CASE REPORT

Cutaneous neck lesion of occult odontogenic origin: search for the tooth

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SUMMARY

The differential diagnosis for inflammatory neck swellings is vast. A swelling of dental origin should be considered because, while rare, they mimic more common causes of neck lumps. We report the case involving a recurrent submandibular swelling in a young female patient that was presumed to be an epidermoid cyst by her general medical practitioner. After 6 months of unsuccessful treatment in the community, an odontogenic source was identified and treated successfully following referral to a local Oral and Maxillofacial department.

BACKGROUND

Cutaneous sinus tracts in the head and neck region may be caused by infection in a tooth.^{1 2} The diagnosis is challenging because, whilst rare, they can present as neck lumps mimicking more common pathologies, such as epidermoid cysts, malignant neoplasms, pyogenic granulomas, pilar cysts and furuncles. Unchecked, cutaneous lesions of odontogenic origin can lead to chronic sinus formation and resultant disfiguring facial scarring. It is therefore imperative that clinicians consider an odontogenic origin for neck lesions in the head and neck region as a source of potential infection. Should there be any doubt in the diagnosis, this case highlights the importance of prompt referral to either general dental practitioner or as in this case, the local Oral and Maxillofacial department.

CASE PRESENTATION

A woman aged 21 years with no relevant medical history presented with a lesion on the right side of her neck, below the border of the mandible ([figure 1](#)). It had been present for ~6 months, undergoing intermittent episodes of increasing size and pain, before spontaneously discharging purulent material. A diagnosis of an epidermoid cyst had been made in primary care. Despite numerous courses of oral antibiotics, the lesion persisted and the patient was referred to her local Oral and Maxillofacial department for consideration of surgical excision of the lesion. There had been no suspicion of an odontogenic source until this point as the patient had never reported of dental pain.

On examination, a 10 mm×10 mm tender, slightly erythematous lesion was clearly visible below the body of the right mandible ([figure 2](#)). There was no evidence of discharge from the lesion and no punctum was visible. A degree of perilesional scarring was noted to already have taken place.

Intraorally, the lower right second mandibular molar tooth had a large carious lesion present. The

tooth was not mobile and was not tender on clinical palpation. There was however evidence of a chronic discharging sinus in the buccal mucosal sulcus adjacent to the tooth.

There was no sinus tract palpable adjacent to the neck lesion, and attempts to milk purulent discharge from the lesion were unsuccessful. Therefore, imaging was undertaken to attempt to confirm the diagnosis.

INVESTIGATIONS

The patient initially had a sectional panoramic radiograph carried out ([figure 3](#)). This confirmed the presence of a periapical radiolucency that extended into the furcation of the tooth. In addition, the surrounding bone was sclerotic. These signs were in keeping with chronic infection arising from the lower right second molar. An ultrasound scan of the neck was also undertaken following extraction of the tooth to confirm the presence of a resolving cutaneous sinus tract ([figure 4](#)).

DIFFERENTIAL DIAGNOSIS

The referral diagnosis from the community practitioner was that the lesion represented an epidermoid cyst undergoing recurrent episodes of infection. The differential diagnosis for lesions of this ilk in the head and neck is vast. It includes inflammatory lesions such as furuncles, salivary gland fistula, local mycotic infections and granulomatous disorders (eg, tertiary syphilis and tuberculosis).^{1 2} Neoplastic processes must be considered, such as squamous cell carcinoma, cutaneous metastases and cutaneous lymphoma.^{3–5} Lesions in the neck may be misdiagnosed as thyroglossal cysts, branchial cleft cysts and dermoid cysts. The combination of thorough extraoral and intraoral examinations, alongside confirmatory dental imaging, confirmed the occult diagnosis of a cutaneous sinus tract of odontogenic origin in this case, despite the absence of a history of dental pain.

TREATMENT

The patient underwent uneventful extraction of the lower right second mandibular molar tooth under local anaesthesia.

OUTCOME AND FOLLOW-UP

At 8-week clinical review, the lesion was resolving, with the patient reporting no further episodes of discomfort or discharge from the right neck lesion ([figure 5](#)). She was subsequently discharged.

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Figure 1 Image of the inflammatory lesion on the skin in the submandibular region at the time of referral to the local Oral and Maxillofacial unit.

