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Case Report

Giant recurrent cutaneous squamous cell carcinoma of the gluteal region managed with wide local excision and split-thickness skin grafting in a medically complex patient: a case report

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ABSTRACT

Cutaneous squamous cell carcinoma (cSCC) is an invasive malignancy that rarely presents as a giant, exophytic mass in non-sun-exposed regions like the buttocks. We report the case of a 74-year-old male tiles worker with a 15-year history of plaque psoriasis, coronary artery disease (triple vessel disease), hypertension, and type II diabetes mellitus, who presented with a massive recurrent right gluteal cSCC measuring 15×15 cm. The recurrence emerged two years following a primary excision done in 2024. Contrast-enhanced computed tomography (CECT) scan demonstrated extensive superficial infiltration tracking from the L3 to S5 vertebral levels, strictly confined to the skin and subcutaneous layers with completely preserved underlying musculoskeletal planes. Concomitant necrotic bilateral inguinal lymphadenopathy was pathologically confirmed via fine-needle aspiration cytology (FNAC) to be reactive lymphadenitis driven by tumor superinfection rather than metastatic spread. Following optimization of his dual antiplatelet and antidiabetic therapy, the patient underwent an aggressive, margin-negative wide local excision. The massive soft-tissue defect was successfully reconstructed using a meshed split-thickness skin graft (STSG). This case illustrates that giant, locally advanced cSCC can remain anatomically confined to superficial tissue planes, rendering surgical curative resection and immediate autologous skin grafting achievable even in a highly complex cardiovascular patient.

Keywords: Skin cancer, Squamous cell carcinoma, Recurrent, Psoriasis, Wide local excision, Split-thickness skin graft

INTRODUCTION

Skin cancer can be broadly classified into melanoma and non-melanoma skin cancer (NMSC). NMSC is the 5th most common cancer globally, as per GLOBOCAN 2022.[1] Regions with high human development index (HDI), show the highest prevalence for both melanoma and NMSC. Cutaneous squamous cell carcinoma (cSCC) is usually less common than basal cell carcinoma (BCC) among the NMSC.[2]

cSCC is highly linked to cumulative lifetime UV exposure-making it more commonly associated in elderly age group population. Historically, it is more prevalent in male than females.[2,3] Common sites of occurrence include areas with high sun-exposure. Other factors contributing to the development of cSCC in non sun-exposed areas are-chronic inflammatory conditions, burn scars, or chronic dermatological conditions like plaque psoriasis.[4]

cSCC in sites like the gluteal region, which are usually covered with garments, mostly have delayed presentations. It has a high propensity for local recurrence and also tends to involve deep structures like the bone.[5] The "giant" nomenclature is reserved for the cSCC which exceeds 5 cm in maximum diameter.[6] It poses extreme surgical, reconstructive and anesthetic challenges. This case report outlines the clinical presentation, staging dilemma, and successful surgical management of an exceptionally large, recurrent gluteal cSCC in a geriatric patient with severe systemic comorbidities.

CASE REPORT

Clinical presentation

A 74-year-old male, tiles worker by profession, initially presented in the Surgical Oncology department at AIIMS Raipur with a painful, progressively enlarging mass over the right gluteal region for the past 2 years. The mass was associated with purulent and blood-mixed discharge. He had a history of plaque psoriasis spanning over the past 15 years. Previous surgical excision was done for him in early 2024 at an outside facility for a similar lesion in the same site-the procedure performed was wide local excision and split thickness skin grafting. The postoperative histopathology revealed well differentiated SCC. He did not receive any adjuvant treatment and defaulted follow up visits afterwards. The patient underwent percutaneous transluminal coronary angioplasty (PTCA) in mid-2023 for coronary artery disease with triple vessel disease (CAD-TVD). He also had hypertension and type II diabetes mellitus (DM) for the past 5 years.

