

## Case Report

# Localised submental abscess consequent to an infected premolar socket: a case report

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### ABSTRACT

Deep neck infections either cellulitis or abscess are localised initially within the potential spaces and fascial planes of the head and neck. These infections should not be ignored. One should not underestimate the necessity of appropriate and timely treatment of deep neck infections due to the late sequel of serious and potentially life-threatening nature of these infections. An intriguing patient of a limited submental/ suprahyoid pathology secondary to suppuration in the premolar socket was addressed with timely intervention surgically.

**Keywords:** Premolar, Cervical, Cellulitis, Abscess, Submental

### INTRODUCTION

Cervical fascia and the compartmentalisation, tends to limit any pathology in the initial stage. A lowered immunity or the virulence of the infective organism leads to a spread in the subcutaneous planes, the “cellulitis” phase and if unchecked a suppurative or phlegmon phase. The latter manifests with a sudden appearance of softness due to exudation fluid, cellular or necrosis. Fluctuation the clinical sign elicited over the involved region is the strong indication for necessity of surgical intervention. Odontogenic aetiology predominates in the present era in the adults while tonsillar and pharyngeal in the children.

In spite of wide availability of dental care and high level antibiotic therapy, odontogenic infections necessitating hospitalization are a serious issue.<sup>1-3</sup> Virulence of the bacteria, lowered host immunity, and lack of appropriate therapy are consequent to flaring of localized dental infections in the deep fascial spaces of the head and neck.<sup>4,5</sup> Odontogenic infections in the head and neck region may lead to life-threatening complications, like

respiratory obstruction, diffuse inflammatory abscess processes, necrotizing fasciitis, purulent meningitis, cerebrospinal abscesses, mediastinitis, sepsis, and septic shock.<sup>6-9</sup>

A dental socket suppuration occurs initially then the pathogens and their toxins penetrate the open tooth apex and result in inflammatory reaction of the periodontium, bone, and overlying periosteum.<sup>10</sup>

### CASE REPORT

A-70-year-old elderly gentleman was admitted in the cardiology services of our institute, a tertiary health care facility of North India with acute pain in the lower jaw, which was localised to the left lower first pre molar. With tongue spatula tap tenderness over the above tooth.

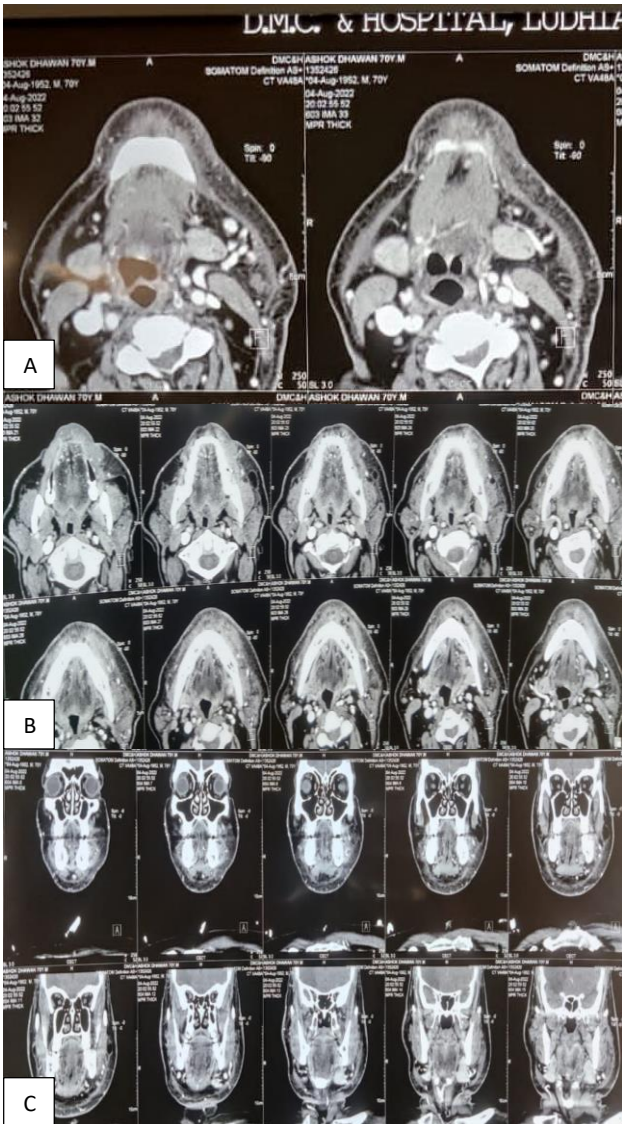
There was induration and tenderness at chin and left submental and submandibular region. Tongue mobility was normal.

Patient was febrile.

The haemogram was TLC 18.3, neutrophils 78%, lymphocytes 50%, monocytes 8%, and eosinophils 2%, basophils 0%.

CT imaging study (axial /coronal) showed cellulitis lower jaw with myositis of suprahyoid muscles (Figure 1 A-C).

Since there was no localised suppuration, only dental extraction was undertaken and he was put on third generation broad-spectrum empiric antibiotic therapy.



