REVIEW ARTICLE

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Radiological findings of soft tissue calcification in mandible through panoramic radiography: a literature review

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ABSTRACT

Objectives: This review aims to analyze the role of digital panoramic radiography in identifying soft tissue calcifications in the mandibular region, summarize the prevalence and distribution of these calcifications based on recent literature (2018–2023), and critically evaluate the diagnostic necessity and relevance of complementary imaging modalities (CBCT, CT, MRI, and ultrasonography) for definitive characterization in each specific type of calcification.

Review: Soft tissue calcifications in the maxillofacial region are frequently detected as incidental findings on panoramic radiographs performed for routine dental evaluations. Although panoramic radiography is not the first-line modality for soft tissue assessment due to the superimposition of anatomical structures and reduced contrast resolution, its wide coverage enables visualization of a variety of calcified entities. Based on the reviewed studies, the most frequently detected calcifications include sialoliths, carotid artery calcifications, tonsilloliths, stylohyoid ligament calcification, phleboliths, and calcified lymph nodes. Prevalence varies widely between populations (5.4–46.9%) and increases significantly with age, particularly in individuals over 40 years old. Gender association remains inconsistent across studies. Panoramic radiography demonstrates value in identifying potentially clinically significant findings, such as carotid artery atheroma, which may indicate increased systemic vascular risk. However, localization and characterization accuracy remain limited, and advanced imaging modalities such as CBCT and MRI demonstrate superior capability in differentiating tissue origin and defining lesion morphology.

Conclusion: The most common soft tissue calcifications include sialoliths in the ramus or angle of the mandible, followed by calcifications of the carotid artery, stylohyoid ligament, phleboliths, tonsilloliths, and antroliths. The highest distribution is observed in the submandibular gland, followed by the parotid gland. Soft tissue calcifications are more prevalent in the middle-aged population, followed by young adults, and are more frequently found in women.

Keywords: *Soft tissue calcifications, panoramic radiography, mandible*
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INTRODUCTION

Panoramic radiography is a common imaging modality in dental clinics, but it is not considered the first-line examination for evaluating soft tissue calcifications in the maxillofacial complex due to the superimposition of adherent structures and limited tissue differentiation with low contrast. However, given the broad anatomical coverage of this imaging modality, many calcifications can be visualized. In cases of pathological calcification, detection can prevent serious conditions such as stroke caused by atheroma.[1] Panoramic radiography, a common diagnostic tool used to detect abnormalities during pre-treatment radiographic examinations of patients, plays a crucial role in the diagnosis and treatment planning of various oral and maxillofacial diseases in dental practice. It is also essential in the evaluation of edentulous patients before the fabrication of complete dentures.[2]

Technological advances have increased the use of digital systems in dentistry. Improvements in digital imaging systems and software have led to improved imaging and post-processing adjustments for certain diagnostic tasks to improve image quality. Among the available adjustments, brightness and contrast are widely used by radiologists for scientific research purposes and by dentists in clinical practice (Rovaris et al, 2016). In general, the quality of these image enhancements can also be adjusted according to the examiner's subjective assessment of the imaging quality. Some argue that technological advances, especially in dental radiology equipment, depend on the results of the object being taken or the radiology

equipment being used. According to experts, Magnetic Resonance Imaging (MRI) aims to determine the morphological characteristics (location, size, shape, extent, etc.) of pathological conditions. In addition, MRI has its own advantages, namely superiority in detecting several abnormalities in soft tissues such as the brain, bone marrow, and musculoskeletal system, and is capable of performing functional examinations such as diffusion, perfusion, and spectroscopy examinations that cannot be performed with a CT Scan.[1,3]

Soft tissue calcification in the maxillofacial region is rare and generally corresponds to radiographic findings on routine examinations such as panoramic radiographs. Criteria: The most important diagnostic criteria are the anatomical location, distribution, number, size, and shape of the calcifications. Differential diagnosis should include the hyoid bone, triticeous cartilage, styloid process, superior horn of the thyroid cartilage, and epiglottis. Epidemiologically, these calcifications are most common in individuals over 40 years of age, but some cases have been reported in children.[3] Soft tissue calcifications are common in the maxillofacial region, with a detection rate of approximately 19%–19.7% on panoramic radiographs (Ribeiro et al., 2018; Sutter et al., 2018). Among the main calcifications visualized on the images are calcified atheroma, calcified lymph nodes, tonsilloliths, anthroliths, rhinoliths, sialoliths, phleboliths, and calcification of the stylohyoid ligament, which is most frequently observed.[1]

