

## Case Report

# Pulse Granuloma of The Parotid Gland Masquerading as Carcinoma- a Case Report With Review of Literature

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### ABSTRACT

*Pulse granuloma is a rare benign entity, representing a foreign body reaction to vegetable particles. We report a case of a pulse granuloma involving the parotid gland and clinically masquerading as carcinoma. There are few reports in the literature of pulse granulomas, with most occurring in the oral cavity or lungs. To the best of our knowledge, this is the first reported case of pulse granuloma within the parotid gland.*

**Keywords:** Foreign body; giant cells; parotid gland; pulse granuloma;

### INTRODUCTION

Oral pulse granuloma is one of the terms used to describe oral inflammatory lesions characterized microscopically by the presence of giant cells and hyaline rings.<sup>[1]</sup> Pulse granulomas occur most frequently in the oral cavity of edentulous patients or in patients with a history of dental procedures. Patients may present with lesions in the wall of periapical cysts with prolonged therapeutic opened drainage or dentigerous cysts. The lesions can be fluctuant or firm and are generally tender to palpate.<sup>[2]</sup> Pulse granulomas are peculiar reactions to vegetable matter characterized by aggregates of hyaline rings and may be oral or extra oral.<sup>[3]</sup> Most of the literature suggest that the pathogenesis is a foreign body reaction to ingested legume parenchymatous cells at various stages of digestion.<sup>[4]</sup> There are reported literature regarding occurrence of pulse granulomas in rectum<sup>[4]</sup>, in lungs of patients prone to aspiration, causing lentil aspiration pneumonia.<sup>[5]</sup>

Pulse granulomas are important to recognize because they may indicate serious, pathologic processes, may simulate neoplasia clinically, and

may morphologically be confused with hyaline vasculopathy.<sup>[6]</sup> To the best of our knowledge, we report the first case of pulse granuloma involving the parotid gland.

### CASE REPORT

A 16-year old boy presented with a history of swelling in the parotid region since 3 months. The swelling was initially initial small, progressed to attain the present size. He had fever and associated pain. The patient gave a history of having undergone FNAC at a local hospital, the diagnosis being parotid abscess. Subsequently he underwent incision and drainage and was covered with antibiotics. Following which the swelling increased in size and was referred to our institution.

Examination revealed a swelling in the right parotid region measuring 7x5cms. The swelling was soft to firm in consistency, tender. Surface of the swelling showed an ulcer measuring 2x1cms.

FNAC of the swelling revealed a benign vascular lesion.



Fig.1 : Gross photomicrograph of soft tissue mass showing salivary gland with cystic space (black arrow).

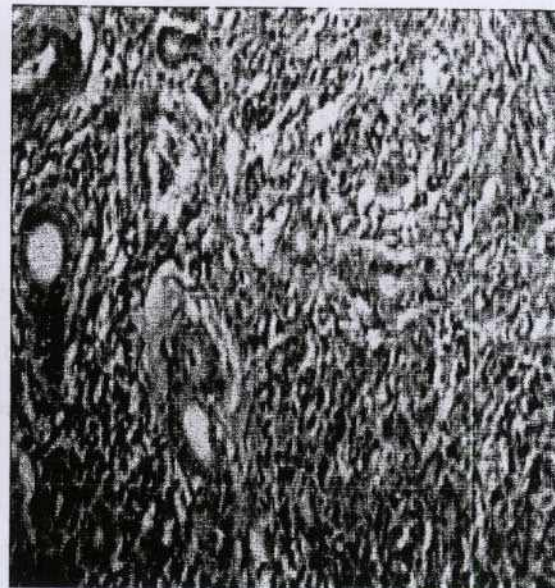


Fig.2 : Microphotograph showing chronic sialadenitis (H&E,X100).

A right parotidectomy was performed and the specimen sent for histopathological examination.

Grossly, the resected specimen consisted of a skin covered soft tissue mass measuring 14x9x4.5cms.[Fig.1] Surface of the skin showed an ulcer measuring 2x1cms. Margins were slanting and the floor was filled with slough. Adjacent to the ulcer was a salivary gland measuring 4x3.5x3cms. Cut surface showed tiny cystic spaces.

Microscopy showed salivary gland densely infiltrated with lymphocytes, eosinophils, along with intersecting areas of fibrosis, dilated and congested blood vessels.[Fig.2] Focal areas showed granulomas consisting of central convoluted hyalinized rings surrounded by foreign body giant cells. [Fig.3 and Fig.4] Hyalinized structures were positive for Periodic Acid Schiff (PAS). The final diagnosis was chronic sialadenitis with pulse granuloma involving the parotid gland.

#### DISCUSSION :

Pulse granuloma, a controversial lesion with regard to its etiopathogenesis and nomenclature has been described in the literature under a variety of names such as vegetable granuloma, giant cell hyaline angiopathy, the recent term being 'hyaline ring granuloma'.<sup>[6]</sup>

Hyaline rings were initially described by Knoblich<sup>[7]</sup> in 1969, who noted these lesions in human lungs and experimentally produced similar lesions in various nonprimate animal lungs by injecting broth of lentils, the seeds of leguminous plants. Lentils consist of grains of starch within honeycomb-like structures, the cotyledons, and the shell-like structures that surround the cotyledons, the spermodermis. Knoblich showed that cotyledons, composed of cellulose, incited the hyaline rings. So he coined the term "lentil pulse pneumonia".<sup>[7]</sup>

