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An Unexpected Lingual Cortical Erosion in a Solitary Bone Cyst of the Mandible

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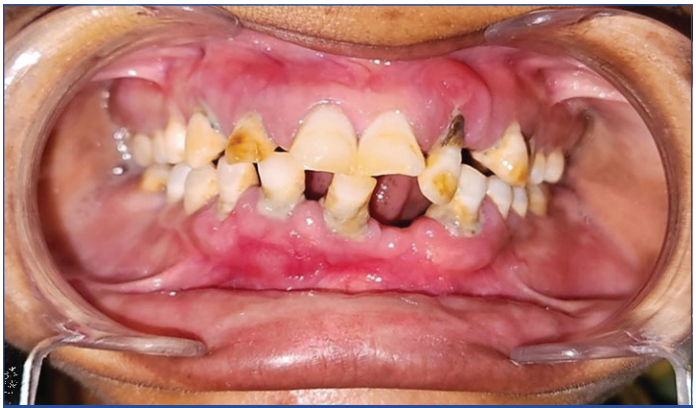
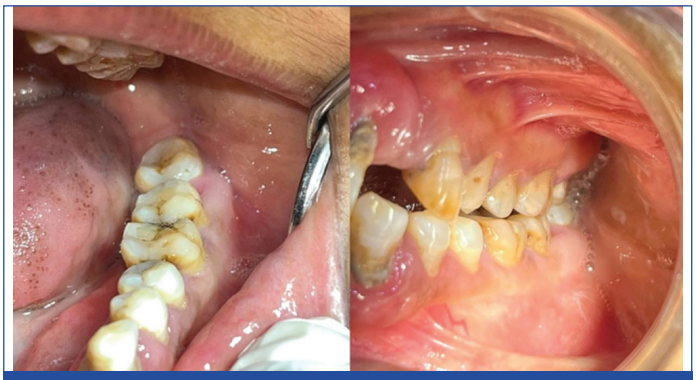
A 42-year-old woman reported to the outpatient department with the chief complaint of intermittent, sharp, radiating pain in the lower left back tooth region for the past five days which aggravated on mastication and reduced on medication. Medical history was non significant and dental history revealed that the patient underwent extractions five years before. On clinical examination, no extraoral abnormalities were detected [Table/Fig-1]. Intraoral examination revealed decayed 27, 36, 47 teeth, missing 46,31,32, and tenderness on percussion in relation to 37,38. There was generalised gingival attachment loss and mobility in relation to 37,22,16,41,42 [Table/Fig-2]. On further examination, a localised swelling was evident on the alveolar mucosa in relation to 37 and 38, measuring approximately 1×2 mm with a smooth surface and irregular margins. No discharge was present. On palpation, the swelling was tender with no pus discharge. No bony expansion was appreciated [Table/Fig-3]. A provisional diagnosis of dental caries with a periapical abscess in relation to 37, 38 was given.

[Table/Fig-1]: Extraoral image of the patient showing no asymmetry.

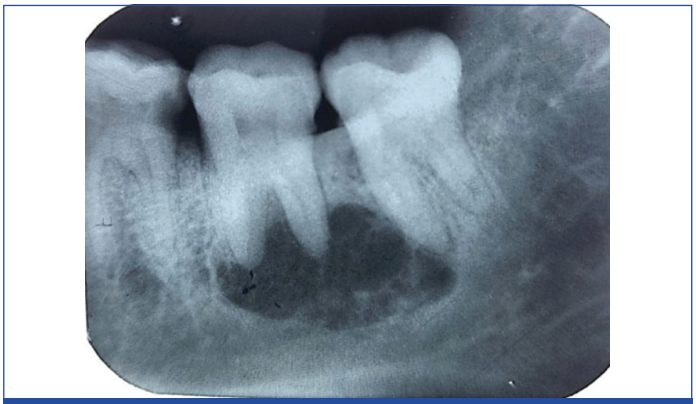


[Table/Fig-2]: Intraoral examination showing generalised chronic periodontitis and multiple decayed and missing teeth.

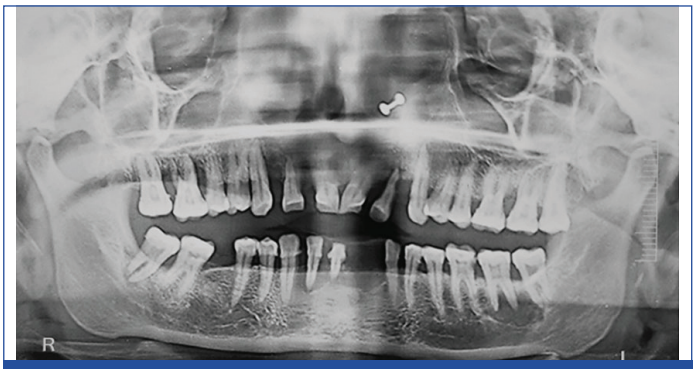
An Intraoral Periapical Radiograph (IOPA) in relation to 37,38 was taken which revealed a well-defined corticated multilocular radiolucency with internal septations in the periapical region in relation to 37,38. The radiolucency extended from the mesial root of 37 to the mesial root of 38 [Table/Fig-4]. The patient was then advised to take an Orthopantomogram (OPG). IOPA findings were confirmed in the OPG. OPG also revealed a well-defined, corticated, periapical radiolucency which appeared to extend from the distal root of 36 to the mesial root of 38. Horizontal bone loss was present and partially edentulous spaces in relation to 31,32,46 were present [Table/Fig-5]. Cone Beam Computer Tomography



[Table/Fig-3]: A localised swelling evident on the alveolar mucosa in relation to 37 and 38.

