



ORAL FOREIGN BODY (PULSE) GRANULOMA – A RARE MASQUERADE

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Abstract

Oral Foreign Body Granuloma is a simple reactive lesion of the oral cavity yet rare lesion occurring intraorally mainly due to the impingement of indigestible cellulose moiety of botanical food products. This lesion is associated with histopathological appearance of hyaline rings which leads to the name Oral Pulse Hyaline Ring Granuloma (OPHRG). This case report is an attribute to compromised oral health which leads to gingival impingement of food particles with updates and review on Oral Foreign Body Granuloma.

Index Terms – Cellulose moiety, Compromised oral hygiene, Oral Pulse Hyaline Ring Granuloma (OPHRG)

I. INTRODUCTION

The foreign body reaction to botanical substances has been referred to as oral foreign body (pulse) granuloma. Pulses are edible seeds, including peas, beans, and lentils (1). One distinctive feature of this lesion is that it can develop both centrally and peripherally (2). The periapical or sulcular zones of teeth are where this most frequently happens. Rarely observed in conjunction with inflammatory odontogenic cysts (3) also occurs pulmonologically and in the vicinity of the digestive tract.

A granulomatous reactive lesion, pulse granuloma in general, is indicated by the abbreviation (PG). (OPG) is the term used to describe intraoral lesions that are marked by large cell inclusions, eosinophilic rings, and inflammatory infiltration. (3). Although it goes by a number of names, it is recommended to use a new substitute called “Seed Storage Cell Granuloma”(4).

II. CASE REPORT

The primary complaint of a 32-year-old female patient who came to the Department of Oral Medicine and Radiology was that she had been experiencing swelling in her palate for the past two months with pain and surface bleeding were linked to the oedema. The patient appeared to be in good health and family history and medical history are not considered. On extraoral examination no abnormalities detected. There were no other anomalies discovered.(Figure 1)



Figure 1: Intra oral findings

Oral hygiene status of the patient was satisfactory. On intra oral examination a dome shaped well demarcated swelling of size 3cmx3cm was seen on the right palatal mucosa, pedunculated with tenderness on palpation, and with surface bleeding. extending 1cm from midline of palate medially, anteriorly extending up to 14, posteriorly extending up to 17. The mucosa covering the swelling was reddish color with no other secondary changes. Borders were smooth and well demarcated.

All of the inspeactory findings were validated upon palpating the lesion. The swelling had regular, smooth borders was soft painful and was readily bleeding on palpation. The condition Epulis Fissuratum was diagnosed provisionally.

The IOPA taken in relation to right maxillary posteriors revealed root stumps in relation to 15,16



(Figure 2)



(Figure 3)

Figure 2 and 3 IOPA showing root stumps in relation to 15,16

Excisional biopsy was done under local anesthesia and the gross specimen was submitted including 1 bit of soft tissue measuring about 2.8 cm × 2 cm in size. The specimen was routinely processed and stained with H&E. The H & E stained sections of the given soft tissue specimen reveals delicate connective tissue areas with dispersed inflammatory cells, proliferating endothelial cells, large and small blood vessels, areas of hemorrhage, macrophages and focal areas of necrosis resembling microabscesses (Figures 4 and 5).

The stratified squamous, hyperplastic, non-keratinized epithelium that covers it exhibits pseudoepitheliomatous hyperplasia in certain places. The connective tissue exhibits focal areas of degeneration, including blood cells and the overlying epithelium is ulcerated in the most of the areas (Figure 6). Sections in certain places show entrapped foreign bodies that resemble beans as well as eosinophilic hyaline entities that are most likely foreign bodies. (Figure 7).

An oral foreign body (pulse) granuloma was finally diagnosed histopathologically. Root stumps pertaining to 15,16 were removed, and the lesion was excised.

