

Dental health of cleft patients attending the 18-month-old clinic at a specialised centre

› Abstract

Orofacial clefts are the most common craniofacial anomaly and children with a cleft are at increased risk of dental caries and anomalies, the most common being hypodontia. This evaluation aimed to establish whether implemented changes after the first cycle led to improved oral health prevention in children attending the 18-month-year-old cleft dental appointment. A total of 44 records were analysed retrospectively over a 9-month period for the second cycle. The initial findings were presented locally and nationally to cleft teams, and an article discussing the dental health of 18-month-old cleft patients was published in the *British Dental Journal*. Despite the Covid-19 pandemic limiting dental care access, registration with a local dentist increased by 8% in the second cycle. There was a 24% increase in the number of patients having twice-daily toothbrushing performed and an 11% increase in the number of cleft patients who have stopped bottle-feeding by 18 months. The implemented changes following the initial cycle looking at dental health had a positive impact on the percentage of patients who brush twice daily, stopped bottle-feeding and registered with a local dentist.

Key words

› Orofacial clefts › Caries › Prevention › Dental assessments

Orofacial clefts are the most common craniofacial anomaly, with the incidence estimated to be between 1:600 and 1:750 live births in the UK (Tollefson and Shaye, 2018). The clinical manifestations of orofacial clefts are diverse,

ranging from isolated clefts limited to the lip to more complex bilateral clefts of the lip, alveolus and palate. The aetiology of cleft lip and/or cleft palate (CLP) is thought to be multifactorial, with contribution of both genetic and environmental factors (Cobourne, 2004; Xu et al, 2018).

Approximately 30% of CLP cases are associated with a syndrome, and patients often present with a range of associated anomalies, not limited to the orofacial region (Nicholls, 2016). There are currently 11 regional cleft centres in the UK with paediatric dentists playing a vital role in the complex multidisciplinary care and management required for these patients (NHS England, 2013).

CRANE database

The Cleft Registry and Audit Network (CRANE) database, set up by the Department of Health in 2000, forms part of the national clinical audit run by the Royal College of Surgeons (RCS) Clinical Effectiveness Unit. The database collates information from multiple health professionals who are part of the multidisciplinary team that care for CLP children in England, Wales and Northern Ireland.

As part of the national audit, dental indices such as decayed, missing and filled teeth (dmft/DMFT) scores and developmental enamel defect (DDE) scores are recorded in 5- and 10 year-old children (Cleft Registry and Audit Network, 2022). These scores are collected during a dental examination with a paediatric dentist and records the dental health including any anomalies (effects on tooth shape, size or structure). This allows the collection of regional audit information which facilitates national reporting of clinical management of patients with cleft and may also link to other relevant national databases.

Dental implications of CLP

Patients with CLP are known to be at higher risk of developing dental caries. A service evaluation looking at the dental health of 5-year-old patients with CLP attending a specialist cleft

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centre found that, of the 96 patients included, over 40% had a dmft score of >0, with 22% of patients being noted as having active dental caries (Amin, 2021). As such, it is important these patients are reviewed regularly to reinforce oral health prevention strategies and provide treatment in a timely manner. These findings are consistent with a systematic review by Worth et al (2017). Of the 22 studies assessing dmft/DMFT in orofacial cleft patients, the overall pooled dmft in 5 year olds was 0.63 with the pooled DMFT in 10 year olds calculated as 0.28 (Worth et al, 2017). These findings reinforce the current view that patients with CLP are more likely to have a higher dmft/DMFT experience compared to individuals without cleft (Worth et al, 2017).

Several dental anomalies have also been associated with CLP. Nicholls (2016) assessed 162 children in Western Australia diagnosed with CLP and found that 94% of patients had at least one dental anomaly, with 34% having two or more dental anomalies (Nicholls, 2016).

The most common dental anomaly in CLP patients is hypodontia in the line of the cleft. Shapira et al (2010) found that the prevalence of missing teeth in the permanent dentition for CLP patients was 77%, with upper lateral incisors on the cleft side being the most common missing tooth. Other common dental anomalies include supernumerary teeth in the cleft region, developmental defects of enamel, microdont teeth, double teeth, ectopic/impacted teeth and morphological anomalies including dens invaginatus (Sanghvi et al, 2022).

Aim and objectives

The aim of the second cycle of this service evaluation was to establish if the changes implemented following the first cycle led to improved oral health prevention in children who attended the hospital for a dental consultation at age 18 months. This included assessment of general dental practitioner (GDP) registration, bottle-feeding cessation and toothbrushing habits.

