

Case Report: Management of a Peripheral Giant Cell Granuloma in the esthetic zone of upper jaw



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ABSTRACT

The peripheral giant cell granuloma (PGCG) or the so-called “giant cell epulis “ is one of the most common oral giant cell lesions. It occurs in response to chronic local irritation, and originates from mucoperiosteum or the periodontal ligament. This article presents the clinical and histopathological findings of PGCG in the esthetic zone in a 26 years old female patient. The treatment plan consisted of an excisional biopsy with immediate soft tissue grafting by placement of a free gingival graft in order to prevent esthetic complications. The six-month clinical follow-up showed no recurrence of the lesion and soft issue healing. Proper management of a PGCG lesion requires eliminating other pathologies prior to planning for surgery. Correct diagnosis of such lesions is essential to optimize the treatment and prevent recurrence. Clinical examination alone may not give a correct picture, thereby requiring histopathological confirmation. Immediate soft tissue augmentation using free gingival graft has been suggested as a surgical solution after removal of PGCG when soft tissues and the whole attached gingiva is lost.

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Case report

A 26 years old female patient was referred by her dentist to department of periodontology of dentistry faculty of Guilan University of medical science with a chief complaint of swelling in the left anterior gingival region of upper jaw since one year (Figure 1).



(Figure 1)

History revealed that the swelling started as a small one and progressively increased to the present size over a period of one year. It was accompanied by intermittent pain. There was no history of trauma, neurological deficit, fever, loss of appetite, weight loss. The patient was systemically healthy.

No significant findings were detected in the extra-oral examination.

In the intra-oral examination, a solitary pedunculated, exfoliated, lesion was observed in the gingiva of upper left canine. The lesion was reddish and 8 mm × 15 mm in maximum dimensions. (Figure 2)



Figure2: The lesion was 8mm*15mm in maximum dimensions

On palpation, the lesion had a firm consistency. The contour was regular with determined margins and the overlying mucus membrane was intact. There was no similar swelling present in any other part of oral cav-

ity. The patient's oral hygiene status was poor.

Radiological examination revealed no evidence of bony involvement. After history, clinical features & investigations, provisional diagnosis of peripheral giant cell granuloma was made. The patient received comprehensive examination that was followed by two scaling sessions and provided with proper oral hygiene instructions. After 1 month, the lesion was re-evaluated and no significant changes were recorded in its clinical appearance. Thus, the patient was scheduled for surgical excision biopsy of the lesion was performed under local anesthesia.

The lesion was excised down to the periosteum ; a thin layer of bone so that no soft tissue remained (Less than 0.5 mm) in the alveolar bone was resected as well by a surgical back action curette. (Figure 3)



Figure3: The lesion was excised down to the periosteum

A free gingival graft (accordion technique) was harvested from palatal surface same tooth and was placed on the defect area to compensate the excised tissues and to avoid an esthetic complication in the anterior region (Figure 4, 5).



Figure4: A free gingival graft (accordion technique)



Figure5: A free gingival graft (according technique) was placed on

The free gingival graft technique is a predictable procedure, but the donor site (palate) is left with an open wound that must heal by secondary intention. The following variant techniques attempt to minimize the donor site wound by removing the donor tissue in a different configuration and altering the shape to maximize coverage over the recipient site. These techniques are (1) the accordion technique, (2) the strip technique, and (3) the combination epithelial-connective tissue strip technique. All are modifications of the free gingival grafts (1).

The accordion technique, described by Rateitschak et al,(2) attains expansion of the graft by alternate incisions in opposite sides of the graft. This technique increases the donor graft tissue by changing the configuration of the tissue.

Biopsy specimen was embedded in 10% formalin and was sent for histopathological analysis in Center for Advanced Pathology (fadaei Labs, Rasht, Iran). The histologic sections showed a lesion composed of some multinucleated giant cells distributed throughout the lesion embedded in ovoid to spindle cell stroma along with few mononuclear and RBCs extravasation. Also few fragmented bony trabeculae were present at the periphery of the lesion. There was no evidence of malignancy in the specimen.

The first visit after surgery was two weeks later and sutures were removed (3) (Figure 6).



Figure6: The first visit after surgery was two weeks later and sutures

Follow up visits were scheduled at three week intervals. Figure 7 shows two months after surgery. Prophylaxis and oral hygiene instructions were performed on every recall visit. No signs of recurrence of the lesion have been observed during six months after the excision (Figure 8)



Figure7: Two months after surgery



Figure8: Six months after surgery

There was no esthetic (pink esthetic index(4)) problem caused by the excision; this is due to proper healing of the free gingival graft on the healthy tooth surface. Presently patient is under follow up on 6 month interval.

In the two-month follow-up, the color of the transplanted area was no different from the color of the adjacent gums, but in the six-month follow-up, the color of the transplanted area is slightly lighter than the adjacent gums, which is abundant in most free gingival transplants. In this study, due to the Slight thickness of the grafts and the accordion technique, at least the difference in color change from the adjacent gingiva can be seen. A inform consent was taken from the patient for publishing her case in the scientific literature.

The difference between this study and other studies is the definitive treatment of PGCG with complete removal of the lesion and immediate reconstruction of the lost gums with minimal damage to the patient due to the small donor area of the adjacent tooth of the recipient tooth. Because with the accordion technique, the minimum size of the donor area will be required, and also due to the one-session treatment and the proximity of the donor area to the recipient area, the patient will experience minimal discomfort.