**Figure 1 (A-C): CT imaging axial study showed cellulitis lower jaw with myositis of suprahyoid muscles. CT imaging coronal study showed cellulitis lower jaw with myositis of suprahyoid muscles.**

But after 48 hrs there was a spontaneous drainage of purulent discharge from the chin area with fluctuation elicitable in its vicinity (Figure 2). He was taken up for surgical intervention under general anaesthesia. A horizontal skin crease incision was given at the lower end of the brawny indurations, approximately at the level of

the hyoid reaching below the platysma till the fascia covering underlying submandibular gland laterally and the anterior bellies of the diaphragm and the mylohyoid medially (Figure 3). A lateral and medial blunt digital exploration was negative for any suppurate. An exploration superiorly over the body of the mandible till the symphysis menti deep to the lower lip muscles i.e., mentalis, depressor labialis and depressor anguli oris revealed entrapped suppuration, filling and lifting the hollow between the chin and the lower lip. The entire plane was opened up to facilitate drainage.



**Figure 2: Spontaneous drainage of purulent discharge from the chin area with fluctuation elicitable in its vicinity.**



**Figure 3: A horizontal skin crease incision was given at the lower end of the brawny induration.**

The dental socket of the left premolar which earlier was showing stagnant purulent exudates cleared up with healthy hyperaemic developing underneath (Figure 4).

Daily dressings were carried out along with short wave diathermy. The swelling regressed and the haemogram improved within 72 hours.

The haemogram was TLC 9.9, neutrophils 21%, lymphocytes 14.2%, monocytes 4.8%, and eosinophils, 2%, basophils 0.4%.



**Figure 4: Superior, inferior, lateral and medial blunt digital exploration.**



**Figure 5: Healing dental socket of the left premolar.**

## DISCUSSION

Odontogenic infections are the predominant infections of the head and neck region.<sup>2,6,8</sup>

It is difficult to diagnose early as an infection of the deep facial space may not manifest as a clear deterioration of the subject's general condition, thereby a late initiation of therapy, and consequent increase risk of untoward sequel complications.<sup>7,11,12</sup>

Prabhu et al 17-year 1015 subject analysis reported 78.43% of all head and neck infections to have had an odontogenic etiology.<sup>2</sup>

Adoviča et al documented 139 of 263 (70.6%) infections in the head and neck region were odontogenic.<sup>3</sup>

Bakir et al on the contrary recorded the lowest rates of 48.6%, were odontogenic and other common aetiologies

were peritonsillar infections (19.7%) and tuberculosis (6.9%).<sup>8</sup>

The head and neck have a unique anatomy where inflammatory conditions manifest with distinct characteristics.<sup>6,13-15</sup>

The complex relationships of structures of the face and neck are notable. The presence of teeth in the oral cavity which are in the vicinity of the paranasal sinuses. Moreover, area is very well vascularised and even lodges the organs of special sense responsible for sight, hearing, smell, and taste.<sup>16-19</sup> Inflammation is the body's defensive reaction to a damaging stimulus, which may be physical or biological (pathogenic microorganisms).

In pyogenic infections, the host's immune response breaks down and the infection develops. This mechanism is the main cause of inflammation in the head and neck region.<sup>9,18</sup> The pathogens usually arise from necrotic tooth pulp or tooth roots, pathologies of the apex and periodontium, infected odontogenic cysts, and pathologies associated with completely or partially retained teeth.<sup>1,6,19</sup> The necrotic pulp of the molars and rarely at the premolars is usually the site from where infections begin or single-root teeth in the anterior segment of the maxilla and mandible.<sup>3,19,17,19</sup> The etiological factor in 20-30% of odontogenic infections is periodontitis.<sup>15</sup>

Empirical therapy, usually using a multidrug regimen, is initiated until microbiological examination results are available (usually 72 hours). The bacteriological examination is performed to identify the species of microorganism, its susceptibility to specific groups of antibiotics and chemotherapeutics.

Majority of patients hospitalized secondary to an odontogenic infection necessitate surgical intervention by incision and drainage. General anaesthesia with endotracheal intubation or local anaesthesia with premedication was used. Respiratory obstruction and difficulties in endotracheal intubation pose great challenges in head and neck odontogenic infections.

The site of the infection determines site of incision site and drainage of abscess. Primarily guided by the causal teeth group and muscle attachments in a given anatomical region.<sup>2,8,9,20,16</sup>

The most common locations of odontogenic infections according to Shah et al were the submandibular (SMD) (30%), buccal (B) (20%), submental (SM) (15%), and sublingual spaces (SL) (10%). The least frequent were the PPH (8%), CF (5%), M (4%), and PM spaces (2%).<sup>21</sup> Mathew et al investigated 137 patients with an odontogenic infection in the head and neck region and reported that the most common location was the submandibular space (69.3%).<sup>22</sup> Odontogenic infections

may occupy several sites in the head and neck region, and the SMD space is usually the first site occupied.<sup>21-23</sup>

In our patient the location of the abscess was in the submental region and originated from the left premolar socket. This is the site which is not that common for origin of odontogenic abscesses. In spite of empiric antibiotic therapy with cefuroxime and metronidazole and dental extraction the initial cellulitis didn't subside and we had to intervene surgically and drain the abscess.

## CONCLUSION

Premolar root infection with manifestation in the submental region is not an uncommon presentation. Surgical intervention namely dental extraction and external or internal evacuation of the suppurative collection from the involved fascial compartments is the only resort.

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