Materials and methods

As part of ongoing dental care at the Evelina London Cleft Service situated at St Thomas' Hospital, all paediatric patients are invited for their first dental review by the paediatric dental consultants at age 18 months. Retrospective data collection from the 18-month dental clinic was carried out over two cycles. Examination and data collection was conducted by the same two paediatric dental consultants in both cycles. Within the first cycle, data was collected

Table 1. Summary of results in dental prevention compliance in both cycles

Preventive advice	Cycle 1 n (%) n=62	Cycle 2 n (%) n=44
Registered with GDP	26 (42)	22 (50)
Stopped bottle-feeding	31 (50)	27 (61)
Brushing at least twice a day	41 (67)	40 (91)

between September 2016 and September 2018 and included a total of 62 dental records. Data extracted included regular dental care provider details, last dental visit, oral hygiene practice, and whether the child was bottle-fed at the time of data collection (Sanghvi et al, 2019).

After implementation and approval through the trust clinical governance team of the change, a second cycle was conducted between March 2020 and December 2020 (due to the Covid-19 pandemic limiting face-to-face appointments in January 2021) with a total of 44 dental records reviewed retrospectively as per the first cycle. All data collected for both cycles was anonymised and evaluated using Microsoft Excel software.

Results

Cycle 1

On analysis of 62 records, only 58% of patients with CLP were registered with a local dentist for regular dental reviews; 50% of 18-month-old children seen in the service were still bottle-fed, of whom 71% were not registered with a local dentist. With regards to oral health habits, 33% of patients did not perform toothbrushing at least twice a day of which 80% were not registered with a dentist.

Implemented changes

Several changes were implemented to improve dental advice provided and highlight the importance of local dental reviews at regular intervals between tertiary care visits in the cleft service. The findings of cycle 1 were initially presented locally at Evelina London Cleft Service and then presented at the Craniofacial Society of Great Britain and Ireland annual scientific meeting in May 2018. Recommendations for improvement in parental awareness of dental prevention advice were shared with other regional cleft units. Cycle 1 was also published in the *British Dental Journal* in August 2019 as a

way to disseminate the findings of the service evaluation with primary dental care practitioners and highlight the importance of dental reviews as part of the wider multidisciplinary team network (Sanghvi et al, 2019).

Additionally, two patient information leaflets were published in June 2020. These leaflets targeted dental prevention for 0–5 year olds and were sent to all cleft patients in weaning packs at roughly 6 months. These weaning packs included the dental prevention leaflet, a baby toothbrush, fluoride toothpaste and a free-flowing cup. The leaflets were also provided at the time of the 18-month dental appointment. The leaflets are based on the Delivering Better Oral Health guidance, widely accepted and implemented by all dental practitioners (Public Health England, 2021).

Cycle 2

Forty-four patient records were included in the second cycle. Thirty-two of these patients received the oral health prevention leaflets to reinforce verbal dental prevention advice; 50% of the 18-month-old patients were not registered with a local dentist. More than a third of the of children (39%; $n=44$) with CLP were still bottle-fed. A total of 35% of the patients who were still being bottle-fed did not have a local GDP. It was also noted that toothbrushing was delivered at least twice daily in 91% of CLP patients. *Table 1* provides a summary of the improvement of results between both cycles.

Discussion

Data from the service evaluation revealed a significant improvement in oral health habits with an increase of 24% of patients brushing twice daily between the two cycles. Of the 9% where brushing occurred less than twice a day, 75% did not have a regular GDP. While this result falls short of the gold standard that 100% of patients should receive twice daily toothbrushing, the targeted dental prevention leaflets were only introduced midway through the second cycle, which may have attributed to the results.

It is also important to explore the reasons behind parents not performing bi-daily toothbrushing. Parents may experience anxiety surrounding toothbrushing in the area of a cleft lip repair; therefore, supporting parents and providing assistance and demonstration of toothbrushing techniques can increase confidence and in turn improve oral health patterns (British Dental Journal, 2007). Clinicians should focus on providing tailored oral hygiene instruction

focusing on soft tissue retraction and ensuring plaque stagnation areas are mechanically cleaned. Thought also needs to be given to utilising and embedding mobile phone applications into oral hygiene advice as a method to engage children into the toothbrushing process.

Continuation of bottle-feeding was noted in 39% of patients in cycle 2, of which 35% did not have a local dentist. The Delivering Better Oral Health guidance recommends encouraging the use of free-flowing cup from the age of 6 months with feeding from a bottle being discouraged from 1 year old. CLP patients may have feeding difficulties, which may lead to hesitation in cessation of bottle-feeding. The results showed that compared to cycle 1, bottle-feeding cessation had improved by 11%. Further education on the importance of limiting the quantity and frequency of sugar-containing foods in the diet is important for parents to be aware of from an early age (Rivkin et al, 2000).

Finally, limited improvement was noted in registering with a GDP at the 18-month review with only 50% of CLP patients having a local dentist. The British Society of Paediatric Dentistry (BSPD) advocates all children to be seen in a primary care setting by the age of 1 (BSPD, 2022). Despite multiple hospital appointments and medical intervention from an early age, parents may not have been aware of the importance of dental visits from the age of 12 months or found it difficult to prioritise GDP visits on top of other healthcare visits.

