



Extensive Gingival Epithelial Dysplasia: A report of a case treated with split-thickness skin graft.

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ABSTRACT

Oral Epithelial dysplasia (OED) is a common premalignant condition which can be histologically differentiated to mild, moderate and severe. There is a risk of 36% that epithelial dysplasia might progress to carcinoma in situ. Surgical intervention is the best option as it helps to eradicate the lesion totally. However, in large lesion over the oral cavity, the reconstruction of the defect is of paramount importance. This case report discussed regarding a 51-year-old who was diagnosed with a large area of severe epithelial dysplasia involving the sulcus of the lower left quadrant and extending superiorly towards the attached gingiva. Patient has positive risk factors of smoking and betel nut chewing. Wide excision of involved tissue was done with a good surgical margin and split-thickness skin graft obtained from the lateral thigh was used to reconstruct the surgical defect. This case illustrates the use of split-thickness skin graft as a reconstruction option for surgical defect involving the attached gingiva and sulcular region. Long term follow-up of 1 year shows good healing and no signs of disease progression. This case report show that split skin graft is one of the good choice of treatment to cover the lesion and restore the oral function.

Keywords: Epithelial Dysplasia, Split-thickness skin graft and Attached gingiva

INTRODUCTION

Oral epithelial dysplasia (OED) is a common premalignant condition affecting around 2 to 5 per 1000 population. Dysplastic features of a stratified squamous epithelium are characterised by cellular atypia and loss of normal maturation and stratification. The term oral epithelia dysplasia can only be used when microscopically there is an architectural disturbance with underlying cytological atypia. It is only applicable to lesion where the full thickness of the epithelium has undergone varying degrees of cellular atypia¹. OED can only be diagnosed histologically. WHO uses a combination of architecture and cytological features which provide an objective approach to diagnose. WHO suggests that epithelial dysplasia be divided into three grades, which are the mild epithelial dysplasia, moderate epithelial dysplasia and severe epithelial dysplasia². In mild dysplasia, the architectural and cytological disturbance is limited to the lower third of the epithelium. Moderate dysplasia is when there is architectural disturbance extending into the middle third of the epithelium. Severe dysplasia starts when there is greater than two thirds of the epithelium that shows architectural disturbance with cytological atypia. Carcinoma-in-situ is regarded as the most severe form of severe dysplasia, and involves changes through the entire epithelial thickness³.

According to Silverman, 36% of dysplastic lesions progressed to carcinoma⁴. Management of OED ranges from “wait and see” approach to surgical removal. This is decided based on, the clinical feature, histological feature as well as current patient risk factors. OED generally fall into a condition called as oral potentially malignant disorders (OPMD). OPMD risk factors of malignant transformation includes, gender, duration of leukoplakia, leukoplakia in non-smokers, site predilection (tongue/floor of mouth has higher risk), size more than 200mm² and non- homogenous type⁵. Clinically, OED presents as leukoplakia, erythroplasia or even as erythroleukoplakia⁶. Surgical excision of the OED is the best treatment available, however it still does not eliminate the risk of progression to carcinoma. Therefore, in post-surgical resection of OED, continuous surveillance is of paramount importance⁷. Grafts are generally a tissue of epidermis with a varying amount of dermis that is detached from its own blood supply and placed on a vascularised bed to obtain new blood supply. In general, they are divided into Autografts (one part of the body to another), Allografts (genetically different individual from the same species) and Xenografts (graft from another species).

For this particular case report, split-thickness skin graft (STSG) has been used to reconstruct the intraoral surgical defect. STSG is the most common graft used to reconstruct defect that cannot be closed primary. STSG comprises of 100% of epidermis and some component of dermis, this flap can be further classified into a thick graft (0.15-0.3mm), intermediate graft (0.3-0.45mm) or a thin graft (0.45-0.6mm) ⁸. Generally STSG are harvested from the donor site using a dermatome, where the thickness and the width of the required graft can be determined by inserting the correct blade guard and setting the lever to the correct thickness required. Once harvested, STSG is generally meshed prior to placement over the surgical bed. This is done, to allow for evacuation of seroma/hematoma from beneath the graft as well as to increase the coverage area. Grafts are generally secured into position by using sutures and/or tissue glue.

Healing of STSG is divided into 3 phases. During the first phase, when the graft is secured to the surgical bed it receives its nutrients and oxygen from the plasma via diffusion only. This is why a good primary contact with the surgical bed is of paramount importance. Meshing will also allow draining of excessive fluid that may reduce primary contact. This phase is called imbibition, which generally happens around the first three days. The second phase is known as Inosculation of vessels of skin graft and host bed, it has been postulated that at this phase new blood vessels are generated to supply the graft with blood. This phase is known as revascularization which typically takes place on day three till seven after the operation. It will appear pink when the graft is thin. Phase three, which is termed remodelling via revascularization and fibrous attachment in restoring normal histological structure⁸.

The advantages of STSG are it had a better success graft take as compared to full thickness skin graft (FTSG). Besides that, it has a lower donor site morbidity as compared to FTSG. However to its disadvantage, it has a higher secondary contracture rate as compared to FTSG, this is likely due to the pull of the microfibroblast and a poor aesthetic match to the surrounding tissue⁸. STSG are generally contraindicated in an avascular surgical bed like on cortical bone without periosteum, cartilage without the perichondrium or tendon without the peritenons. Graft generally undergoes around 10-20% of contraction depending on the thickness of the graft. Reconstruction of an oral cavity defect with STSG is not new technique, as they have been previously reported.