Soft tissue calcification (STC) in the maxillofacial region is rare and generally corresponds to radiographic findings on routine radiographs. STC is classified as idiopathic, dystrophic, or metastatic. Dystrophic calcification occurs in degenerated, diseased, and dead tissue despite normal serum calcium and phosphate levels. In contrast, metastatic calcification is the process by which normal, undamaged tissue calcifies due to hypercalcemia, such as that seen in hyperparathyroidism. Determining the exact location of STC is a major diagnostic challenge. Due to the presence of shadow images, panoramic radiography remains incapable of diagnosing STC. Furthermore, STCs located in the head and neck area are positioned close to each other, making estimating their exact location very difficult with conventional imaging.[4]

The prevalence of soft tissue calcification/ossification in different populations varies. The incidence ranges from 2.61 to 27.64% in studies using panoramic radiography and 15 to 62.6% in studies using CBCT. In a study examining soft tissue calcification/ossification in the head and neck region of Turkish patients, the incidence was reported to be 33.4% in CBCT images. In our study, the incidence of soft tissue calcification/ossification in the head and neck region on CT images of Turkish patients was indicated to be 23.3%. The variation in results reported in the literature is likely due to differences in the studied population, number of patients, and imaging procedures used.[5]

Sialoliths are calcareous deposits in salivary glands formed by the deposition of calcium salts around a central nidus that may consist of desquamated epithelial cells, bacterial debris, foreign bodies, or mucus plugs. Between 80% and 90% of salivary gland stones occur in the submandibular gland, 10% to 20% occur in the parotid gland, and only 1% to 7% occur in the sublingual gland. These soft tissue calcifications are formed due to the deposition of calcium and phosphate salts in the salivary glands or ducts, and most commonly occur in the submandibular salivary glands. Imaging methods such as plain radiography, CT, CBCT, ultrasonography, and sialography are used to image sialoliths. Studies evaluating the prevalence of sialoliths on panoramic images have reported a prevalence ranging from 0.01% to 1%, while the prevalence of sialoliths on CBCT images ranges from 0.2% to 1.7%. In our study, the incidence of sialoliths was found to be 1.63%. This situation is thought to be caused by the use of different imaging methods and differences in the population.[5]

REVIEW

A literature review using 4 databases, Google Scholar, PubMed, Elsevier, and Wiley, was conducted to explore the existing literature on Panoramic Radiographic Analysis of Soft Tissue Calcification in the Mandibular Area: A Review. The research results were selected based on the title and abstract according to their relevance to the review topic, and then the results were re-selected based on the inclusion and exclusion criteria. The inclusion criteria in this study were research articles with distribution data discussing the use of panoramic radiography for the detection of soft tissue calcification in the mandibular area published between 2018 and 2023. The exclusion criteria in this study were duplicated literature, full text unavailable, and written in languages other than English or Indonesian. Based on the selection criteria, 5 pieces of literature were collected and reviewed.

