



SQUAMOUS CELL CARCINOMA ON FIBULAR GRAFT DONOR SITE: A CASE REPORT

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ABSTRACT

Background: Bewildering abilities of a carcinogenic cells provoke modern oncology research constantly. One such provocation is free flap donor site malignancy. As it is soo rare, very few researchers reported a distant donor flap site malignancy till date. **Case Summary:** We Present a head and neck cancer operated and reconstructed with free fibular graft in which squamous cell carcinoma developed in donor site with in 6 months after primary surgery which was excised and field was radiated. Clinically patient remains disease free on follow up. **Conclusion:** Although consensus does not exist, based on review literature, we advocate standardized surgical practices alongside further research in understanding biological properties of cancer cells and microenvironment favoring their recurrence.

INTRODUCTION

Free fibular graft is a common method of providing wound coverage and reconstruction in head and neck cancers. Post operative complications commonly include flap rejection, failure and local infections. However, hardly any reported development of squamous cell carcinoma (SCC) at the graft donor site.^[1] The known described leading risk factors for Squamous Cell Carcinoma are Ultra Violet Radiation, immune suppressants, Ionizing Radiation, chemicals and chronic wounds. It is also cited that p⁵³ tumor suppresser gene plays a role in carcinogenesis. Only a small number, have published the development of SCC in free fibula graft donor site. We present one such rare case of SCC arising from free fibular donor site in a patient just operated for SCC of Right lower Alveolus a month ago.

CASE REPORT

A 49-year-old male presented with a non-healing ulcer over the Right lower mandibular alveolus since 4 months. On examination, a 3X 3 cm Ulcero-proliferative lesion was noted in Rt lower alveolus extending antero-posteriorly from 1st premolar to Retro molar trigone. Medio-lateral extent from mucosa of Floor of mouth to Gingivo-buccal sulcus (Figure 1). The patient was worked up and was found to be having Poorly Differentiated Squamous Cell Carcinoma (Adenoid variant). Whole body PET CT showed FDG uptake in lesion confined to Oral Cavity with no nodal or distant metastasis.

The patient was electively posted for Composite Resection with reconstruction after our institutional tumor board recommendation. Right sided composite resection, Right Modified Radical Neck Dissection with Right Free Fibular Flap reconstruction were performed. Two separate surgical teams with separate instrument sets for each field were used. Post operative recovery course was uneventful, and patient discharged to home on post operative day 7. The Final pathology report demonstrated T4a lesion, one positive lymph node and peri neural invasion (T4aN1Mo).

Patient was reviewed again in tumor board and sent for adjuvant Concurrent chemo-radiotherapy. Patient was treated with 66 cGy of radiation with concurrent cisplatin. Post treatment workup showed no residual disease. Immediately a week later patient developed an ulcer on the free fibular graft donor site. The ulcer was progressive, exophytic with everted margins. Biopsy was taken from ulcer edge. Biopsy demonstrated SCC (Adenoid variant). A Wide Local Excision with a cuff of normal tissue was done. Wound was covered with a local flap which healed without complications (Figure 2). The final pathology report demonstrated SCC. Post operative MRI of leg showed no further disease. Subsequent radiation to tumor bed was given. On clinical follow up patient is currently disease free.^[2]



Figure 1.



Figure 2.



Figure 3.

DISCUSSION

The development of SCC in a donor site is rarely encountered and less frequently reported. In reviewing the literature, we found few documented case reports. Our case report represents a one such rare occurrence of differentiated SCC at a free fibular donor site for reconstruction of operated head and neck cancer.^[3]

The presentation of SCC in flap donor site has been reported in a setting of tumor seedlings in previous case

reports. Some documented SCC in Split skin grafting donor sites^[4], who were undergoing reconstruction for resected head and neck cancers.^[1] Few case reports demonstrated SSC in vein graft site, in pectoralis flap donor site. Numerous reported port site implantation. Only two reported iatrogenic implantations of SCC in the donor site, indicating the cancer may have seeded into the donor site during the course of surgical procedure. *Carr and gilbert* described an early implantation of graft donor site in 1986. *Nelson et al* in 1988 cited the possibility of SCC on the graft, being a new primary lesion. In 2003, *hoopmann et al* noted the inevitability of contact between cancer and graft site and stated the need of standardized safety measures. *Hussain et al* in 2011 in his case report had convincing evidence of iatrogenic implantation due to use of same hollow needle. In 2012, *Morrith and Khandwala* also reported a SCC implantation. In 2012, *wright et al* could not rule out iatrogenic mechanical spread, as they detected viable melanoma cells in electrocautery plume in mice. Our case is one of the few reported occurrences of recurrence or a second primary in a patient who was operated for head and neck cancer with reconstruction adhering to standardized operative safety measures like gloves and instrument changes, separate teams with different equipment working simultaneously. The predisposing factors that contribute to this development at donor site remain unclear. Seedling of the donor site with cancer cells is one postulated theory, while others theorize major surgery itself induces a degree of immunosuppression and consequent decreased immune surveillance could allow metastasis. Research suggests a close association between inflammation and carcinogenesis. Inflammation may create a conducive micro environment that favors cancer growth. Perhaps due to uncertainty, *burger and Richardson et al* called for more research to identify viable cells on gloves and instruments. However, *Richardson et al* and *curran et al* demonstrated Squamous epithelial debris in both glove and instrumental washings in head and neck cancers. Some authors were even specific with gown and draping practices for maintaining separation between tumor and graft bed. Despite all the case reports, there is no general consensus for recommendation of instrument and glove change. These are supplementary to standard surgical excision guidelines, like negative margins, en block resection, avoidance of tumor spillage. If tumor seedling is possible, to a distant site there is no reason not to believe that seedling is not possible at excision site. The rationale to support the potential cause to our patient remains uncertain. Some iatrogenic tumor seedling with local inflammation and immune suppression may have created an environment that favors growth of implanted cancer cells or a de novo rampant cell proliferation at the donor site may have promoted the tumor formation. Our experience with this rare case suggests need of further research with respect to viability of tumor cells, micro environmental factors favoring tumor growth and biological properties of primary cancer cells favoring its

sustainability, alongside favoring practice of standardized operational protocols.

CONCLUSION

SCC of donor site is a very rare complication. Although consensus does not exist, based on review of previously published articles, we advocate standardized surgical practices for resection of primary and graft site. We are also of opinion that further research is needed in understanding the tumor micro environment, immune suppression, inflammation and biological properties of cancer cells favoring their recurrence.

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