CASE REPORT

We present a case of a 51 years old gentleman who presented with a erythroleukoplakia lesion over the left lower posterior sulcus of the mandible measuring around 6 x 4cm (Figure 1). Patient claimed the lesion over the left lower sulcus started around 6 months prior to the clinic visit. Lesion was not associated with bleeding and pain. Medical history was unremarkable. However, patient has positive risk factors which are, smoking (14 sticks per day), occasional alcohol consumption and betel nut chewer. Extraoral examination of the lymph nodes were unremarkable. Intraorally there was poor oral hygiene with generalised staining due to smoking and betel nut chewing habit. A linear erythroleukoplakia lesion was seen buccal of 34 till the distal of 37 region extending medially to the attached gingiva and laterally to the adjacent buccal mucosa.

Lesion was non scrapable and not indurated on palpation. Dentopantomogram (DPT) and Cone Beam Computer Tomography (CBCT) was taken, and showed no bony erosion over the 34 till 37 region. At this point our working diagnosis was Carcinoma in-situ and oral epithelial dysplasia. We proceeded with an incisional biopsy and report show that there is parakeratinized stratified squamous epithelium exhibits severe dysplasia with features of bulbous rete ridges, increased nuclear to cytoplasmic ratio, nuclear and cellular pleomorphism, nuclear hyperchromatism and increased mitosis with abnormal mitotic figures. Pathologist gives an impression of Verrucous hyperplasia exhibiting severe epithelial dysplasia. CT neck showed no enhancing lesion over the left buccal or alveolar region, no bony erosion and multiple subcentimeters lymph nodes were seen over the bilateral neck region. Patient was advised for wide excision of the lesion and reconstruction with STSG in view of the size of the defect.

Intraoperatively, wide excision of the lesion was done incorporating the interdental papilla with a good surgical margin and dissection was done at the supraperiosteal plane in order to provide a vascular bed for the STSG. STSG was harvested from the left lateral thigh measuring 6x4cm. STSG was inserted into the surgical defect above the periosteum and secured into place using Nylon 4/0 sutures (Figure 2). Patient was placed on nasogastric feeding for a period of 1 week to allow for optimal healing of graft by reducing intraoral muscle movement. We used chlorhexidine as oral toilet irrigant and do oral toilet twice daily for the patient when patient in ward to reduce the risk of infection. As for surgical site at inner thigh, kaltostat was placed and was keep for one week. Patient was reviewed weekly for 1 month and then seen monthly for close monitoring. Post-operative review showed no obvious sign of infection. One-year post-op review revealed that the recipient and donor site has healed well. There is slight discolouration of the vestibular mucosa at the surgical site compared to the surrounding tissue.



Figure 1

Erythroleukoplakia lesion over the left buccal sulcus extending from the 34 until the distal of 38 region, with irregular margin and area of nodular surface. The lesion seems to be extending superiorly towards the cervical region of the dentition and inferiorly towards the buccal mucosa region.



Figure 2

Insetting of the harvested split-thickness skin graft over the surgical bed and secured with interrupted suturing. Post-operative.

DISCUSSION

Early detection and management of oral potentially malignant disorders is crucial in preventing progression of the disease. Epithelial dysplasia in the oral cavity can be managed conservatively or surgically. Conservatively, we will advise patient to avoid those risk factor, with a routine close surveillance and/or serial biopsy to assess the cellular changes. However conservative management is appropriate for diffuse lesion with mild dysplasia¹. Surgical resection of the severe epithelial dysplasia lesion is the best treatment option as it provides good long-term prognostic outcome. A study by Mehanna et al⁷, showed that oral potential malignant lesion had a higher rate of malignant transformation if not treated by surgical modalities. In view of the clinical presentation of mixed red and white lesion over the left quadrant, associated risk factors and histopathological findings of moderate epithelial dysplasia, patient was subjected for wide excision of the lesion and reconstruction with STSG.

In view of the lesion being extensive over the sulcus and attached gingival of the lower left quadrant, the reconstruction options were; closure of the surgical defect with periodontal dressing such as PerioPack®, to allow for secondary healing, multiple gingival grafts or STSG. The use of PerioPack® to close the surgical defect may cause severe scarring over the surgical site leading to the loss of buccal sulcus region. The use of gingival graft is an option; however, this method would require multiple gingival grafts to successfully close the large surgical defect. The use of STSG allows grafts to be tailor made based on the size of the corresponding surgical defect. The pliable nature of the STSG, allows for easy inseting of the graft over the surgical defect site as well as adaptation into interdental space via simple suturing. The only disadvantage of this grafting option is the need for general anaesthesia and it involves 2 operative sites.

Post-operative healing of the STSG was uneventful, with 90% uptake of the graft over the surgical defect. Sulcus depth over the surgical site was preserved as seen in Figure 3. Besides that, the physiological periodontal pocket is preserved over the surgical site as seen in Figure 4. As for recession, patient have existing recession pre- operation as it can show at the anterior teeth at Figure 4. After operation, surgical site doesn't show obvious contraction and recession of the teeth as compared with anterior teeth. However, from an aesthetic point of view, there is significant pigmentation over the surgical site. This is attributed to the normal variation of pigmentation transfer from the skin graft to the surgical site. Since the surgical site, is at the posterior mandible, pigmentation is not a major concern.

In conclusion, the STSG is a suitable reconstructive option for wide superficial defect of the oral cavity. The ease of harvesting which was done by dermatome and the customizable size of the graft, makes it a suitable soft tissue graft with a good surgical and functional outcome for patients.



Figure 3

1-year post-operative of the surgical site. Good uptake of the split-thickness skin graft over the buccal mucosa with a good sulcus depth.



Figure 4

Physiological pigmentation over the grafted site with a physiological pocketing over the adjacent tooth.

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COMPETING INTEREST

The authors declare no conflict of interest.

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