1. Soft Tissue in the Mandibular Area

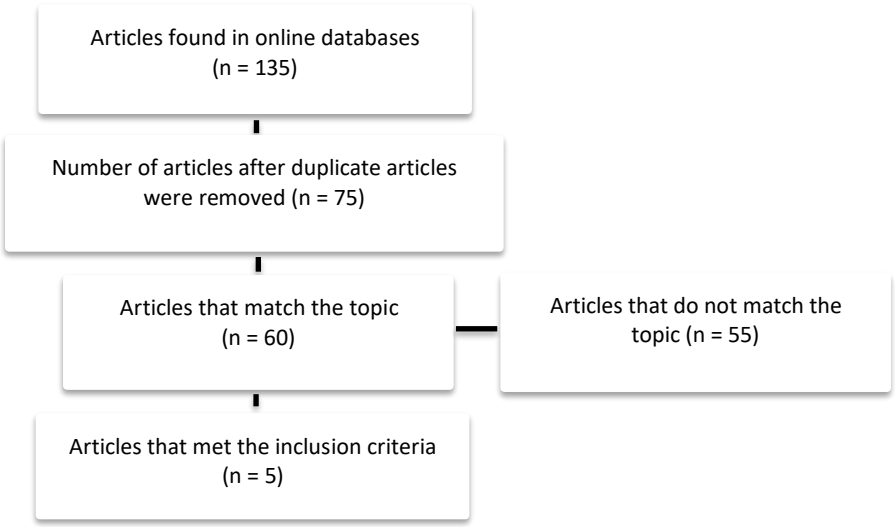
The soft tissues of the mandible are a crucial component in shaping the lower face and defining the facial profile. Mandibular soft tissue profile analysis, such as the Holdaway method, helps to comprehensively and effectively assess soft tissue structures.[7] This analysis uses reference lines from the eye, porion, and chin points, as well as from the nose to the chin. Both harmonious and indistinguishable soft tissue relationships are also used in orthodontic treatment planning.[8] The causes of soft tissue in the mandibular area can be caused by various factors, including injury, soft tissue tumors, recurrence, genetic syndromes, hormonal changes, administration of radiation or chemicals, as well as changes in the soft tissue itself.[9] Injuries to the face, including the mandibular

area, can result in abnormal soft tissue formation. The severity of the injury can also affect the aesthetic outcome and facial function. Meanwhile, soft tissue tumors, such as soft tissue sarcomas, can form in the mandibular area and cause soft tissue changes. These tumors can grow rapidly and damage surrounding tissue. Recurrence or disruption of soft tissue in the mandibular area can be caused by several conditions, such as recurrence after surgery or a combination of neoadjuvant chemotherapy/radiotherapy followed by surgery.[10] Genetic syndromes, such as Gardner syndrome or Li-Fraumeni syndrome, can also cause soft tissue tumors. Hormonal changes, such as those that occur in middle age and old age, can increase the risk of developing soft tissue sarcoma. Radiation or chemical exposure can also increase the risk. Finally, changes in the soft tissue itself, such as skeletal convexity, can be caused by various factors, including age, race, and overall health.[11–14]

2. Soft Tissue Diagnostic Imaging Methods in the Mandibular Area

The use of radiographic imaging has completely revolutionized the diagnosis and treatment planning of oral cancers. The role of imaging in oral cancer can be broadly categorized into those used to evaluate primary disease and those used to evaluate metastatic disease. It is a useful tool for staging and management planning in the mandibular soft tissue area. Table 1 presents a comprehensive overview of recent research on diagnostic imaging modalities used in detecting soft tissue lesions in the mandibular area, as described below.

The following is an illustration of the systematic literature review chart:



List of Articles

The results of this kind of literature search can be described using a narrative method, namely, the data in the ranking results are grouped according to inclusion criteria determined by the researcher, such as name, year of publication, title of the article, method, research results, and database.

Table 1. List of Articles

Author (Year)	Title	Conclusion	Identified the Diagnostic Imaging Methods	Design of Study	Results
Pohanar et.al[15] (2018)	Prevalence Of Soft Tissue Calcifications On Digital Panoramic Radiographs In Marathwada Population: A Retrospective Study	Tonsilloliths were found to be high among the soft tissue calcifications, and men were shown to have a higher prevalence of soft tissue calcification	Digital Panoramic Radiographs	Retrospective study	Patients identified with soft tissue calcifications included 63.41% arteriosclerosis, 45.29% calcified atherosclerotic plaques, phlebolith in 11.7%, sialolith of submandibular salivary gland in 4.3%, calcified

