

# Review Article

## Cardiac toothache

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### ABSTRACT:

One of the most often reported dental issues is a toothache. Pain management is the most important task for all the dentist. The most frequent sign of many dental problems is a toothache. The worst pain, as they say, is dental pain. This is due to the numerous neurological connections teeth have with the brain's pain centers. A toothache may be regular or intermittent, severe, dull, or throbbing. The most prevalent causes of orofacial discomfort are dental or periodontal problems, as well as musculoskeletal problems. However, the patient may complain of discomfort in this area even if the source is elsewhere in the body. Cardiovascular discomfort is one probable cause of heterotopic pain. It maybe a symptom of heart attack.

**Keywords** -Orofacial pain, Cardiovascular Diseases, Heterotopic pain

Received: 11 April, 2023

Accepted: 14 May, 2023

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**This article may be cited as:** Kaur A. Cardiac toothache. J Adv Med Dent Scie Res 2023;11(6):103-105.

### INRODUCTION

Patients presenting for treatment with craniofacial discomfort are a common occurrence in dentistry practise. Pain in the orofacial area may be caused by factors other than teeth. Non-odontogenic craniofacial pain, often known as heterotopic pain, is the most difficult diagnosis for doctors. 2 Chest discomfort, which may extend to the shoulders, arms, and neck, is a common sign of ischemic heart disease.3,4 However, heart discomfort might spread to the jaws, causing a toothache.

It has been stated that craniofacial pain was the sole symptom of cardiac ischaemia in 6% of patients. According to the research, a considerable percentage of patients encounter death or possibly lethal sequelae as a result of a craniofacial misdiagnosis of transferred heart discomfort.

Several studies of emergency department patients found that those who had never had chest pain had a much higher death risk than patients who reported chest pain as their major complaint. It is critical to identify the true source of the pain rather than the location of the discomfort in order to send the patient for suitable therapy and prevent needless dental procedures.

Referred orofacial discomfort might be signs of a heart condition.

Due to the similarities in the site of the pain, the biggest diagnostic problem that Dentists encounter is distinguishing between Craniofacial pain and Cardiac Pain. If detected in time, it can aid in the early management of any Cardiac issue that, if left untreated, can lead to Myocardial Infarction or Heart Attack. The pain descriptors "pressure" and "burning" were statistically related with cardiac pain, whereas "throbbing" and "aching" were connected with odontogenic pain. There were no gender differences discovered. The pain quality, severity, and gender features of referred craniofacial pain from dental (n = 359) vs. cardiac (n = 115) origin were evaluated.

Ischemic heart disease is one of the major causes of death in adults .The clinical description of ischemic heart disease is characterized by substernal pain, which spreads to the shoulders, arms and neck. In some cases, the pain may spread to the jaws and teeth. Ischemic heart disease is one of the major causes of death in adults .

### EPIDEMIOLOGY

For example, researchers in Barcelona discovered that orofacial pain that is genuinely heart-related tends to be felt in the lower left jaw but even on both sides, implying that, unlike toothache discomfort, you may feel the pain on both sides of the face. According to

the study's primary author, orofacial pain of cardiac origin is regarded as unusual, although it can occur in up to 10% of all patients during a heart attack, with or without chest discomfort. This ache is most commonly felt in the lower jaw.

Orofacial discomfort of cardiac origin is commonly a toothache that develops spontaneously and worsens with exercise.

Orofacial discomfort is reported separately (6%) or in combination with other forms of pain (30%). Craniofacial pain of cardiac origin is generally accompanied by other symptoms or a suggestive history, such as exercise-induced pain. The significance of properly analysing a patient's medical history and physical status in the diagnosis of orofacial discomfort related to myocardial ischemia cannot be overstated.[3]

The cardiac toothache is caused by cardiac muscles. It is accompanied by chest discomfort, anterior neck pain, craniofacial pain, and/or shoulder pain.

