Journal of Dental Sciences 20 (2025) 1386–1388

Available online at www.sciencedirect.com

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journal homepage: www.e-jds.com

Refractory gingival pyogenic granuloma treated with wide excision

Pyogenic granuloma (PG), known for its high recurrence rate of 23.3%, presents treatment challenges [1]. Local excision down to the periosteum was initially deemed optimal, but due to a high recurrence rate, re-excision became necessary [2,3]. In a refractory case, wide excision proves effective.

In October 2015, a 58-year-old male patient presented with a persistent gingival tumor near tooth 37. Previous treatments for periodontal disease and tumor excisions had proven ineffective. The patient had a medical history of hypertension and poorly controlled diabetes but had no drug allergies and no use of tobacco, alcohol, or betel nut. Importantly, he did not take calcium channel blocker medication and no evidence of oral or dental trauma was found around the tumor. Clinical examination revealed a non-painful, easily-bleeding tumor measuring 1.5x1.0 cm on the mesial and buccal gingiva of tooth 37. Periodontal examination revealed that the probing pocket depths within normal limits for tooth 34 and 37, which were connected by a dental bridge. Periapical radiography displayed no signs of periodontal bony defects around tooth 37. The differential diagnosis included PG, giant cell tumor, and peripheral ossifying fibroma. Initially, a local excision down to the periosteum was performed for an excisional biopsy with a minimal safety margin on the gingiva, combined with thorough root planing. Following tumor recurrence, we adopted a stepwise local excision down to the periosteum approach, gradually increasing the safety margin in sequential surgeries, ultimately reaching a maximum of 4 mm. Unfortunately, despite four surgeries, the tumor recurred repeatedly, ultimately reaching a final size of 1.7 × 1.1 cm (Fig. 1A–C).

Subsequently, we conducted a wide excision with 4 mm safe gingival margins, 1 mm of peripheral osteotomy, and 0.5 mm of root surface abrasion (Fig. 1D). Histopathological analysis of all 5 specimens consistently showed lobules of capillary proliferation and inflammation, confirming the diagnosis of a PG (Fig. 1E and F). Despite tolerable gum recession, minimal root exposure, and post-surgery sensitivity, there was no recurrence observed during the follow-up period of 6 months (Fig. 1G).

The finding from our case highlights the success of wide excision in treating refractory PG by eliminating tumor extensions into surrounding tissues.

In 83% of cases, PG originates from the gingiva [4]. Surgical excision remained the main treatment strategy for PG. Previous single-arm cohort studies on PGs indicated recurrence rates ranging from 3% to 23% following local excisions [1,4]. In a cohort study with a control group, two techniques either local excision at soft tissue tumor margins and extensive excision with safety margin of 2 mm around the tumor were compared. This study revealed a 14.3% recurrence rate for the PGs treated by local excision but no recurrence was observed for the PGs treated with extensive excision [5]. In our refractory PG case, despite four consecutive surgical excisions to expand the soft tissue safety margin, recurrence persisted. It suggests that the PG might infiltrate into the bone and dental root surface, highlighting the absolute need of wide excision for our PG.

This case report emphasizes the complexities of gingival PG. Despite the potential factors like medication use, trauma, poor oral hygiene, and hormonal influence before wide excision, recurrence persists. This finding indicates