Author (Year)	Title	Conclusion	Identified the Diagnostic Imaging Methods	Design of Study	Results
		than women.			stylomandibular and stylohyoid ligament in 4.2%, tonsillolith in 3.2% and lymph node calcification in 2.1% of the radiographs. The association of the presence of calcification with age was analyzed with the Chi-square test (P<0.05). Women showed an increased prevalence of soft tissue calcifications (P<0.001). The Mean age of participants with calcification and without calcification was assessed (P<0.05) using the Mann-Whitney U test.
Mohan[16] (2019)	Digital Panoramic Radiograph- A Screening Aid in Detection of Soft Tissue Calcifications: A Retrospective Study	Incidental findings of soft tissue calcifications on panoramic radiograph help in early referral for investigation, which could potentially decrease the morbidity and mortality, especially in the case of carotid artery calcification.	Digital Panoramic Radiographs	Retrospective analysis	Among 1029 digital radiographs viewed for calcifications, 620 were male and 409 were female. Various soft tissue calcifications were viewed, which included carotid artery calcification (46.91%), stylohyoid ligament (6.7%), tonsillolith (31.1%), and lymph node (2.2%). The association of the presence of calcification with age and gender was analyzed with the Chi-square test.(p>0.05)
Rajkumar et.al[17] (2021)	Prevalence of Soft Tissue Calcification in Orthopantamograph	The prevalence of soft tissue calcifications was low, which increased with age. Soft tissue	Digital Panoramic Radiographs	Retrospective study	The most common soft tissue calcification identified was submandibular sialolith 37.5%, followed by 25% of calcified stylohyoid ligament, 12.5% of

Author (Year)	Title	Conclusion	Identified the Diagnostic Imaging Methods	Design of Study	Results
		calcification occurs more commonly in males than in females. Once a soft tissue calcification is diagnosed incidentally in a routine dental radiograph, it can aid in the prevention of the disease.			phlebolith, and 12.5% of tonsillolith. 12.5% Carotid artery Calcification
Haghighat [18] (2019)	Prevalence of Soft Tissue Calcifications in Panoramic Radiographs of Patients Referred to Guilan School of Dentistry Within 1 Year and Its Relationship With Systemic Diseases	The present study shows that soft tissue calcifications are not an unusual finding in panoramic radiographs. They increase significantly with aging but have no significant association with gender. The prevalence of soft tissue calcification is higher in cardiovascular disease patients.	Digital Panoramic Radiographs	Descriptive cross-sectional study	The prevalence of elongated stylohyoid ligament calcification, laryngeal cartilage calcification, carotid artery calcification, lymph node calcification, and sialolith was 20.2%, 9.8%, 2.4%, 1.8%, 0.6%, and 0.1%, respectively. Stylohyoid ligament and vascular calcifications were significantly correlated with cardiovascular disease and hypertension. Gender and soft tissue calcification were not significantly associated. The prevalence of tonsilloliths was significantly higher in men (P=0.0001). A significant correlation was found between soft tissue calcification and age groups, so that as age increased, the prevalence of carotid artery calcification, stylohyoid ligament calcification, and tonsillolith increased.

Author (Year)	Title	Conclusion	Identified the Diagnostic Imaging Methods	Design of Study	Results
Rosana et.al[20] (2018)	Calcifications in Soft Tissues Observed in Panoramic Radiographs	Panoramic radiographs and tomographies, frequently requested by dental surgeons, can precociously report the presence of calcifications in soft tissues, such as salivary glands, vessels, and muscles, and the presence of carotic atheromas, which may help avoid or precociously treat serious arteriopathies, myositis, and sialadenitis, in asymptomatic conditions. The knowledge of anatomy by dental surgeons affords early diagnoses through examinations of routine dental images, which emerge today together with the practice of holistic dentistry, where the mouth/body relationship is seen as an insoluble whole.	Digital Panoramic Radiographs	Retrospective study	Two thousand, four hundred and forty-four (2,444) radiographs were analyzed. Considering all calcifications, 132 individuals showed some level of calcification, representing 5.4% of the sample. Prevalence of sialoliths of the submandibular gland (49 patients) was found, followed by sialoliths of the parotid gland (40 patients), which did not differ significantly from each other ($p > 0.05$), although they differed from the other cases of calcifications ($p < 0.05$).