### **PATHOGENESIS**

The cause of cardiac pain referred to the orofacial region can be explained by convergent mechanisms in the trigeminal complex. Because of the position of your vagus nerve, heart and lung problems might produce dental pain. This nerve connects your brain to several organs throughout your body, including your heart and lungs. [1]It goes through your mouth. Discomfort in craniofacial tissues caused by the heart is frequently bilateral, but odontogenic discomfort is invariably unilateral. The neck and mandible are the most often documented locations for craniofacial structures. However, other orofacial areas where cardiac discomfort is reported in the literature include the neck, maxilla, zygomatic arches, head, temporomandibular joint, ears, and teeth. Pain of cardiac origin is deemed peculiar due to its position. However, investigations such as those undertaken by Kreiner et al. reveal that cardiac ischemia shows up in the craniofacial tissues in 1 out of every 15 individuals. [2]

Pain from the heart that manifests in the orofacial area might extend to other craniofacial structures (throat, neck, temporal area, head, infraorbital region, maxilla) or the thoracic region (thorax, shoulders, arms). Odontogenic pain (pulpar or periodontal) can manifest in tissues such as the ears and temporal region. If the pain is of cardiac origin, the temporal region corresponds with one of the locations specified. However, dental discomfort is seldom associated with the normal locations of precordial pain.

Here is the representation of distribution of pain:[9]

Distribution of pain during cardiac ischaemia in patients without chest pain

- Craniofacial - 12 (54.5%)
- Left arm -5 (22.7%)
- Left shoulder - 4 (18.1%)
- Right shoulder - 2 (9%)

- Right arm-1 (4.5%)

### **CINICAL CASES**

A PubMed search was undertaken for all human studies in which cardiac discomfort started in the face, teeth, or jaw. Only papers written in English were considered. The studies were evaluated for bias and quality.[1]

There were 18 studies included (2 prospective cohorts and 16 case reports).

Except for one, all of the case reports were about a single patient.

The methodological quality of nine papers was rated as poor, eight as average, and one as excellent. In seven investigations, the only symptom of cardiac origin was jaw, tooth, or face discomfort. [7]. According to the research with the best methodology, 6% of patients with cardiac discomfort had jaw or facial pain as their primary symptom; however, all of these patients, with the exception of one, characterised the pain as "pressure" or "burning."

There are recorded clinical examples in the scientific literature of individuals whose heart pathology began with atypical orofacial discomfort. Four of the nine cases examined were males between the ages of 63 and 79, and five were females between the ages of 56 and 76. The discomfort was limited to the orofacial complex, which included the maxilla, mandible, head, zygomatic arches, submandibular region, neck, temporal region, and teeth. Except in one case, the discomfort spread to other locations such as the neck, shoulder, infraorbital region, thorax, precordial region, throat, and temporal area. The severity was extreme in all nine cases, which occurred spontaneously.

In two of these nine cases, the patient received unneeded dental treatment as a result of an initial misdiagnosis, and as a result, the condition was not resolved. In one example, the patient had tooth extractions, while in the other, the patient was diagnosed with temporomandibular dysfunction as a likely reason for the discomfort. The beginning of pain was associated with physical exertion in two of the nine instances, while the pain came spontaneously in the other cases. The duration of the symptoms' progression was only mentioned in four of the clinical instances documented, and it spanned from three days to nine months.[5]

In six of the cases, a vasodilator was used to ease the discomfort, while in the other three, nothing was done.

### **SIGN AND SYMPTOMS**

- 1) Pain in the mandible is associated with pain in the substernal (middle of the chest) region.
- 2) No dental pathology is seen that could cause the type of dental pain the patient is complaining of.
- 3) The pain is sudden in onset and the intensity of the pain ranges from mild to severe. The patient

complains that the pain is gradually increasing in intensity.

- 4) Pain increases when undertaking any physical activity; pain decreases when resting.
- 5) Taking analgesics or anaesthetizing the mandible does not relieve tooth discomfort.
- 6) a pulsating or scorching sensation
- 7) an ache that goes away or alters significantly
- 8) a prolonged pain throughout days or months; a spontaneous ache in several teeth
- 9) a pain that does not go into remission even after anaesthetic block (freezing); a lack of reaction to effective dental treatment.

### MISDIAGNOSIS.

One possible source of heterotopic pain is pain of cardiac origin. When these orofacial symptoms occur, unnecessary dental treatment is often performed. There are published clinical cases of patients who have undergone unnecessary dental extractions or have been prescribed analgesic treatments due to the misdiagnosis of temporomandibular disorders, without curing the orofacial pain. This causes a delay in diagnosing myocardial infarction or angina and, hence, a delay in initiating the appropriate therapy.

