Congenital granular cell tumor (CGCT), also known as congenital epulis or Neumann’s tumor, is a rare, benign condition of newborns. It is often noted in the upper dental arch as a smooth-surfaced mucosal tinted growth. The lesion may be small and undetected (if the mouth is closed) or may be large enough to interfere with respiration or breast-feeding.

The lesion is reported to have a female predominance (male/female ratio is 1:10), accounting for 10.8% of all the oral lesions as per a single-center report in India, while other centers had reported incidence rates as low as 0.0006%. This gives an impression of a lack of records on the incidence of this tumor. Known site predilection for the maxillary alveolar ridge exists, but multiple CGCTs in the mandibular arch have also been reported. The origin of growth is controversial and supported by different theories; however, it is reported to start prenatally and arrests at birth. The clinical features may prompt diagnosis, but often they must be studied before planning excision, which is the gold standard treatment.

The previously documented cases have not stressed the use of pre-surgical ultrasound or point-of-care ultrasonography examination (POCUS) for newborns with CGCT. We attempted to describe clinical and histological aspects along with notes on possible similar lesions which can be misleading during diagnostic workup. Also, the role of primary care physicians (PCPs)–dental specialists is briefly pointed out.

**Case Report**

A mother of a 2-day-old baby girl was referred by a primary care physician, with a complaint of swelling in the oral cavity of her child noticed since her birth. The swelling was reported to...
be associated with difficulty in closing the mouth. The swelling
was not reported to be associated with any changes in size but
was reported to cause difficulty in routine breast-feeding and
showed noticeable redness when the infant was crying. The
maternal and fetal histories were noncontributory (i.e., normal
course of gestation and vaginal delivery in the 37th week). No
relevant family history was reported. No abnormalities had been
diagnosed in the last gestational ultrasound. The oral examination
revealed a 1.5 × 1.5 cm spherical pinkish-red swelling in the
gingiva of the maxillary dental arch region, located slightly
toward the left side of the midline. The swelling did not allow
complete closure of the mouth (examined when the newborn
was asleep) [Figure 1a]. It extended between the dental arches,
partially blocking the oral cavity and movements of the tongue.
It had a smooth surface, no visible vasculature, was non-pulsatile,
pedunculated and, showed some surface erythema at the point
of attachment with the gingiva. On palpation, it was soft,
freely mobile in all directions, non-compressible, and was not
associated with any secondary changes [Figure 1b].

A provisional diagnosis of “Congenital Epulis” and differential diagnoses
diagnosis

of granular cell tumor, melanotic neuroectodermal tumor of
infancy (MNTI) and atypical oral granuloma were made by
the diagnostic team. The swelling was studied ideally under
ultrasonography (USG) [Mindray DC 8, Medisense Technologies,
India] with a high-frequency linear probe (7–14 MHz). This was
planned to evaluate the morphology, vasculature, and associated
foci of infections as a protocol of pre-surgical assessments.
The POCUS examination showed a well-defined hypoechoic
oval-shaped cystic lesion arising from the left upper gingiva.
The lesion was measuring about 1.17 cm × 1.33 cm, extending
from a point 2 cm below the nasal aperture superiorly to a point
about 1.5 cm above the submental region. There was no internal
vascularity, signs of infection, abscess formation, or associated
enlarged lymph nodes. The infant was not cooperative for the
initial POCUS examination, and movements did contribute
to some distortion. A color Doppler examination was not
successful owing to the same reasons. The imaging features,
however, as per the radiologist, did suggest the diagnosis of an
“Epulis” [Figure 2]. The swelling was planned for an excisional
biopsy. The parents had given consent for the procedure, and
neither the weight of the infant nor the hemoglobin percentage
did contradict the procedure.