Currently he was on dual antiplatelet therapy (DAPT) (Aspirin and Ticagrelor), anti-hypertensive and oral hypoglycemics. He occasionally consumed alcohol and smokeless tobacco in the form of gutkha. There was no suggestive family history.

Physical examination

His performance status was ECOG 1. Marked pallor was noted. On local examination, a massive, well-demarcated, malodorous, cauliflower-like exophytic plaque measuring approximately 15×15 cm was noted over the right gluteal and paravertebral area, displaying extensive surface ulceration, focal areas of necrosis, and an active purulent exudate (Figure 1).

Multiple enlarged, firm, and discrete lymph nodes were noted in bilateral inguinal region, measuring largest of 2×2 cm in the right side and 2×1.5 cm on the left side.

Radiological and histopathological evaluation

He was initially evaluated with an incision biopsy and CECT scan of the hip and pelvis region. The incision biopsy was suggestive of recurrence in a known case of SCC. The tumor architecture demonstrated invasive sheets and rounded nests of atypical squamous cells infiltrating the subepithelial layers. The individual neoplastic cells were characteristically polygonal with abundant eosinophilic cytoplasm, hyperchromatic nuclei, vesicular chromatin, and prominent nucleoli. Marked intercellular bridges and extensive concentrically laminated concentric arrangements of keratinized squamous cells, known as keratin pearls (or epithelial pearls), were highly abundant throughout the stroma, confirming the well-differentiated nature of the tumor recurrence.

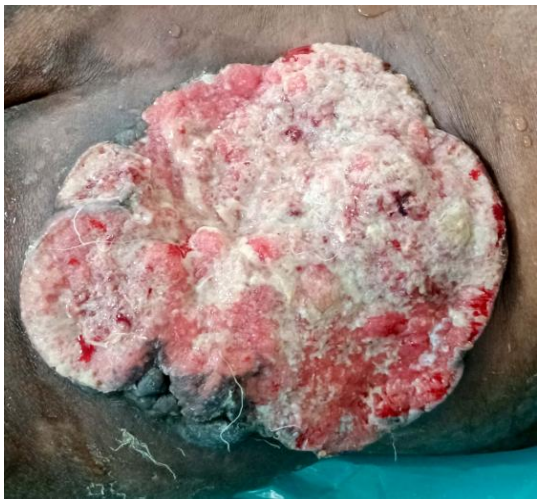

Figure 1: Preoperative clinical presentation of the right gluteal region, demonstrating a massive, exophytic, ulcerated, and cauliflower-like giant cSCC plaque with focal areas of purulent exudate.

CECT scan of the pelvis and hip region demonstrated a relatively defined, heterogeneous, hypo to isodense, superficially infiltrating lesion measuring 15.7×15.6×3.2 cm in the right paravertebral and gluteal region, extending craniocaudally from L5 to S3 vertebra. There was no evidence of intraabdominal extension or bony erosion. Multiple discrete to confluent lymph nodes were noted in the bilateral inguinal region, largest measuring 2.07 cm in right inguinal region and 1.78 cm in left inguinal region.

To rule out inguinal lymph node metastasis, ultrasonography (US) guided fine needle aspiration cytology (FNAC) was performed-which was reported as reactive lymphadenitis in bilateral inguinal nodes (category II under the WHO reporting system for lymph node cytopathology). His wound and pus culture rendered growth of *Pseudomonas aeruginosa*.

Surgical management and reconstruction

The patient underwent comprehensive multidisciplinary optimization by cardiology, dermatology, endocrinology and anaesthesia prior to surgery. Ticagrelor was stopped

5 days before surgery. Sensitive antibiotics were started preoperatively as per the wound and pus culture sensitivity report. Adequate units of blood transfusion were done to optimize preoperative hemoglobin. Under general anaesthesia, the patient was placed in a prone position, and a wide local excision of the tumor was performed. The excision was performed deep down including the underlying muscular fascia to achieve a negative margin at the base.