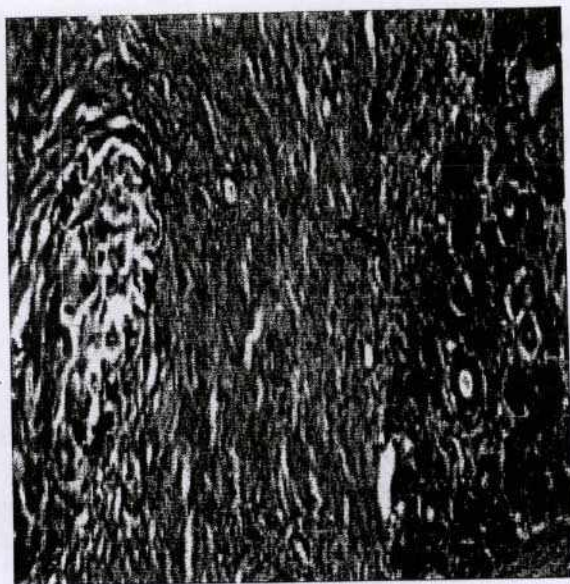


Fig.3 : Microphotograph showing salivary gland tissue (thick arrow) along with hyaline ring granulomas (thin arrow) (H&E,X100).



Fig.4 : Microphotograph showing granulomas consisting of hyaline rings (black arrow) surrounded by foreign body giant cells (H&E, X400).

Pulse granuloma results from the implantation of food particles of plant or vegetable origin. These particles are rapidly digested and sometimes partly get altered by host responses. The cellulose part of plant foods being indigestible persists in the form of hyaline material, whereas the starch matter gets digested. This cellulose moiety

invokes chronic granulomatous response. This is evidenced by animal experiments conducted on rats by Talacko and Radden.<sup>[1]</sup>

Two theories have been proposed for its etiopathogenesis:

(1) the origin of the hyaline rings is due to a foreign material (pulses and legumes) having penetrated the oral mucosa or gastrointestinal tract and lungs (exogenous theory) and (2) the rings are due to hyaline degenerative changes in walls of blood vessels, degraded collagen or fibrosed extravasated serum proteins (endogenous theory).<sup>[6,8]</sup>

Microscopically pulse granulomas are characterized by aggregates of thin, faintly eosinophilic hyaline rings often admixed with acute and chronic inflammation and multinucleated giant cells. The rings vary in size and shape, and are usually associated with demonstrable particulate vegetable matter.

The pale, eosinophilic, hyalinized areas identified in H and E stained sections also show positivity with Periodic Acid Schiff (PAS). Peripheral portion of the vegetable matter stains positively with van Gieson, which represents condensation of collagen.<sup>[6]</sup> Gram, Grocott methenamine silver and Ziehl-Neelsen stains can be employed to rule out bacterial, fungal or mycobacterial micro organisms.<sup>[4]</sup> Hyaline rings have shown ultra structural features of degenerated collagen and cellulose.<sup>[9]</sup>

These commonly occur in inflammatory and developmental odontogenic cysts. Oral pulse granuloma occurs in the posterior regions of an edentulous mandible, in periapical areas of grossly decayed teeth or retained roots and teeth with a history of endodontic therapy, where the root canal has been left open. It can also be associated with impacted lower third molar teeth with a history of pericoronitis, in post-extraction

tissue reactions or as part of a cyst wall where there has been a communication with the oral cavity.<sup>[2]</sup>

Rhee and Wu have reported pulse granulomas in gallbladder, fallopian tube, and skin in association with fistulae involving the gastrointestinal tract, which was proved by gross visualization of the fistulae and by the presence of barium-laden histiocytes or vegetable matter deep in various organs.<sup>[10]</sup> A very interesting case of iatrogenic pulse granuloma occupying the periprostatic soft tissue was demonstrated by Nambudripad, caused by transrectal biopsy that displaced the vegetable matter and provided the nidus for the pulse granuloma.<sup>[11]</sup> Pulse granulomas were shown to occupy the colorectum in association with colonic diverticula and a rectal mass.<sup>[4,10]</sup>

The hyaline rings could be mistaken for *Torulopsis glabrata* infection, a yeast-like fungus similar to the candida species<sup>[6]</sup>, *Coccidioides*<sup>[4]</sup> or a *Strongyloides stercoralis* infestation which was ruled out in our case with relevant investigations.

Other differential diagnosis which is of importance is the suture granuloma. Shauffer and Sequeira<sup>[12]</sup> have reported a case of suture granuloma following surgery for colonic carcinoma which presented as a distinct mass at the anastomotic site, raising the suspicion of recurrence. Fleishner and Berenberg<sup>[13]</sup> found foreign body granulomas surrounding silk suture material at the anastomotic site in some patients with recurrent neoplasm who underwent a second resection.

Our case had a clinical presentation of an ulcerated growth in the right parotid region, mimicking a carcinoma and thus it was excised. The histopathological features were of granulomatous reaction of foreign body type and showed a variety of inflammatory cells

associated with occasional 'hyaline rings'. An interesting feature was the finding of eosinophils admixed with lymphocytes. In such situations, a detailed microscopic examination with adequate tissue sampling, serial sectioning with use of special stains may be helpful.

### TAKE HOME MESSAGE

Pulse or hyaline ring granulomas are rare but are well-defined oral and extraoral lesions due to implantation of the cellulose moiety of plant foods. The knowledge of unusual sites of occurrence and clinical presentation of pulse granulomas may alert clinicians to the diagnostic pitfall of mistaking pulse granulomas for other entities, especially malignancies and thus avoid unnecessary resections.

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MEMORANDUM FOR THE RECORD

On 10/10/54, the following information was received from the [redacted] regarding the [redacted] of the [redacted] in the [redacted] area. The [redacted] was [redacted] by [redacted] and [redacted] on [redacted] at [redacted]. The [redacted] was [redacted] and [redacted] on [redacted] at [redacted]. The [redacted] was [redacted] and [redacted] on [redacted] at [redacted]. The [redacted] was [redacted] and [redacted] on [redacted] at [redacted].

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