The swelling was locally infiltrated 0.5 ml with local anesthetic
(2% lidocaine with 1:80,000 epinephrine) around the peduncle
over the gingiva using a 27 gauge needle and excised using
No. 15 Bard-Parker blade. The hemostasis was achieved by
gentle pressure over the gingiva at the site of excision using
sterile cotton. The excised specimen [Figure 3] was sent for
histopathological study. The histology (10 × H&E-stained)
showed a sub-epithelial well-circumscribed growth composed
of large polygonal cells having abundant granular eosinophilic
cytoplasm and central round nuclei. The overlying stratified
epithelium showed some atrophy with no pseudoepitheliomatous
hyperplasia [Figure 4a]. The 40 × section showed no evidence of
neuroblasts, melanin-filled cells, or signs of dysplasia/malignancy
[Figure 4b]. The diagnosis of “congenital granular cell
epulis (CGCE)” was made considering these features as the
final diagnosis. The patient was followed up the consequent
day and showed healing with no signs of infection [Figure 5].
Breast-feeding was resumed after 24 h of the procedure, and the
infant was able to achieve normal mouth closure. The patient
is on follow-up on a regular basis and showed no recurrence or
complications to date.
Discussion

Congenital granular cell tumor (CGCT) is a rare benign tumor occurring in the oral cavity, causing an obstruction, interfering with breast-feeding, or posing an immediate airway concern.\(^1\) The first two of these symptoms were recorded in the current case. The CGCT occurred in the anterior region of the upper dental arch which is in line with most reported cases.\(^1\) The lesion was solitary in the current case, while multiple lesions in both dental arches are reported.\(^4,6\) The exact origins of CGCT are not clear. They may have descended from ectodermal (nerve cells), ecto-mesenchymal (odontogenic epithelium) or pure mesenchymal (smooth muscle cells, fibroblasts), or primitive cell groups (undifferentiated mesenchymal cells).\(^9\)

The CGCT in the current case had a typical benign clinical picture with no infective cause, which was previously described.\(^1,3,4\) However, the differential diagnosis of oral growth is a wide subject ranging from congenital malformations (embryonic hamartomas, hemangiomata, encephalocele, teratomas, and dermoid cysts) to reactive/benign lesions (MNTI, fibromas, granuloma, and schwannoma). Also, malignant tumors (rhabdomyosarcoma, chondro-/osteosarcoma) may also be considered.\(^4\) We have narrowed down the diagnosis of CGCT based on the sex, site specificity, and presence at birth, as reported by a previous standard report.\(^4\) However, given the array of possibilities, we felt a need to study the tumor before surgical excision. Thus, we considered doing a point-of-care ultrasonography examination (POCUS).

The POCUS was adopted in the current case for pre-surgery checks, internal vascularity, and to check for abscess as performed before for dental emergencies.\(^7\) The royal society had recommended directives to train oral and maxillofacial surgeons for adopting the POCUS.\(^8\) In spite of the role of ultrasonography, the CGCT was never studied under POCUS by surgeons for adopting the POCUS.\(^2,11\) The collaboration is more essential in rural settings, where primary care physicians (PCPs) become a point of contact for oral problems, rather than a dentist.\(^2\) The existing research clearly shows knowledge gaps among PCPs regarding oral health.\(^13\) Also, PCPs may benefit themselves by identifying

Dental surgeons were described to have a role in primary care in addressing, reporting, or monitoring some basic medical disorders.\(^11\) However, a team of specialized dentists, along with medical doctors, may address a simple surgical emergency as CGCT. There is evidence that favors the collaborative work of dentists and the medical fraternity for addressing basic care and emergency issues.\(^2,11\) The collaboration is more essential in rural settings, where primary care physicians (PCPs) become a point of contact for oral problems, rather than a dentist.\(^2\) The existing research clearly shows knowledge gaps among PCPs regarding oral health.\(^13\) Also, PCPs may benefit themselves by identifying
a simple/treatable dental case by collaborated diagnosis. The dentist may communicate with a PCP on the diagnosis of oral swellings and, surgical complications and get advice on the need for advanced surgical care (such as a neurologist, pediatric surgery). The PCPs—dental specialists associations may have a role in the future for addressing a treatable dental surgical case in infants and children.

**Conclusion**

The congenital granular cell tumor (CGCT) in the oral cavity of newborns may be studied by POCUS if not identified by perinatal diagnosis. This POCUS provides a pre-surgical picture before planning a simple oral excision. A postsurgical histological study is needed to provide a final diagnosis and rule out aggressive tumors. The current report also highlights the role of specialist dental surgeons and clinical pathologists collaborating to form a team of primary care physicians in rural settings.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient's parents/guardian had given his/her consent for his/her images and other clinical information to be reported in the journal. The patient understands that his/her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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