DISCUSSION

Acute neck swelling of intraoral origin is well documented and can be life-threatening (eg, Ludwig's angina). However, diagnosis of chronic odontogenic neck lesions is challenging as patients may often be unaware of the presence of a dental periapical infection, or may not report episodes of dental pain.¹ Chronic dental infection may often remain asymptomatic until an acute exacerbation, particularly with the development of chronic sinuses which facilitate discharge of purulent material. Patients with chronic infections typically present to secondary or tertiary centres having undergone multiple treatments with antimicrobials, or even after unsuccessful surgical procedures.^{3 4}

The most common areas for odontogenic sinus tracts to erupt include the buccal area, submental region, nasolabial fold and adjacent to the inner canthus.⁵ Our case however demonstrates that they may also present as cutaneous lesions in the neck. Therefore, an odontogenic cause must be considered for any purulent facial or neck lesion.³⁻⁵

Targeted clinical examination is extremely useful in clinching the diagnosis through observation of tooth decay, identification and palpation of sinus tract with the expression of pus at the opening.^{6 7} However, in chronic cases, the tract may be fibrosed, and the presence of scar tissue may make identification of the sinus opening difficult. Furthermore, an unhealthy retained root may be the underlying problem, which may not be readily identifiable on examination. Case reports list a number

Figure 3 Right sectional panoramic radiograph showing the right lower right second molar. There is a well-defined periapical radiolucency (white arrow) that extends into the furcation. The surrounding bone is sclerotic. The features are consistent with chronic infection arising from the lower right second molar.

of imaging modalities which can be used to confirm the diagnosis, and delineate the sinus tract and responsible teeth. Simple radiographs can demonstrate periapical radiolucency adjacent to causative teeth or roots, as in [figure 3](#). If the sinus tract remains patent, careful insertion of a gutta-percha cannula into the tract followed by radiography can aid in identification of the exact tooth responsible for the sinus tract.^{8 9} However, in many cases, the tract may not be fully patent at the time of examination, negating the use of this otherwise novel investigative strategy. Some reports advocate CT to identify odontogenic sinus tracts in cases if clinical examination and radiographs are equivocal.^{7 8} While CT scans can identify the sinus tract and associated decayed teeth, we elected to perform initial dental imaging and a subsequent neck ultrasound scan, which successfully confirmed the diagnosis (periapical radiolucency in [figure 3](#); sinus identification in [figure 4](#)). This strategy allowed for successful diagnosis and treatment of the neck lesion, while also sparing this young patient a significant radiation dose. Had these investigations failed to confirm the diagnosis, then a neck CT scan would have been considered.

Figure 2 Close up of the lesion presumed to be an epidermal cyst undergoing recurrent bouts of acute infection, despite repeated courses of oral antibiotics.

Figure 4 Ultrasound scan showing the right submandibular region with the main landmarks arrowed. (Sinus, small white arrows; mylohyoid muscle, large white arrows; submandibular gland, large black arrows).

Figure 5 The healing lesion, previously shown in [figure 2](#), 6 weeks after extraction of the responsible tooth.

Treatment options for odontogenic sinus tracts are targeted towards treatment of the causative tooth/teeth. While conservative management with systemic antimicrobials has been attempted, any response is usually temporary; antimicrobials are now only considered an adjuvant treatment option, for instance, when patients are immunocompromised.¹⁰ Conversely, there are many reports of definitive, successful endodontic⁹ and surgical^{5 9} management of these lesions. Root canal treatment to the causative tooth is the treatment of choice if the tooth is suitable for endodontic therapy, and if the patient desires an attempt at salvaging the tooth for aesthetic reasons. Surgical extraction of the causative tooth or root definitively treats the source of the chronic inflammation in cases unsuitable for root canal treatment.^{6 10} Both treatments permit spontaneous healing of the sinus tract over the following 2–4 weeks.^{5 9 10} Surgical extraction was the strategy successfully implemented in the presented case, as the tooth was significantly decayed and the patient had no desire for endodontic treatment of the posteriorly positioned causative tooth. Excision or exploration of the sinus tract (eg, fistulectomy) is currently deemed an unnecessary and risky treatment option in the first instance, as once odontogenic origin is confirmed, the majority of tracts appear to heal after the intraoral source of chronic infection has been addressed.^{4 10} However, surgical revision of a residual scar or skin dimpling may occasionally be required.^{8–10}

Chronic odontogenic cutaneous sinus tracts can cause significant morbidity. Mindful history taking, meticulous clinical intraoral examination and targeted imaging can allow a clinician to stratify whether a dental cause may be responsible for patients presenting with facial or neck lesions. Appropriate referral to a general dental practitioner or Oral and Maxillofacial department⁵ will help to avoid missing an

Learning points

- ▶ Neck lumps have a wide differential diagnosis.
- ▶ Dental pain is not a prerequisite in the history to identify the presence of periapical tooth infections which may present as persistent cutaneous neck lesions.
- ▶ Purulent perioral neck lumps, or those with features of chronic ulceration, should undergo thorough intraoral examination, in addition to examination of the lesion itself.
- ▶ Prompt referral to a general dental practitioner or Oral and Maxillofacial department should always be considered if odontogenic infection is considered the primary source of the lesion.

opportunity to diagnose this easily treatable condition early, and thereby avoid undue stress, unwarranted investigations and inappropriate treatments for these patients.

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