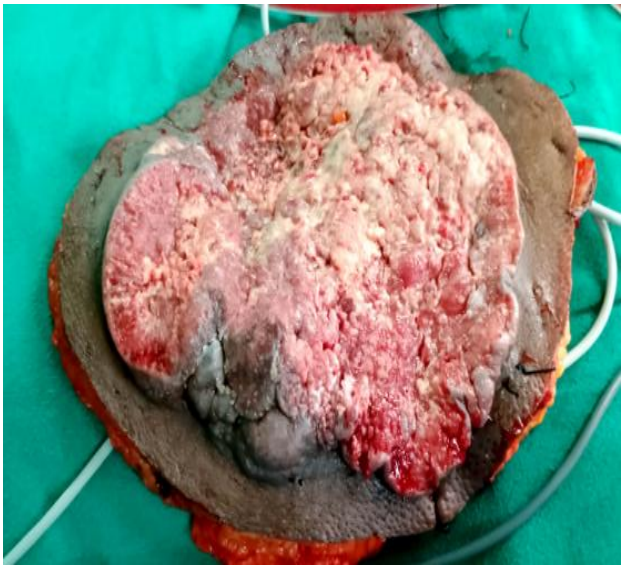

Figure 2: The excised surgical specimen showing the giant tumor surrounded by a macroscopic clear margin of healthy skin and deep subcutaneous tissue.

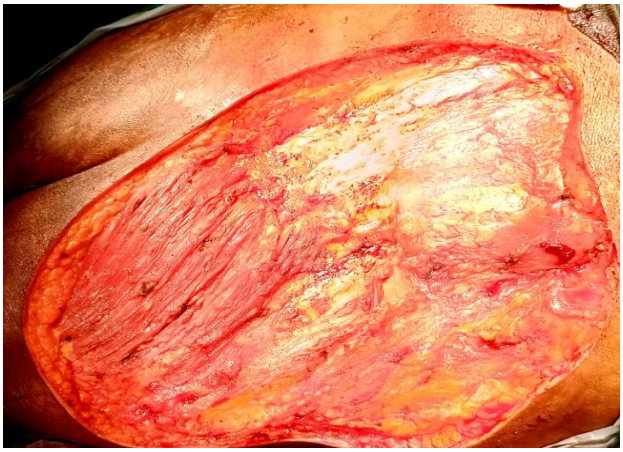

Figure 3: Intraoperative view of the right gluteal defect following radical wide local excision.

The surgical specimen measured 20×20 cm and comprised the tumor proper along with a prominent rim of normal appearing skin and a deep subcutaneous cushion (Figure 2). Intraoperatively, the resection bed was palpated and it was confirmed that the underlying gluteal muscle was free from disease infiltration corroborating to the preoperative radiological findings (Figure 3).

Primary closure for such a large soft tissue defect was not possible. Autologous split thickness skin graft (STSG) was harvested from the thigh of the patient to achieve a feasible, durable and quick reconstruction. After harvesting, the graft was meshed extensively to maximize the surface coverage, promote seroma and hematoma drainage and adapt precisely to the irregular contours of the underlying muscular bed. The STSG was secured circumferentially and centrally with surgical skin staples and progressive tension sutures (Figure 4). A bolster dressing was tied over the STSG to potentiate optimal graft-bed adherence and prevent seroma or hematoma accumulation.