III. DISCUSSION:

An unusual oral finding with a contentious etiopathogenesis is oral pulse granuloma. While some authors reject the idea of a vegetative origin, many others do agree (3). The presence of amorphous hyaline masses or structureless hyaline rings inside fibrous connective tissue are typical characteristic of pulse granulomas. The eosinophilic material can be round, oval, or irregular bodies encircled by giant cells, fibroblasts, and inflammatory cells, while the hyaline material can appear uniform homogenous. (Figure 7).

According to histopathology, oral pulse granuloma is a localised disease brought on by the implantation of particles from plant-based meals. It often appears in the back of the edentulous mandible when a complete denture is used. And it can also appear in the periapical regions of teeth that have been grossly decayed or have retained roots. Also teeth that had endodontic therapy, impacted lower third teeth with a history of pericoronitis or post-extraction tissue reaction, or as part of a cyst wall where there has been communication between the oral cavity and the periodontal cavity. As a result of periodontal surgery, or as deep periodontal pockets due to poor periodontal health, as here (5).

Dunlap and Barker were the first to evaluate the etiopathogenesis of this lesion and give it the name Giant Cell Hyaline Angiopathy (GCHA). There are two hypotheses regarding the formation of hyaline rings: (1) the rings are caused by a foreign substance (legumes and pulses) entering the lungs, gastrointestinal tract or oral mucosa (exogenous theory); and (2) the rings are brought due to hyaline degenerative changes in blood vessel walls (endogenous theory)

Adkins stated that the foreign body was hyaline material and that the lesion was a foreign body granuloma. According to Philipsen and Reichart's review, the foreign body reaction is brought on by the starch-containing legume cells in food. Additionally, they pointed out that the ring-like formations seen in the oral lesions were the consequence of cooking-induced disruption and the host phagocytic cells' attempts to break down the bean parenchymatous cells at various stages (6).

Gueiros et al. claim that because the Hyaline Rings contain cooked vegetable particles, they are classified as "Pulse Granulomas." Its vegetable origin was also recognised by the terms Oral Vegetative Granuloma (OVG) and "legume associated lesion " (2).

The idea of Talacko and Radden states that once food reaches the tissues, it is rapidly digested and altered by the host's responses. A prolonged granulomatous reaction is caused by an indigestible cellulose component found in plant foods that remains as hyaline material (7).

Harrison and Martin's ultrastructural research supported the notion that the Hyaline Rings were vegetable-based. The term "Oral Vegetative Granuloma" was therefore proposed [8]. Based on histochemical and immunochemical analyses, Gueiros et al. concluded that cellulose is the cause of granuloma development and that oral lesions are caused by the traumatic implantation of vegetable particles in an extraction socket or mouth ulcer. After a granulomatous reaction has occurred, long-term exposure to inflammatory enzymes probably changes the morphological characteristics of Hyaline Rings without compromising their antigenic potential (2).

The aforementioned lesion is now known as Oral PulseHyaline Ring Granuloma, and it was discovered that the HRs were structures produced from pulse fragments (6). Researchers found that histologically implanted lentils, peas, and navy beans had the characteristic Pyogic Granuloma s seen in humans. The remaining vegetative materials lacked the large, compartmentalised ovoid shapes that are linked to pulses, as illustrated in (Figure 7).

Because it has never been documented in the literature, this situation is unique. Fifty-three of the sixty-four cases that Chou et al. reviewed had a history of tooth extraction. Of the eleven patients that remained, seven had a history of trauma, surgery or large periodontal pockets. Three lesions were seen behind a resorbed primary tooth and one in the walls of odontogenic cysts (8).

Certain vegetable components, such the coloured pericarp, might have cuticle-like characteristics. Occasionally, oral myiasis involving the lips, palate, floor of the mouth, or periodontal areas is mentioned in the literature. The presence of round (albumin) cells with distinct cell walls, a birefringent pigmented cover structure (pericarp), and Hyaline Rings are characteristics of OPHRG which rules out oral myiasis (9).