Based on research by Pohan ar et al. (2018), the prevalence of phleboliths was found to be 11.7%, submandibular salivary gland sialoliths 4.3%, stylomandibular and stylohyoid ligament calcification 4.2%, tonsilloliths 3.2%, and lymph node calcification 2.1% from radiographs.[15] Research by Mohan et al (2019) stated that various soft tissue calcifications were seen, including calcification of the carotid artery (46.91%), stylohyoid ligament (6.7%), tonsillolith (31.1%), and

lymph nodes (2.2%).[16] This is in line with the research of Rajkumar et al. (2021), which stated that the most commonly identified soft tissue calcification was submandibular sialolith 37.5%, followed by stylohyoid ligament calcification 25%, phlebolith 12.5%, and tonsillolith 12.5%. Carotid artery calcification.[17] Haghighat et al. 2019 research stated that the prevalence of longitudinal stylohyoid ligament calcification, laryngeal cartilage calcification, carotid artery calcification, lymph node calcification, and sialolith was 20.2%, 9.8%, 2.4%, 1.8%, 0.6%, and 0.1%, respectively.[18] Meanwhile, according to research by Rosana et al. 2018, it was stated that the prevalence of submandibular gland sialoliths (49 patients) was found, followed by parotid gland sialoliths (40 patients), which did not differ significantly from each other ($p > 0.05$), although different from other calcification cases ($p < 0.05$).[20] Based on the research conducted, the results obtained were that the soft tissue with the largest percentage is tonsillolith (31.1%), stylohyoid ligament (6.7%), phlebolith 12.5%, and the smallest percentage is lymph node (2.2%).

Digital Panoramic Radiography is an imaging technology that provides panoramic images of anatomical structures in the oral cavity, including the soft tissues surrounding the mandible. This technology can provide clearer and more detailed images, making it easier to evaluate the condition of potentially affected soft tissues. CBCT, or Cone Beam Computed Tomography, is an imaging technology that uses X-rays to produce three-dimensional images of anatomical structures in the mandible. This is very useful in determining the location, size, and characteristics of tumors or other soft tissue abnormalities. With diagnostic imaging technologies such as Digital Panoramic Radiography and CBCT, doctors can make more accurate diagnoses and plan more effective treatments for soft tissue cases in the mandible. This technology also helps in monitoring disease progression and evaluating the results of treatment measures that have been taken.

DISCUSSION

An anthrolith is a calcified mass in the maxillary sinus that arises from the deposition of mineral salts around a central nidus that may be a blood clot, bone fragment, root tip, foreign body, or pus or mucus discharge. On radiographic examination, anthroliths may be round to ovoid and irregular, uneven, or smooth in shape (Figure 6). Most anthroliths are usually associated with radiographic signs of sinusitis, including mucoperiosteal thickening, polyps, and air-fluid levels.[6]

The demographic characteristics of patients with soft tissue calcification/ossification vary by population. In the literature, some studies have shown that soft tissue calcification/ossification is more common in women[21,22], others in men[23,24], while others have reported no gender differences.[25,26] Soft tissue calcification/ossification is generally seen in patients over 40 years of age, but can also be seen in children.[27,28] In three recent studies examining patients in Turkey, the mean age of patients with soft tissue calcification/ossification was 52.12 ± 17.62, 44.17 ± 16.04, and 51.2 ± 15.6, respectively.[21,24,25]. In these studies, it was reported that patients with soft tissue calcification/ossification were mostly aged 40 years and above. Considering the demographic characteristics of the patients in our study, there was no difference between genders; however, when their age was evaluated, the majority were over 40 years old, which is in accordance with the literature.

Soft tissue calcifications in the head and neck region are relatively common in the general population and are usually detected on routine radiographic examinations as an incidental finding.[29] While some cases are asymptomatic, others remain asymptomatic for years. The majority of previous studies have used conventional 2D imaging modalities to detect soft-tissue calcifications.[30,31,32]

Tonsilloliths are located in the crypts of the palatine tonsils and are described as calcium salt concretions associated with saprophytic bacteria, likely caused by chronic cryptic tonsillitis.[33] Although microscopic tonsillolithiasis is quite common, multiple bilateral macroscopic tonsillolithiasis is rare and mostly asymptomatic.[34] Approximately 30 cases have been reported since 1990. The majority of them consisted of giant unilateral tonsilloliths causing dysphagia or dyspnea[35,36], and very few were asymptomatic bilateral macroscopic tonsilloliths.[37,38] To our knowledge, the MRI presentation of tonsilloliths has been described in only one report.[39]