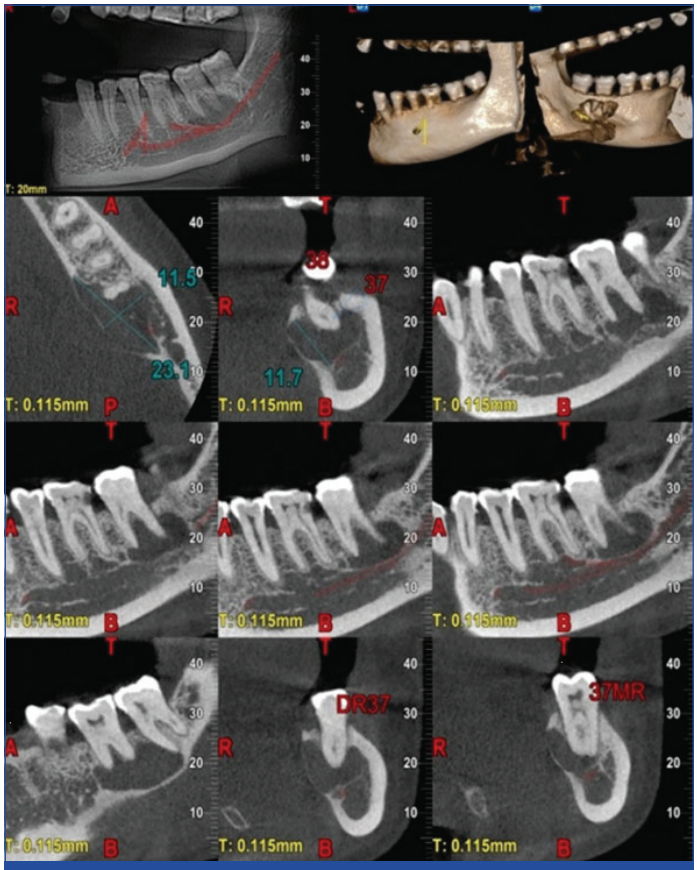


[Table/Fig-4]: Intraoral Periapical Radiograph (IOPA) showing a well-defined corticated multilocular radiolucency with internal septations in the periapical region in relation to 37,38.



[Table/Fig-5]: OPG showing a well-defined, corticated, periapical radiolucency which appeared to extend from the distal root of 36 to the mesial root of 38.

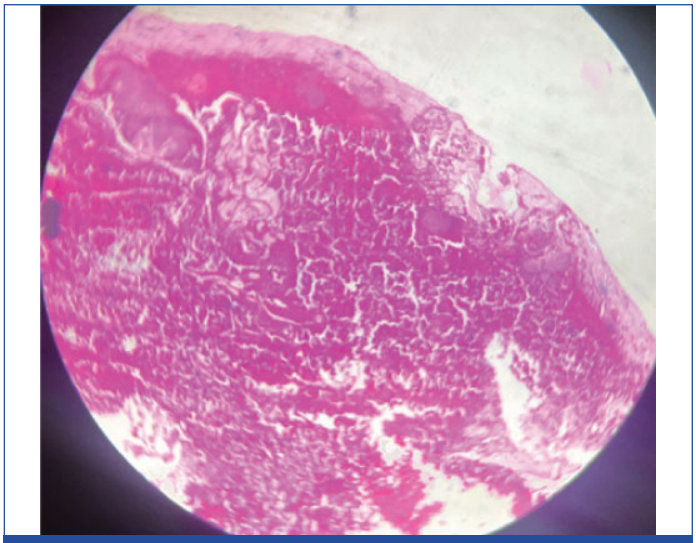
(CBCT) was advised, which revealed distal proximal cervical radiolucency involving enamel dentin and approximating pulp in 36. And there was presence of unilateral, localised, well-defined radiolucency in the left mandibular body region in relation to the periapical region of 36,37 and 38. The margins were well-defined with thinly corticated. The shape appeared vaguely oval measuring approximately 23.1 mm anteroposteriorly, 11.5 mm buccolingually, and 11.7 mm superioinferiorly. The radiolucency extended anteriorly from the periapical region of 36 from the distal root to the mesial root of 38. Buccally and lingually it extended to the cortical plates with erosion of the lingual cortical plate, thinning, and cortical expansion. The lingual cortical erosion was unexpected as clinically there was no evidence of bony expansion. Superiorly, the lesion was a few millimetres short of the alveolar crest in relation to 37 and inferiorly above the mandibular canal. Internally the lesion was totally radiolucent [Table/Fig-6]. Differential diagnosis was given as radicular cyst, simple bone cyst, odontogenic keratocyst, and ameloblastoma.