https://doi.org/10.1016/j.jds.2023.11.012

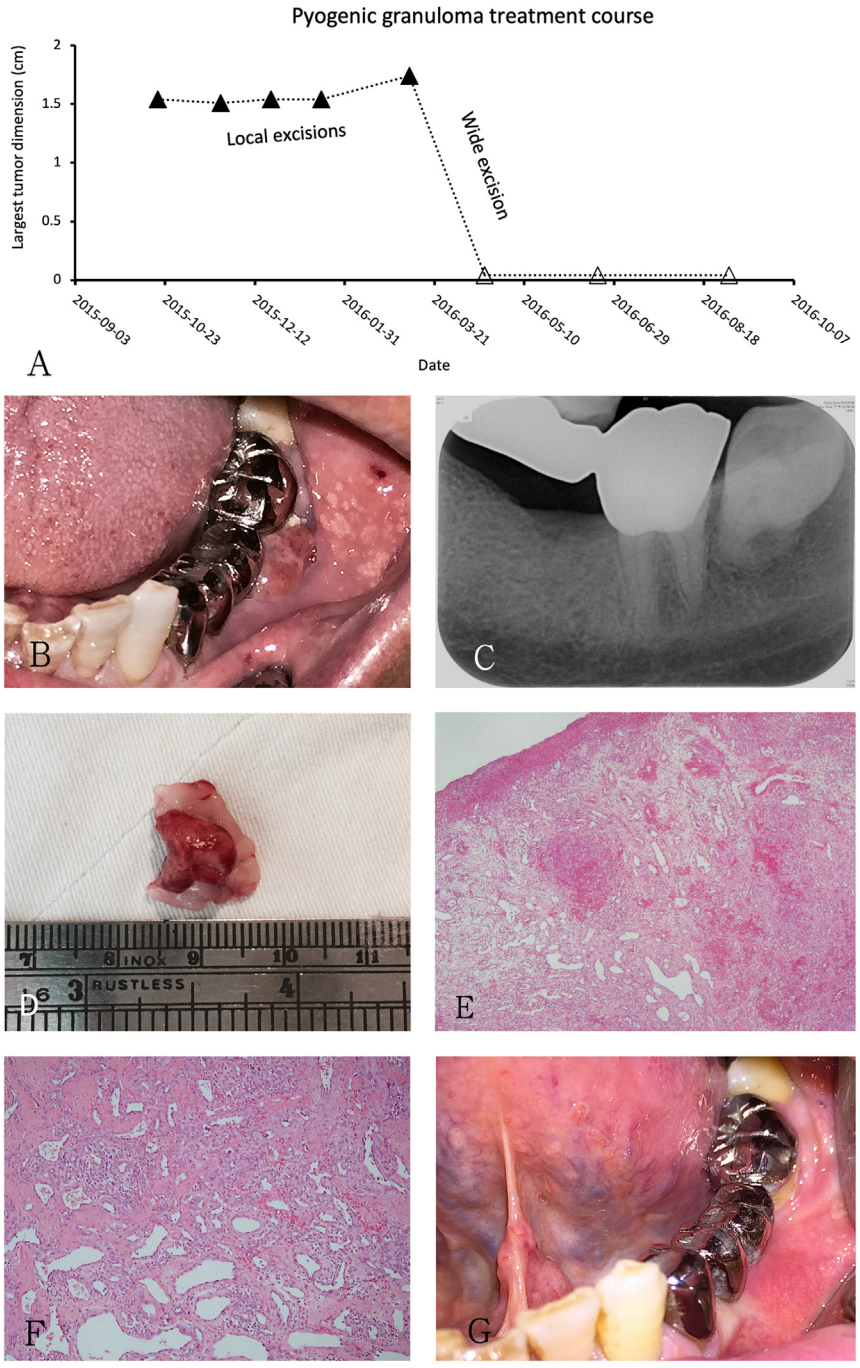

Figure 1 Clinical photographs, radiographs, a gross photograph of the surgical specimens, and histopathological microphotographs of our patient with refractory pyogenic granuloma. (A) During the patient's local excision period, the tumor recurred after each observation, with the tumor size remaining the same or even larger than the original. After four recurrences and four unsuccessful local excisions, the fifth surgery, which involved wide excision, led to the patient's recovery, with no recurrence over six months. (B) A deep red, smooth-surfaced tumor was observed on the mesial and buccal gingiva of the left mandibular second molar, measuring 1.7 cm × 1.1 cm. (C) The periapical radiography revealed no signs of periodontal bone loss or periapical pathosis in the area of the left mandibular second molar, and the teeth showed no carious lesions. (D) The wide excision specimen exhibited a 4 mm safe margin surrounding the tumor, while there was no safe margin on the left side of the specimen since the tumor extended directly to the free gingival margin, leaving no additional normal tissue for excision. (E) A low-power view of the patient's pathological tissue section exhibited lobules of capillary proliferation with an inflammatory cells infiltrate (H&E stain, original magnification 10x). (F) A high-power view of the tumor revealed lobules of capillary proliferation and branching blood vessel formation (H&E stain, original magnification 40x). (G) There was no recurrence six months after the wide surgical excision, although complications such as gingival loss and root exposure were observed. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

that for the refractory gingival PG, extensive tumor excision is absolutely necessary.

Declaration of competing interest

Th authors have no conflicts of interest relevant to this article.

Acknowledgement

We sincerely thank Dr. Yi-Qian Liang for his diligent data collection efforts and or providing us all the clinical information. We thank Chang Gung Medical Foundation Institutional Review Board for approving the case report (IRB No.: 202301611B0).

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Received 15 November 2023
Final revision received 19 November 2023
Available online 27 November 2023