Discussion

Giant cell granuloma lesions (peripheral and central) are benign, nonodontogenic, tumors of the oral cavity. They develop peripherally (within gingiva) or centrally (in bone) (5). The peripheral giant cell granuloma (PGCG) is one of the most common oral giant cell lesions. It presents as an exophytic lesion on the gingiva or alveolar ridge, also known as a giant-cell epulis, giant-cell reparative granuloma, osteoclastoma, or giant-cell hyperplasia (6). It is always seen on the gingiva or edentulous alveolar process. PGCG arise interdentially or from the gingival margin, occur most frequently on the labial surface of lower jaw and anterior to the molar teeth, usually asymptomatic, and presenting erosion of the subjacent bone in almost one-third of cases (7-11). PGCG originates from the periodontal ligament or mucoperiosteum (5, 8, 12). PGCGs are slightly more prevalent in women and can be seen at any age, though it is more common between the fifth and sixth decades of life (11, 13).

Etiologic factors are not certainly known, although it is thought that it may be due to a chronic local irritant or aggressive stimulus such as tooth extraction, inadequate dental restorations, ill-fitting dentures, plaque, calculus, food impaction and chronic trauma. (11, 12, 14) Clinical features of PGCGs can present as polyploidy or nodular lesions, primarily bluish red with a smooth shiny or lobulated surface, pedunculated or sessile base, small and well demarcated. (14-16) They vary in appearance from smooth, regularly outlined masses to irregularly shaped, multilobulated protuberances with surface indentations. (17, 18) Pain is rare and in most cases growth of the lesion is induced by constant trauma and local irritation. (15-17)

there are no pathognomic clinical features whereby these lesions can be differentiated from other forms of gingival mass. Microscopic examination is necessary for definitive diagnosis. The final diagnosis however relies on the histopathological diagnosis. Histopathological features of PGCG include a non-capsular tissue mass, which contains a large number of

young connective tissue cells and multinucleated giant cells (16). Hemorrhage, hemosiderin, inflammatory cells, and newly formed bone or calcified material may also be seen throughout the cellular connective tissue. The PGCG bears a close microscopic resemblance to the central giant cell granuloma, and some pathologists believe that it may represent a soft tissue counterpart of the central bony lesion (15, 17). Areas of chronic inflammation are scattered throughout the lesion, with acute involvement occurring at the surface. The overlying epithelium is usually hyperplastic, with ulceration at the baseline (17).

The differential diagnosis of PGCG includes lesions with very similar clinical and histopathological characteristics, such as central giant cell granuloma, which are located within the jaw itself and exhibit a more aggressive behavior, (15) only radiological evaluations can establish a distinction. Cemento-ossifying fibroma in that clinical features are similar but histopathological features are distinct showing collagen, fibrous and cementum tissue (17, 19-21). The early and precise diagnosis of these lesions allows conservative management without risk to the adjacent teeth or bone (22). The giant cells may contain only a few nuclei or up to several dozen of them. Some of them are large, vesicular nuclei; others demonstrate small, pyknotic nuclei (23, 24). Ultrastructural and immunological studies (16) have shown that the giant cells are derived from osteoclasts (25, 26).

treatment

The treatment of PGCG comprises surgical resection with elimination of the entire base of the lesion in addition to the eradication of the underlying source of irritant factors (15). If incomplete bone resection was done, the growth may recur. Recurrence of PGCG is rare, ranges as little as 5–11% have been reported (27, 28). To prevent of recurrence after treatment, in addition to complete simple excision with remove the base of the lesion, the irritation source of lesions must be removed (29, 30).

Mordini L describe an PGCG with expanded, purplish soft tissue lesion surrounding the im-

plant provisional crown on right central maxillary incisor. After complete lesion excision, the implant neck was carefully and gently debrided. After following up at 22 months no episodes of recurrence were identified. After 16 weeks of undisturbed healing, a soft tissue augmentation via tunnel technique was elected as the first treatment option to improve esthetics (31).

Lev R and et.al describe a red, nodular, asymptomatic lesion, approximately 3.5 mm in diameter, located above the maxillary left lateral incisor. Microscopic analysis of the biopsy specimen was consistent with the diagnosis of PGCG. Corrective surgery included a subepithelial connective tissue graft peripherally covered by the surrounding gingiva and resulting in healthy and esthetic gingiva. The free gingival margin of the neighboring teeth and the mucogingival junction remained unchanged (32).

In a systematic review (8) by Chrcanovic B and et. al. was explained Both 'excision alone' and 'excision + curettage' presented high recurrence rates (40% and 31.3%, respectively). The etiology of implant-associated PGCG has not yet been determined. Despite the small number of cases reported, implant-associated PGCG shows a high recurrence rate (1/3) for a benign non-neoplastic lesion and sometimes it requires the removal of the associated implant in order to prevent further recurrences. This recurrence rate is not affected by curettage after excision.

In this case, gingival augmentation immediately after excisional biopsy results in healthy and esthetic gingiva without any problem. Free gingival grafting was used because the wound area was extensive after biopsy surgery. The accordion technique was used to minimize the size of the donor area in the palate.

This case shows that the proper management of a PGCG lesion requires excluding other pathologies prior to diagnosis, which is confirmed by the histopathological analysis of the excised lesion. Surgical excision with bone resection removed the lesion with no signs of recurrence. Soft tissue grafting using a free gingival graft to prevent esthetic complications was performed immediately after surgical excision.

Conclusions

PGCG may follow an aggressive course, sometimes requiring preemptive surgical intervention, resulting in a significant defect in the gingiva. The present case shows that grafting free gingival graft by accordion technique covered the surface of the bare bone, without any problem, successfully eliminates the gingival defect, with excellent results after 6 months. Over this time the free gingival margin and the MGJ of the treated site and neighboring teeth remained unchanged.

Conflicts of interest:

There are no conflicts of interest

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