[Table/Fig-6]: CBCT showing the presence of unilateral, localised, well-defined radiolucency in the left mandibular body region in relation to the periapical region of 36,37 and 38 with erosion of the lingual cortical plate, thinning, and cortical expansion.

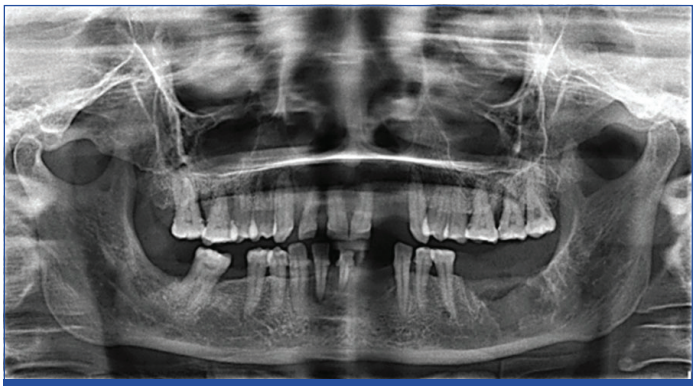
Preoperative blood investigations were conducted, and the patient was found to have microcytic hypochromic anaemia with a haemoglobin level of 8 g/dL. Blood transfusion was performed twice, and the haemoglobin improved to 10 g/dL. Preanesthetic evaluation was conducted, followed by enucleation under general anaesthesia. The specimen was sent for histopathological examination.

The Haematoxylin and Eosin (H&E)-stained histopathological section of the specimen revealed parakeratinised stratified squamous surface epithelium with underlying connective tissue stroma. The connective tissue stroma was moderately collagenised with a chronic inflammatory cell infiltrate. In a focal area, numerous cystic spaces surrounded by macrophages were observed. The cavity was filled with numerous extravasated red blood cells. Additionally, endothelial-lined blood vessels were also observed. Deeper within the connective tissue, normally appearing bony trabeculae with osteocytes were seen [Table/Fig-7]. Based on these findings, a final diagnosis of a simple bone cyst was given.



[Table/Fig-7]: Specimen with parakeratinised stratified squamous surface epithelium with underlying connective tissue stroma and bony trabeculae with osteocytes (H&E, 4X).

The patient was reviewed after one week, and a postoperative OPG was taken. The OPG revealed a bony defect with a complete loss of the corticated border of the cyst. Teeth 36, 37, and 38 were extracted, suggesting that complete enucleation of the cyst was performed [Table/Fig-8]. The patient was instructed to return after three weeks for the replacement of the missing teeth.



[Table/Fig-8]: Postoperative OPG showing bony defect with complete enucleation of the cyst and extracted 36, 37, and 38.

A simple bone cyst is a benign, empty, or fluid-containing cavity within the bone that lacks an epithelial lining. It is also known by various names such as traumatic cyst, solitary bone cyst, haemorrhagic cyst, extravasation cyst, unicameral bone cyst, and idiopathic bone cavity. Simple bone cysts are classified as intraosseous bone pseudocysts. They comprise approximately 1.25% of cysts in the jaw. The first description of a simple bone cyst was given by Carl Lucas and Theodor Blum in 1929 [1]. According to the World Health Organisation (WHO), this cyst is defined as an uncommon, benign, asymptomatic, slow-growing, non expansile, intraosseous cavity that may be empty or filled with fluid. It has a delicate lining of connective tissue but lacks epithelium [2]. Simple bone cysts are rare and account for about 1% of jaw cysts. They are often observed in the posterior mandibular region [3,4]. They can affect both males and females, but there is a male predominance. Simple bone cysts commonly occur in the second decade of life, but they can also affect individuals over 40 years of age. The posterior premolar-molar area of the mandible is the most frequently affected site [3].

Simple Bone Cysts (SBC) are also known as traumatic cysts, as the trauma-haemorrhage theory has been widely discussed and accepted. This hypothesis was proposed by Howe. According to this theory, an insufficient level of trauma to the bone leads to the formation of an intraosseous haematoma, without causing a fracture. In the absence of organisation and repair, the haematoma

has the potential to liquefy and subsequently give rise to a cystic defect [5].

Radiographic features of SBC include unilocular or multilocular radiolucencies of variable size and shape, with well-defined borders. Resorption or displacement of teeth is not seen. Loss of lamina dura may be observed, and there may be widespread extension of the lesion without bone expansion, but cortical bone thinning due to endosteal erosion may be present [6].

Therefore, the diagnosis of SBC is based on clinical examination, radiological investigation, and histological findings. Early treatment and regular follow-up are recommended to promptly diagnose and treat any recurrences.

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