CASE REPORT

Genial tubercle fracture: What do we need to know?
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Abstract
Genial tubercle fractures are rare. They can occur as an isolated fracture or with other fractures of the mandible, particularly symphyseal fractures. The diagnosis can be difficult in an isolated fracture, as standard radiographs for mandibular fractures, orthopantomogram and posteroanterior mandible, will not show the fractured tubercles. A computed tomography scan would be the standard investigation of choice for diagnosis. However, it is not unusual to make a radiological diagnosis of salivary gland calculi or a foreign body in the floor of mouth giving rise to unnecessary surgical intervention. The incidence of isolated genial tubercle fractures is higher in elderly individuals with multiple comorbidities. Hence, it becomes more imperative for oral and maxillofacial surgeons to diagnose this condition to avoid unnecessary surgery, for a condition that can be managed conservatively.

Keywords: Genial tubercle fracture, mandibular fracture, parasymphyseal fracture

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Introduction
Genial tubercles give attachment to geniohyoid and genioglossus and support the tongue. Fracture of the genial tubercles can cause swallowing difficulty and when associated with anterior mandibular fracture can cause respiratory obstruction. Fractures of this structure are rare and are usually diagnosed on the computed tomography (CT) scan as a foreign body or salivary calculi.

Case Report
A 79-year-old lady was transferred from a peripheral hospital following diagnosis of large sublingual hematoma causing painful tongue movement and odynophagia. It was noted from the history that she had knocked her lower partial denture while drinking water from a bottle. This led to bruising in the floor of mouth, which then developed into an hematoma.

Her medical comorbidities included atrial fibrillation, severe chronic obstructive pulmonary disease, valvular heart disease, hypertension, and previous breast carcinoma with current hormone therapy. She was on oral anticoagulation at the time.

A CT scan was obtained which showed a radiodense structure in the floor of the mouth [Figure 1]. This was initially thought to be denture material however it was noted that the denture was intact. The possibility of a sialolith was discussed. Current CT was compared to previous CT scan obtained for another medical pathology. This showed no calculi. It was decided that it is unlikely that calculus of that size would form in <3 months.

The CT scan was discussed in the radiology meeting. The position of the radiodense body in the floor of mouth and lingual cortical irregularity led to the diagnosis of genial tubercle fracture. Management included nutrition, cessation of anticoagulant, and avoiding denture wear for a period of at least 2 weeks.

Following discharge, she had further CT scan 3 months later, which again confirmed unchanged hyperdense structure, isodense to the mandible, and a resolved sublingual hematoma with only minimal residual thickening of the floor of mouth. Clinically, the floor of mouth looked normal and history suggested no further swallowing issues.

Discussion
Fracture of the genial tubercle is a rare occurrence.[¹] A total of 20 cases isolated genial tubercle fractures are described to date.[²]

The genial tubercle fracture is classified into type I: Isolated genial tubercle fracture associated with atrophied edentulous mandible or denture and type II: Associated with a mandibular fracture. Type II is rare and can cause a significant airway issue. The Type I fracture occurs usually in elderly female patient and is often spontaneous. The risk factors are edentulous mandible, mandibular atrophy, and underlying diseases that alter bone metabolism.
The clinical signs and symptoms range from ecchymosis, pain on tongue movement, and edema of floor of mouth to large hematoma, neck bruising, breathing difficulty, and dysphagia/odynophagia. Standard investigations for mandibular fractures, usually an orthopantomogram and posteroanterior mandible, may not be able to show the genial tubercle fracture hence CT or occlusal radiograph should be taken. CT is the choice of investigation, as it will show both soft-tissue damage and genial tubercle fracture. It is also suggested in midline mandibular fractures it is worth considering CT to diagnose type II genial tubercle fractures. Given the rarity, there are no definitive treatment guidelines to treat this isolated fracture and decision would be clinical. Conservative management and avoiding denture wear for 7–15 days were adopted in majority of reported cases.

Differential diagnosis is sialolith and foreign body. Misdiagnosis to either sialolith or foreign body can lead to unnecessary surgical procedure in elderly patient.

**Conclusion**

This case has shed some light on a rare yet clinically significant fracture. The incidence might be much higher than what is recorded as most of the isolated fractures improve without any treatment and may not have had diagnostic imaging to confirm fractures. There is also possibility of making the diagnosis of a more common condition like sialolith or foreign body.

**References**

1. Sasaki R, Okamoto T, Sangu N, Watanabe Y, Ando T. Genial tubercle fracture. J Craniofac Surg 2019;30:161-2.
2. Barbosa DF, Bezerra TM, Silva PB, Pimenta AM, Kurita L, Costa FG. Clinical, imaging, and therapeutic aspects of genial tubercle fractures: A systematic review. J Oral Maxillofac Surg 2019;77:1674.e1-13.
3. Davis GG. III. Fracture of the lower jaw with separation of the genial tubercle. Ann Surg 1894;19:653-7.
4. Ryan JM, Ross D, Obeid G. Genial tubercle fracture: A case report and review of the literature. J Oral Maxillofac Surg 2010;68:2338-41.

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