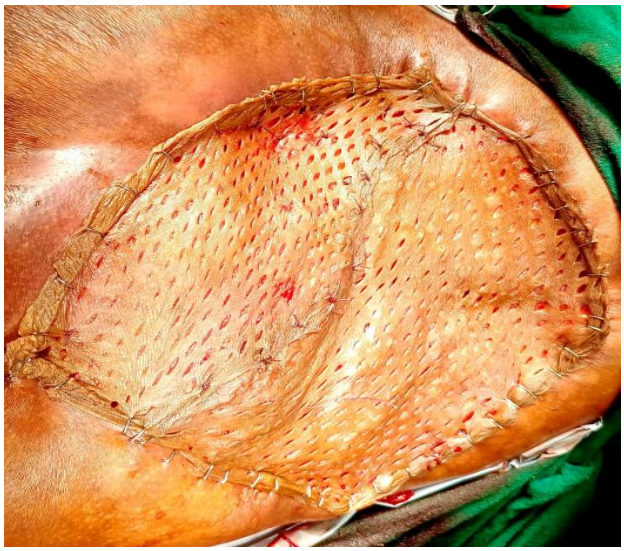

Figure 4: Immediate postoperative reconstruction of the massive gluteal defect utilizing an autologous, meshed STSG secured with surgical staples.

Postoperative course

The patient was extubated on the table and shifted to general ward post surgery. There were no adverse cardiac events in both intra-op and post-op periods. Further blood transfusion was done along with albumin infusion to maintain adequate levels of hemoglobin and serum albumin. After post-operative day (POD) 1, he was started on an oral diet and allowed for mobilisation. DAPT was started from POD 3. His graft site wound was opened on POD 4 and partial graft loss was noted. Wound bed swabs were sent for culture, which did not grow any organisms. He was managed conservatively with three cycles of negative pressure wound therapy (NPWT) followed by regular dressings. Donor site dressing was removed on POD 15-which revealed healthy regeneration. His wound gradually improved and he was discharged on POD 30.

Final histopathology

Final histopathology demonstrated well differentiated SCC. Nests of atypical squamous cells invading the

dermis along with prominent, concentric keratin pearl formation were noted (Figure 5). The tumor dimension was 18×18×2 cm. The thickness was more than 6 mm. The depth of invasion (DOI) was 2 cm and the level of invasion was upto subcutaneous fat. All margins including the base were adequately free. No lymphovascular or perineural invasion were identified.

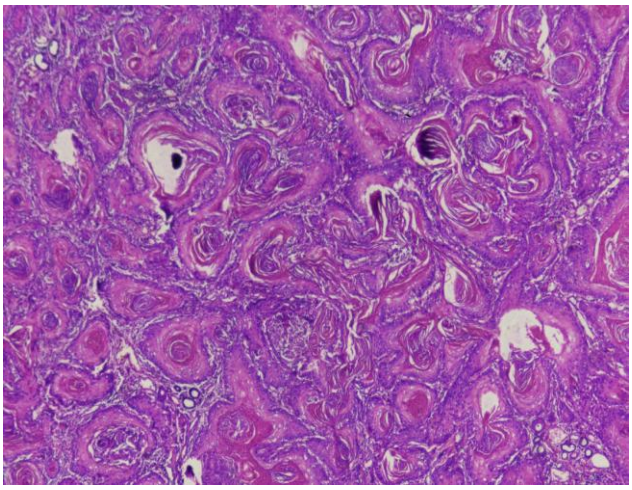

Figure 5: Histopathological section of the tumor tissue (H and E stain, 4× zoom) demonstrating classical features of well-differentiated squamous cell carcinoma, featuring nests of atypical squamous cells invading the dermis along with prominent, concentric keratin pearl formation.

Follow up

The case was discussed in a multidisciplinary tumor board. A plan of adjuvant radiation versus observation was discussed. In view of clear surgical margins, absence of multiple high risk pathological features and a low-risk non-sun-exposed location of the tumor-observation with regular follow up visits for clinical evaluation was decided. Currently, the patient is disease free for 6 months, with appropriately healed wounds and minimal functional limitations.