A Phlebolith, a calcified thrombus, is a calcified thrombus found within a blood vessel. This is common in hemangiomas or VMs and is often asymptomatic. Altered blood flow dynamics within a hemangioma or VM result in the formation of thrombi and phleboliths.[56] Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) of the neck showed an unusual lesion with calcifications in a 'tooth-like' shape associated with the border of the parotid gland and masseter muscle. The head and neck region is the second most common site for phlebolith formation after the pelvic veins.[57] Calcium phosphate and calcium carbonate represent the main components of vascular phleboliths.[58] Radiologically, these lesions may appear radiolucent or radiopaque. Based on MRI classification, the findings show hyperintensity on T2-weighted imaging and isointensity on T1-weighted scanning.[59]

Several studies have been conducted to investigate the prevalence of positive radiographic findings in edentulous patients, such as impacted teeth, retained tooth roots, cysts or tumors, foreign bodies, and the proximity of the mental foramen to the alveolar crest.[60,61,62] These studies primarily used panoramic radiography as the modality of choice.[63] Panoramic radiography, as a simple and well-tolerated method (especially in elderly patients), is considered practical for assessing

various anatomical structures—including alveolar crest resorption, maxillary sinus, mandibular canal, and mental foramen—and facilitates efficient examination of a large number of patients.[63]

Soft tissue calcifications in the head and neck region are frequently detected during routine dental examinations and panoramic radiographic evaluations.[64] The prevalence of soft tissue calcifications or ossifications is relatively common, and accurate diagnosis is crucial for distinguishing benign lesions from pathological conditions.[64] The reported incidence of soft tissue calcifications on panoramic radiographs ranges from 2.61% to 19%.[65-67] However, in this study, the prevalence was found to be 36.6%, which is higher than that reported in the literature. In addition, there is considerable variation in the distribution of different types of calcifications. For example, Sutter et al. observed multiple calcifications in 1.9% of cases, whereas our study reported a lower frequency of 0.46% for this occurrence.[67]

Garay et al.[38], Haghighat et al.[40], and İçoz and Akgünlü[41] found that the presence of STC increased with age. Consistent with these studies, it was observed in this study that the presence of STC increased with age. It has been reported that CAP was detected in the range of 4.8-5.7% on panoramic radiographs.[39,42,44] In this study, it was seen to be more frequent, namely 12.99%. It has been reported that this disease is usually more common in men, but there is no significant difference between the two sexes. In this study, this disease was more common in women, similar to the studies of Ohba et al.[42] and Bayer et al.[44]

Calcified Lymph Node

Lymph nodes in the head and neck typically enlarge during inflammatory processes. Subsequently, the lymph nodes become fibrous, and foci of calcification begin to develop. Tuberculous lymphadenitis (scrofula) is perhaps the most common disease process associated with sclerotic dystrophic calcification of the lymph nodes. Radiographically, the calcifications appear as speckled radiopacities scattered along nodal chains. The calcified lymph nodes are most often irregularly shaped with a cauliflower-like appearance. (Figure 1). If there are no clinical symptoms, calcification occurs.