The OPHRG must be surgically removed and the recurrence is rare and usually associated with insufficient excision. Throughout the healing process, maintaining good dental hygiene is essential in preventing the implantation of vegetative matter in the periodontal pockets, decaying teeth, or the socket of an extracted tooth (8).

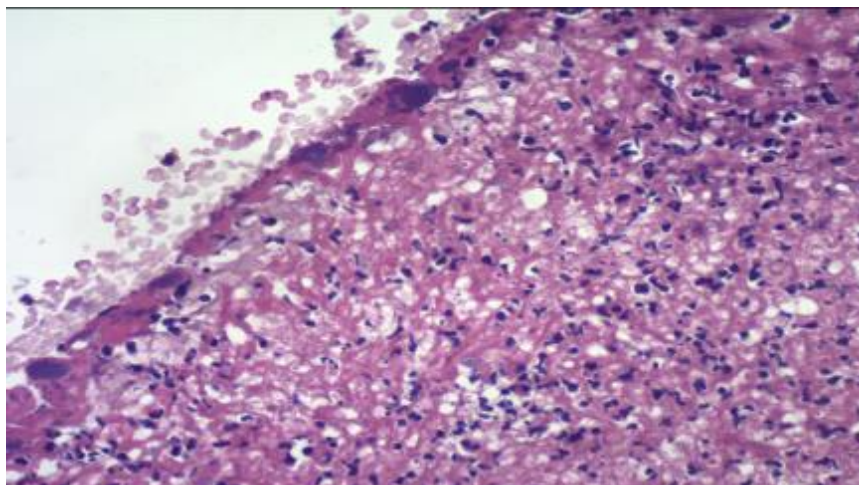


Figure 4: Histopathological picture showing delicate connective tissue with proliferating inflammatory cells

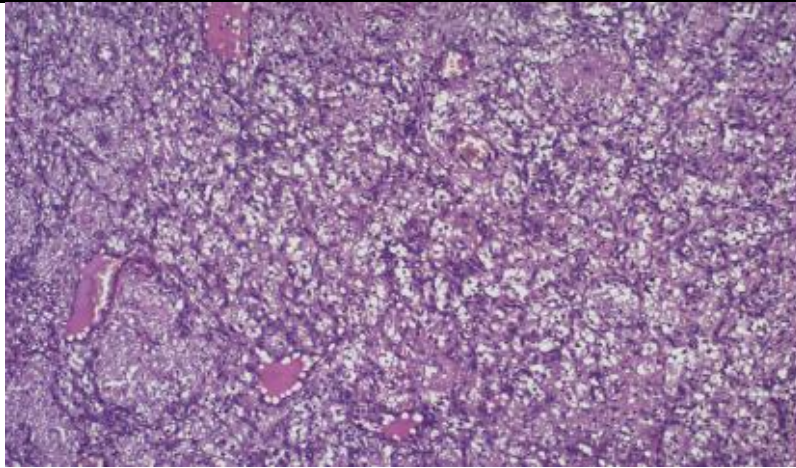


Figure 5: Histopathological picture showing proliferating endothelial cells, large and small blood vessels, areas of hemorrhage, macrophages and focal areas of necrosis resembling microabscesses