DISCUSSION

cSCC typically develops on sun-exposed anatomical sites where UV radiation induces cumulative DNA damage.[3,4] Its occurrence in non-sun-exposed areas, such as the gluteal region, points toward distinct alternative pathogenic mechanisms, often classified under the umbrella of Marjolin's ulcers or carcinomas arising within chronic wounds, scars, or long-standing inflammatory fields.[7] In this patient, two synchronized etiologies likely drove the oncogenesis. The patient's long term history of plaque psoriasis is a critical factor. Chronic psoriasis involves a hyperproliferative epidermal state, persistent T-cell-mediated inflammation, upregulated angiogenesis, and altered cytokine profiles (such as *TNF-alpha* and *IL-17*). This chronic inflammatory microenvironment promotes genomic instability and acts as a potent tumor-promoting field.[8] Furthermore, long-term systemic therapies or localized topical treatments can cause cumulative localized immunosuppression, further lowering the threshold for malignant transformation.[9] Moreover, the patient's occupation as a tile worker compounded this risk. Tile installation demands constant kneeling, leaning, and repetitive mechanical shearing friction across the gluteal and pelvic regions. This continuous mechanical stress, paired with exposure to occupational concrete or stone dust, inflicts chronic microtrauma and breaks down the cutaneous barrier. The persistent cycles of tissue injury, necrosis, and imperfect repair over long term likely accelerated the malignant transformation within his preexisting psoriatic lesions.

A cSCC is designated as "giant" when its maximum diameter exceeds 5 cm. These variants are highly aggressive, showing deep infiltration and an increased risk of regional or distant metastasis.[6,10] The clinical paradox in this case lies in the tumor's massive physical proportions contrasted against its superficial behavior. The tumor tracking horizontally and craniocaudally across ten vertebral segments (from L3 down to S5) represents a vast surface area. Remarkably, despite this massive horizontal footprint and its recurrent nature, the tumor remained strictly confined to the cutaneous and subcutaneous compartments. It failed to breach the deep muscular fascia of the gluteus maximus or erode the underlying sacral and iliac bone structures. The deep gluteal fascia functions as an exceptionally tough, dense fibrous barrier that resists tumor cell penetration. When a tumor has a low histological grade or a well-differentiated architecture, as seen in this patient's biopsy showing robust keratin pearl formation, it often tracks along lines of least resistance within the loose, vascularized subcutaneous fat planes rather than invading deep musculoskeletal structures.[11]

Accurate staging of regional lymph nodes is a crucial prognostic variable in cSCC. The presence of true nodal metastasis drastically down-stages a patient's survival probability and shifts management from localized surgical extirpation to systemic chemotherapy, immunotherapy, or regional palliative radiotherapy.[12] In this patient, CECT scan of the pelvis revealed large, confluent bilateral inguinal lymph nodes with central non-enhancement, a classic radiological hallmark of tumor necrosis. In the setting of a giant recurrent malignancy, this finding would routinely be interpreted as macro-metastatic nodal disease. However, FNAC corrected this interpretation by demonstrating pure reactive lymphadenitis. The central necrosis seen on the CT scan was not caused by metastatic tumor outgrowing its blood supply, but was instead an inflammatory response to the superinfected gluteal mass. The primary tumor was an ulcerated, exophytic lesion with constant purulent and bloody discharge, serving as a portal for polymicrobial bacterial colonization. This chronic

infection caused constant antigenic draining to the regional inguinal basins, inducing follicular hyperplasia, neutrophilic infiltration, and focal micro-abscess formation within the nodes-simulating radiological necrosis. This highlights a vital clinical lesson-necrotic regional lymphadenopathy must never be assumed to indicate metastasis in the presence of an infected, ulcerated skin tumor. Pathological validation via FNAC or core biopsy is mandatory to prevent overstaging, which would prematurely deny patients a curative surgical option.