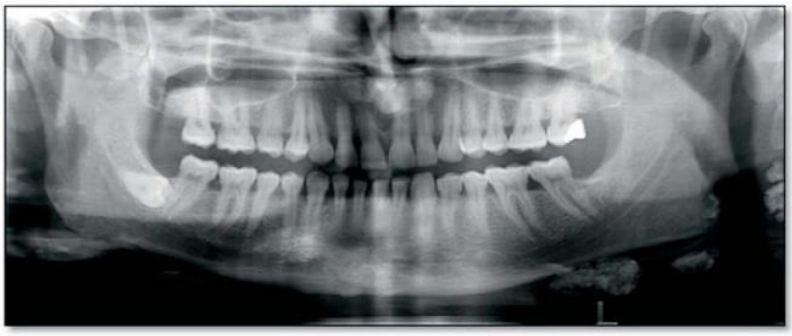


Figure 1. Several calcified lymph nodes are seen on a panoramic radiograph

Ossificans Myositis

Myositis ossificans occurs as a result of trauma or severe muscle strain that occurs during certain occupations and sports. This injury causes bleeding into the muscle's interstitial tissue. During the healing process, the hematoma in the traumatized area will organize and subsequently metastasize to bone tissue. In the head and neck region, the masticatory and sternomastoid muscles are most frequently affected. When the lesion involves the masticatory muscles, it is usually associated with trismus. On radiographs, linear lines (pseudotrabeculae) running parallel to the normal muscle fibers are characteristic of myositis ossificans (Figure 2). Lesions are treated by surgical excision of the calcified mass with physiotherapy to reduce the likelihood of recurrence.[46]

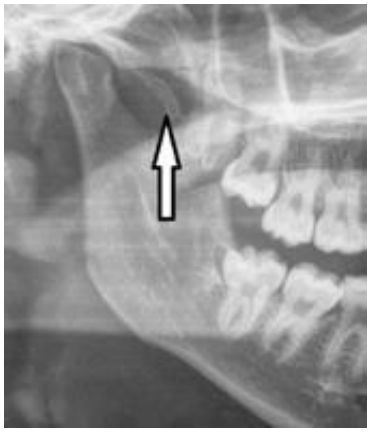


Figure 2. Panoramic view (cut) showing myositis ossificans of the distal fibers of the temporal muscle and its tendon at its attachment to the bottom of the coronoid process

Longus Colli Tendinitis

Longus colli tendinitis, also known as retropharyngeal calcific tendinitis, occurs due to crystalline calcium compounds in the superior fibers of the longus colli muscle. The proposed pathophysiology is that the rupture of calcium crystals triggers an inflammatory response around the longus colli, leading to the formation of reactive fluid in the retropharyngeal space surrounding the muscle.[47] The typical clinical presentation is acute neck pain, dysphagia, odynophagia, and low-grade fever. Pathognomonic radiographic findings include amorphous calcifications anterior to C1-C2 and prevertebral soft tissue swelling or effusion (Figure 3). Most cases are self-limited and resolve spontaneously after 1-2 weeks.

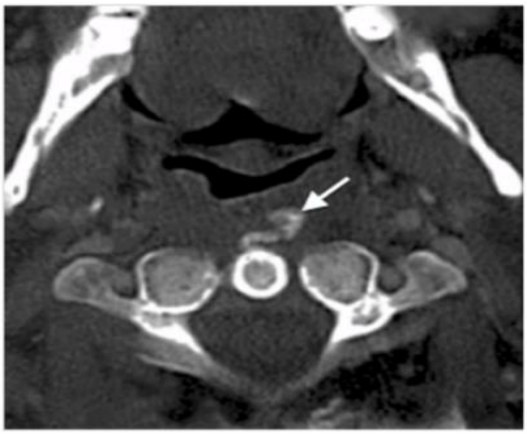


Figure 3. Axial CT image as a complementary modality to confirm calcification in longus colli tendinitis, which is difficult to visualize in detail using panoramic radiography

Phlebolite

Phleboliths are calcified thrombi that occur in the vascular channels associated with hemangiomas and venolymphatic malformations, usually in the soft tissues of the head and neck.[48] On radiographs, they appear as round or oval calcified bodies, which may show concentric rings of calcification similar to a cross-section of an onion. However, some phleboliths consist only of a calcified outer shell, a radiolucent layer beneath this shell, and a radiopaque central core (a bull's-eye or target-like appearance) (Figure 4). Phleboliths are usually numerous and can vary in number from a few to dozens in the affected area.