Unlike a traditional toothache caused by dental disorders, tooth or jaw pain associated with heart problems can be relieved with the coronary vasodilator nitroglycerin, and it can also occur concurrently with chest, neck, shoulder, or throat discomfort.

Dentists should be well-versed in this symptomatology to avoid misdirected dental treatment and medical care delays.

### DISCUSSION

A bibliographic review up to 2009 revealed that the scientific literature mostly comprises solitary clinical examples in individuals with orofacial discomfort of cardiac origin. However, [4] Kreiner et al. conducted multicentric research in 2007. The major goals of this initial study are to determine the prevalence of orofacial pain in a sample of 186 ischemic heart disease patients as well as describe the location and irradiation of pain. Other aspects crucial for performing a proper and differentiated clinical diagnosis, such as kind, frequency, intensity, triggering causes, and how to alleviate them, are not provided. [4-2] Kreiner et al. published another study in 2010 with the goal of distinguishing the kind and degree of toothache from orofacial pain of cardiac origin. The findings revealed that there is no variation in kind between the two groups, but there are changes in the description of the pain in terms of severity and quality. Toothache is described as pulsatile and acute, and heart discomfort is described as stifling and scorching. It should also be highlighted that the level of pain was greater in people with toothaches than in those with heart discomfort. Craniofacial pain of

cardiac origin is less acute than toothache at the intraindividual level. However, the intensity rises closer to the heart. [1]

### CONCLUSION

In 5.2% of patients, cranial discomfort of cardiac origin was the only complaint. In the absence of chest discomfort, however, craniofacial tissues were more impacted than other places. Dental practitioners can play an important role in the diagnosis of craniofacial discomfort caused by a heart attack. During history-taking, the connection of pain with effort and pain alleviation at rest might be useful in suspecting craniofacial discomfort of cardiac origin. Dentists should be familiar with the features of craniofacial discomfort of cardiac origin in order to make an early differential diagnosis. [9]

Cardiac pain commonly radiates to the craniofacial structures. Pain of cardiac origin is usually described as pressure and / or a burning sensation that is provoked by physical activity and relieved by rest. Craniofacial pain of cardiac origin usually occurs bilaterally. Dental practitioners can play a crucial role in the diagnosis of craniofacial pain of cardiac origin. [1-2 -4]

Individuals may seek dental care if they have craniofacial pain that has a cardiac cause. Exercise-induced pain is essential for the diagnosis, and a comprehensive medical history is important for detecting any relevant differential illnesses. In these circumstances, dentists might aid in the identification of orofacial pain brought on by CAD and suggest that patients get their hearts checked.

### REFERENCES

1. Orofacial pain of cardiac origin: Review literature and clinical cases [PUBMED]
2. Kreiner M, Falace D, Michelis V, Okeson JP, Isberg A. Quality difference in craniofacial pain of cardiac vs. dental origin. *J Dent Res*. 2010;89:965-9. [PubMed]
3. Cardiac symptoms diagnosed in the dental chair by Carolyn Thomas
4. Kreiner M, Okesson J. Toothache of cardiac origin. *J Orofac Pain*. 1999;13:201-7. [PubMed] [Google Scholar]
5. SáezYugüero MR, Bermejo Fenoll A, Calvo Guirado JL, Álvarez Martínez E. Jaw pain of cardiac origin. *Av Odontostomatol*. 2003;5:219-23. [Google Scholar]
6. de Oliveira Franco AC, de Siqueira JT, Mansur AJ. Bilateral facial pain from cardiac origin. A case report. *Br Dent J*. 2005;198:679-80. [PubMed] [Google Scholar]
7. Incidence of craniofacial pain of cardiac origin: results from a prospective multicentre study SH Danesh-Sani,\* SA Danesh-Sani, R Zia,\* S Faghihi
8. McCarthy PJ, McClanahan S, Hodges J, Bowles WR. Frequency of localization of the painful tooth by patients presenting for an endodontic emergency. *J Endod* 2010;36:801-805.
9. Orofacial pain of cardiac origin: a case report. Durso BC, Israel MS, Janini ME, Cardoso AS