The surgical management of a giant gluteal tumor requires an extensive surgical field and creates a large raw surface area prone to significant blood loss. Executing this procedure in a geriatric patient with CAD-TVD, who is less than three years post-PTCA, introduces critical perioperative risks.[13] The antiplatelet bridging protocol required precise timing. While stopping DAPT poses a risk of acute coronary stent thrombosis or perioperative myocardial infarction, continuing full DAPT would cause uncontrollable intraoperative oozing from the massive subcutaneous gluteal bed. By stopping the potent P2Y12 inhibitor (Ticagrelor) five days before surgery while maintaining low-dose Aspirin, the multidisciplinary team balanced these risks. This protocol provided adequate intraoperative hemostasis during the wide excision, minimized the risk of a postoperative hematoma beneath the skin graft, and maintained essential antiplatelet protection for his coronary stents.

Closing a large defect in the mobile gluteal and paravertebral region is a reconstructive challenge. Traditional options for large pelvic wounds include regional musculocutaneous flaps (such as gluteus maximus advancement flaps) or complex perforator-based rotation flaps.[14] While flaps provide thick, well-vascularized tissue bulk, they carry significant disadvantages in this specific patient profile. They require long operative times under general anesthesia, increasing the cardiovascular burden on a patient with triple vessel disease. They create large secondary donor-site defects, raising the risk of wound breakdown, seromas, and infections. The patient’s poorly controlled type II diabetes mellitus severely compromises microvascular perfusion, exposing complex flaps to a high risk of partial or total necrosis. Because the tumor spared the deep fascia, the surgical bed retained an intact, highly vascularized muscular base. This allowed for a more pragmatic reconstructive approach-a STSG. Meshing the graft was crucial, it expanded the harvested skin to cover the massive defect and created drainage pathways for residual serum, blood, or localized purulent discharge to escape. This prevented fluid from accumulating beneath the graft, ensuring excellent graft-to-bed adherence and a high take rate. Choosing an STSG minimized operative time, limited blood loss, and avoided donor-site morbidity, allowing for rapid mobilization in an elderly patient.

In the context of massive soft tissue defects and subsequent graft complications, NPWT plays a critical role in promoting secondary wound healing and graft salvage.[15] In this patient, partial graft loss was noted when the graft site wound was opened on POD 4. Because wound bed cultures did not grow any organisms, the complication was managed conservatively utilizing three cycles of NPWT followed by regular dressings. NPWT is particularly advantageous in complex reconstructive cases as it reduces tissue edema, promotes angiogenesis, and expedites the formation of healthy granulation tissue over exposed muscular beds.[16] By actively removing excess exudate and stabilizing the wound microenvironment, NPWT contributed to the patient's progressive improvement and successful discharge.

Despite the successful surgical and reconstructive outcomes, several limitations of this report must be acknowledged. Primarily, as a single case study, the findings regarding the tumor's purely superficial behavior despite its massive size cannot be broadly generalized to all giant cSCC presentations. Furthermore, the postoperative follow-up period is currently limited to six months. While the patient remains disease-free with appropriately healed wounds and minimal functional limitations at this time, the intrinsically high propensity for local recurrence in giant cSCCs necessitates a longer observation period. Extended follow-up is required to definitively evaluate the long-term efficacy of the wide local excision and to validate the multidisciplinary tumor board's decision to pursue observation rather than adjuvant radiation. Finally, the unique convergence of the patient's severe cardiovascular constraints, occupational hazards as a tile worker, and a 15-year history of plaque psoriasis creates a highly specific clinical profile that may limit the direct applicability of this management protocol to a broader patient population.

CONCLUSION

This case demonstrates that giant, recurrent cutaneous squamous cell carcinomas of the gluteal region can display extensive peripheral and superficial tracking while remaining completely localized to the subcutaneous compartment. It underscores that chronic inflammatory dermatoses, like psoriasis, combined with occupational mechanical stress, can act as potent drivers for aggressive local recurrences. Finally, it reinforces that necrotic regional lymphadenopathy should not automatically be assumed to indicate metastatic progression in highly infected skin tumors. Accurate cytological confirmation is mandatory to prevent overstaging, ensuring complex geriatric patients are not prematurely denied definitive, life-saving surgical resections.

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