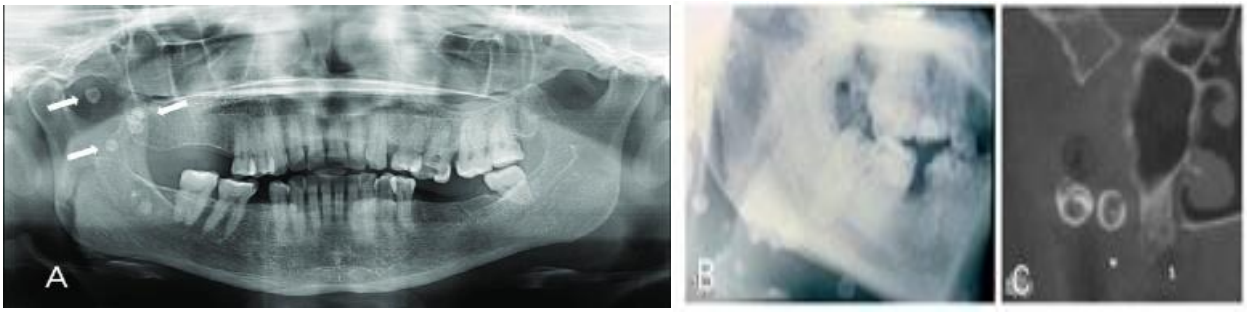


Figure 4. Phleboliths. **A**: Digital panoramic radiograph shows multiple phleboliths on the right side of the mandible. **B**: Lateral view shows phleboliths seen as multiple faint radiopacities in the submandibular space. **C**: Coronary CBCT image of a 27-year-old asymptomatic woman showing phleboliths associated with a venous malformation.

A longitudinal retrospective study was designed to evaluate 500 digital panoramic radiographs of patients visiting the oral radiology department at Ultra Best Dental Science College for the diagnosis of pathologies related to implantology, orthodontics, oral surgery, or general diagnosis. The radiographs consisted of 260 males and 240 females. The radiographs analyzed for soft tissue calcifications were taken from May 2019 to August 2019. Panoramic images were obtained on an X-Mind Pano CephD+ OPG machine with a specification of 68 Kilovolts, 9 milliamperes, with an exposure time of 12 seconds. Each radiograph was taken by a dedicated radiology technician. Radiographs with incorrect projections, over-projection of structures, or unclear diagnoses were excluded from the study. All other images were included. After review and scrutiny by a board member, approval was granted to conduct the study. Calcifications were classified according to their location, number, distribution, shape, and appearance.[49-51] The OPG was divided into eight random squares with a line drawn horizontally across the occlusal plane. Vertical lines are drawn along the anterior aspect of the ramus on both sides and along the nasal septum and midline and are numbered 1-8 (Figure 5).

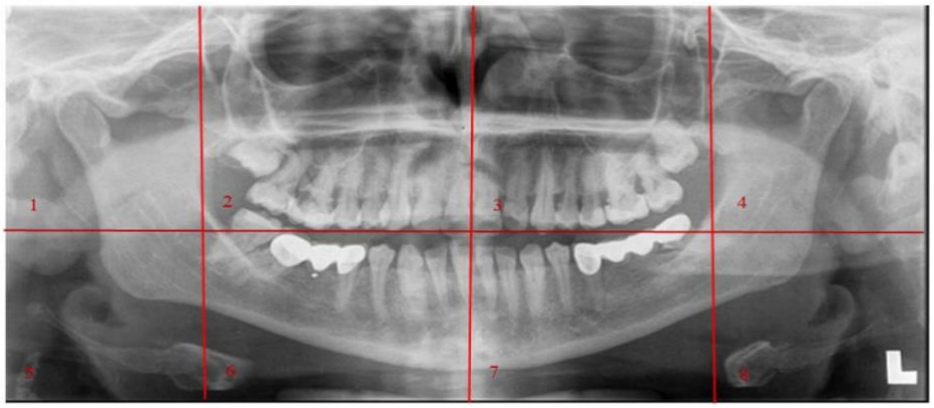


Figure 5. OPG is divided into eight boxes randomly

CONCLUSION

The most common soft tissue calcifications include sialoliths in the ramus or angle of the mandible, followed by calcifications of the carotid artery, stylohyoid ligament, phleboliths, tonsilloliths, and antroliths. The highest distribution is in the submandibular gland, followed by the parotid gland. Soft tissue calcifications are more common in the middle-aged population, followed by young adults, and are more common in women.

ACKNOWLEDGMENTS

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FOOTNOTES

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