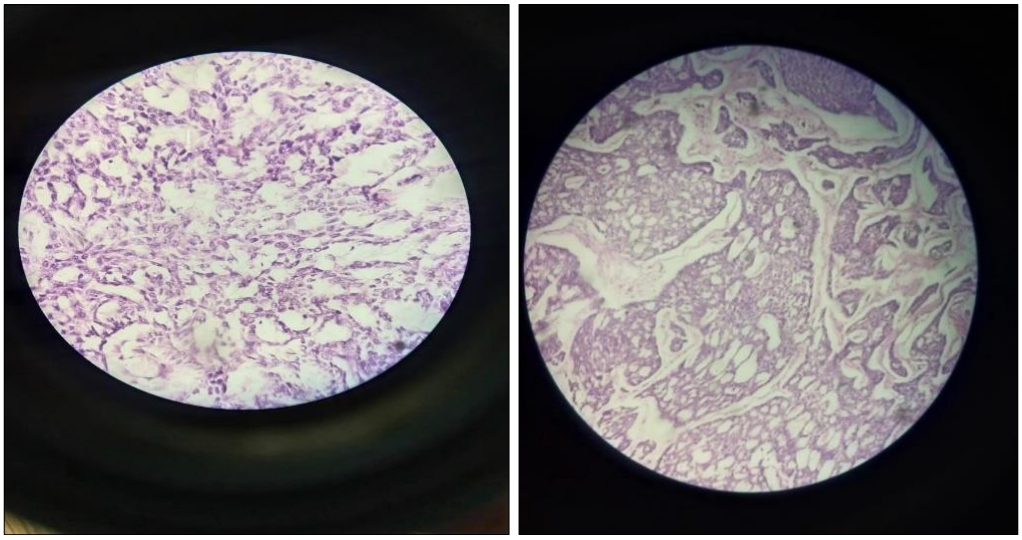
Intraoperative Approach:

1. **Incision Marking:** A curvilinear elliptical skin incision was planned and marked in anatomical continuation with the right nasolabial fold to optimize cosmetic scar blending.
2. **Excision Margins:** A wide local excision was executed, ensuring a lateral clearance margin of 1 cm, a medial clearance margin of 0.5 cm (to conserve critical perioral tissue), and a deep margin of 0.5 cm to encompass the subcutaneous fat plane.
3. **Reconstruction:** Following complete tumor extirpation, the surrounding subdermal flaps were meticulously mobilized (raised) all around to facilitate tension-free closure.
4. **Closure:** Primary closure was performed in two distinct anatomical layers using absorbable sutures for the deeper dermal layer and non-absorbable interrupted sutures for the epidermis.

The postoperative course was completely uneventful, healing cleanly without wound dehiscence, infection, or distorted oral symmetry.

2.4 Histopathological Examination (HPE)

The resected specimen was submitted for histopathological evaluation. Microscopic analysis revealed fragments of skin tissue lined by stratified squamous epithelium showing a basaloid neoplasm.



Microscopic view showing basaloid tumor islands arranged in a reticular/cribriform (adenoid) pattern, highlighted by peripheral palisading and characteristic retraction clefts from the stroma.

The tumor cells were organized in distinct nests, exhibiting an intricate “cribriform (lace-like) and cystic pattern “classic for the adenoid variant.

Key Diagnostic Hallmarks Included:
Peripheral Palisading: Prominent alignment of columnar basaloid cells at the periphery of the tumor nests.
Retraction Clefts: Distinct clear spaces/clefting artifacts separating the tumor islands from the surrounding fibro-mucinous stroma.
Surgical Margins: Microscopic evaluation confirmed that all lateral, medial, and deep surgical margins were entirely free of tumor cells.
Definitive Diagnosis: Nodular Basal Cell Carcinoma – Adenoid Variant.

3. DISCUSSION

Basal cell carcinoma remains a primary focal point in dermatological oncology. At the molecular level, BCC pathogenesis is highly driven by genetic aberrations, with mutations in the "hedgehog signaling pathway" (specifically involving PTCH1 or SMO genes) present in approximately 90% of all sporadic cases.

While nodular BCC is the most ubiquitous presentation, the "adenoid variant "is an architectural subcategory where the tumor cells arrange themselves in thin, interconnecting strands or cords, giving a pseudo-glandular or cribriform appearance. These tubular or cystic spaces often contain mucinous material but lack true glandular epithelial secretion, differentiating them from primary cutaneous adnexal adenocarcinomas.

Staging and risk stratification dictate the therapeutic framework. High-risk features for BCC recurrence include:

* Tumor size > 2 cm in diameter.
* Anatomical location in high-risk zones (the "H-zone" of the face: periorbital, nasal, perioral, and auricular regions).
* Ill-defined clinical margins.
* Immunosuppressed status of the host.

Though our patient's lesion was located in close proximity to the angle of the mouth (2 cm lateral) and measured > 2cm (2.2 x 2 cm), the margins were successfully cleared using surgical intervention.

Differential Diagnosis

The clinical and macroscopically pigmented, nodular appearance of this lesion necessitates differentiation from:

1. **Squamous Cell Carcinoma (SCC):** Displays faster growth, lack of a beaded border, and higher metastatic risk.
2. **Malignant Melanoma:** Shows asymmetry, irregular borders, and variable color distributions.
3. **Seborrheic Keratosis:** Exhibits a classic "stuck-on" appearance, lacking atypical vascularity or ulceration.
4. **Keratocanthoma:** Features a rapid growth phase with a central keratin-filled crater.

Therapeutic Modalities:

The primary modality of treatment for localized nodular BCC is surgical intervention via "wide local excision" or Mohs micrographic surgery, providing excellent cure rates. For patients who are poor surgical candidates or present with low-risk superficial variants, alternative field therapies can be explored:
Radiation Therapy: Useful for elderly patients or in unresectable locations.
Cryotherapy & Electrodessication/Curettage: Reserved for low-risk, small superficial variants.
Photodynamic Therapy (PDT): Utilises photosensitizing agents localized to tumor tissues.
Topical Agents: Such as Imiquimod (5% cream) or 5-Fluorouracil (5-FU).

Given its low metastatic potential and completely cleared surgical margins, the adenoid variant of nodular BCC carries an excellent long-term prognosis. Regular clinical follow-up is mandatory to monitor for local recurrence or the emergence of synchronous primary cutaneous lesions.

4. CONCLUSION

We have documented a classic presentation of the adenoid variant of nodular basal cell carcinoma involving the cheek of a middle-aged female. Despite its specialized cribriform histology, the tumor behaves similarly to standard nodular variants. Wide local excision tailored along natural facial aesthetic lines—such as the nasolabial fold—ensures complete oncological clearance while preserving optimal cosmetic and functional anatomy.

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