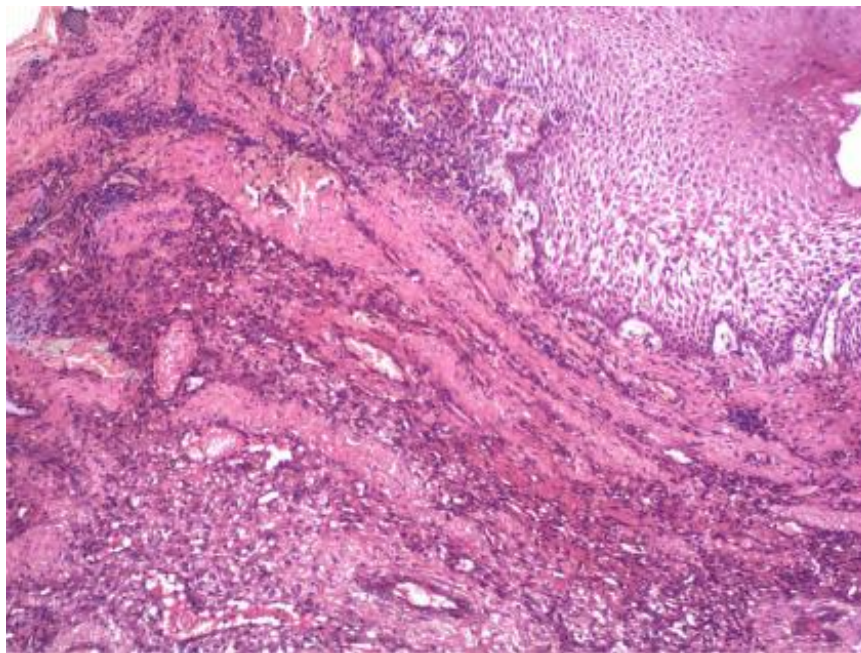


Figure 6: Histopathological picture showing hyperplastic non-keratinized stratified squamous epithelium with pseudoepitheliomatous hyperplasia; epithelium is ulcerated and the connective tissue shows degeneration of tissues including blood cells

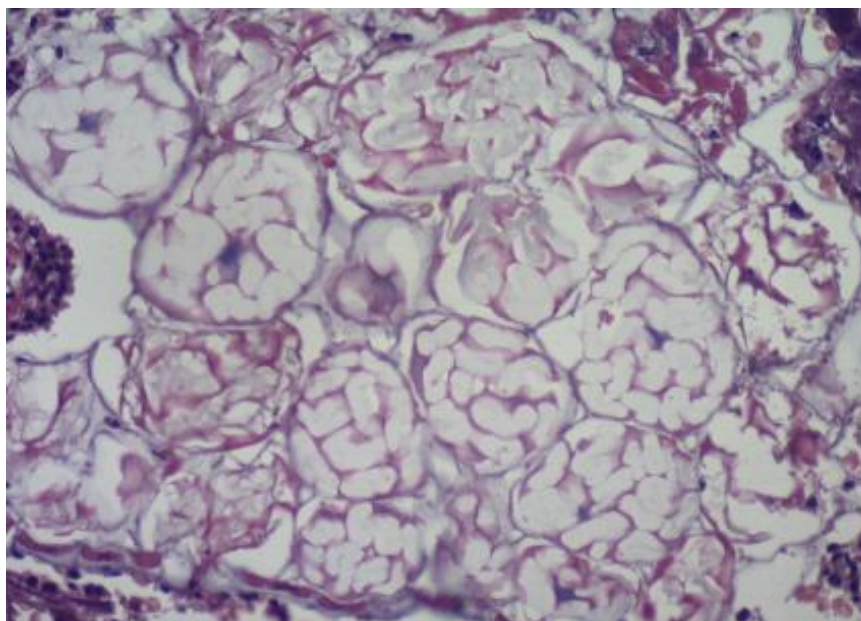


Figure 7: Histopathological picture showing entrapped foreign bodies (resembling legumes) and eosinophilic hyaline bodies

CONCLUSION

Oral foreign body (pulse) granuloma is a rare yet clinically significant lesion that often mimics other pathological conditions, leading to diagnostic confusion. Its etiology, rooted in the implantation of vegetable matter particularly legumes highlights the importance of thorough clinical history and histopathological evaluation. Early recognition is crucial to prevent misdiagnosis and ensure appropriate management. Awareness of this entity can aid clinicians and pathologists in distinguishing it from more aggressive lesions, reinforcing the value of vigilance in oral pathology.

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