It is important that CLP patients are prioritised by dentists owing to their complex dental and medical needs. In addition, these children often have to deal with social and psychological issues (Hodgkinson et al, 2005). Dental pain for any child can be detrimental leading to nutrition interference and disturbed sleep (Fayle et al, 2001). Early tooth loss in this cohort of paediatric patients may negatively impact future dental experiences. This, in turn, could complicate future management of CLP patients who will likely need future orthodontic treatment and management of dental anomalies throughout their adolescent years (Cheng et al, 2007).

GDP access can often be difficult for a multitude of reasons, including an increase in anomalies in the line of the cleft and hesitation surrounding treatment provision in CLP patients who may have associated syndromes or complicated medical backgrounds. Results from a service evaluation by Bhatia and Collard (2012) found that, of 368 participants who had a local dentist, 15% of parents reported their dentist was

not able to provide treatment due to their child having a CLP diagnosis (Bhatia and Collard, 2012). The authors reported that 22% of patients found it difficult and 7% found it impossible to access an NHS dentist locally. Of these patients, 30% had significant medical problems making continued and regular dental care even more essential. While dental access can be difficult, the community dental services are available in some regions to assist patients with special needs and co-morbidities access regular dental care.

An 8% increase was noted in GDP registration between the two cycles. This increase should be seen as a positive result given data collection of cycle 2 of the service evaluation was undertaken during the coronavirus pandemic, when access to dental registration was limited.

It is widely known that the pandemic increased waiting lists in all healthcare settings, including in dental practices. While extra funding allocations for dentistry is most welcome, there is inevitably clear concern surrounding under-use of this resource as dental practices struggle to cope with the backlogs and existing targets (British Dental Journal, 2022). With reduced availability in the number of dental practices accepting patients in the NHS, parents and guardians may find gaining local access to routine dental appointments more difficult. Although private dental care is available, the availability of dentists with a special interest in paediatric patients remains low. Additionally, with a number of cleft patients being treated by a multitude of NHS health professionals, private dentistry uptake for this cohort is weak. Further thought needs to be given regarding improving access to this high-carries risk cohort.

Alongside regular local dentist contact, a multidisciplinary team is required for CLP patient care. In 1998, when investigating commissioning for cleft specialist services in the UK, the Clinical Standard Advisory Group (CSAG) recommended centre specific multidisciplinary care at specific cleft centres. The report outlined the need for dental service provision throughout childhood and adolescence (Sandy et al, 1998).

While paediatric dentistry consultants see patients as part of the CRANE audit with data collection at aged 5 and 10 years, CLP patients are at high caries risk and should be seen between every 3 and 6 months depending on prevention strategies implemented at home. Dental care should ideally be provided by specialists and consultants in paediatric dentistry alongside GDPs who can facilitate regular dental examinations, reinforce dental prevention

Key points

- ◆ Patients with orofacial clefts are at increased risk of dental caries and dental anomalies
- ◆ Establishing good oral health habits is essential for all orofacial cleft patients where further co-morbidities may impact the delivery of invasive dental treatment if needed
- ◆ All patients presenting with orofacial clefts should be encouraged to brush twice daily and parents should be advised to discourage bottle-feeding from one-year-old in keeping with the Delivering Better Oral Health guideline (Public Health England, 2021)
- ◆ General dental practitioners remain a vital component of the wider multidisciplinary team in ensuring cleft patients have access to routine dental care and oral prevention strategies

strategies and provide routine dental treatment. NHS England advises that all children born with CLP should receive dental preventive advice by the age of 6 months. Where possible, they advise that dental treatment should be provided locally with support from a lead specialist in paediatric dentistry who is available to provide advice (NHS England, 2018). Consistent communication between the primary care dentist and hospital paediatric dentists is essential in facilitating necessary treatments as well as ensuring patients dental development and eruption patterns are monitored in the mixed dentition stage where anomalies can be diagnosed early.

It is important to acknowledge an increase in waiting times within the hospital setting. A combination of workforce shortages, backlog of care and additional pressures on services means the waiting times are at a record high for all dental and medical specialities (British Medical Association, 2022). The Evelina London Cleft Service received referrals from 27 maternity units in the South Thames region, with 120–140 new babies diagnosed with CLP referred per year. Using a shared-care approach will inevitably reduce pressures on tertiary care centres, allowing increased access for more patients.

Conclusion

There is a clear need for targeted preventive dental advice in patients with CLP owing to the higher caries risk in this subset of patients. The results from the second cycle of this service evaluation revealed an improvement in targeted dental preventive advice specifically regarding oral hygiene practices. Further strategies are required to deliver the share care dental model for CLP patients.

Good communication between GDPs and tertiary

care dentists continues to be essential in providing consistent and uniform dental health strategies. Despite the coronavirus pandemic creating increased pressure on healthcare access, GPs remain a vital component of the multidisciplinary network for these patients where routine dental examinations, treatment and oral prevention advice can be delivered.

JHV

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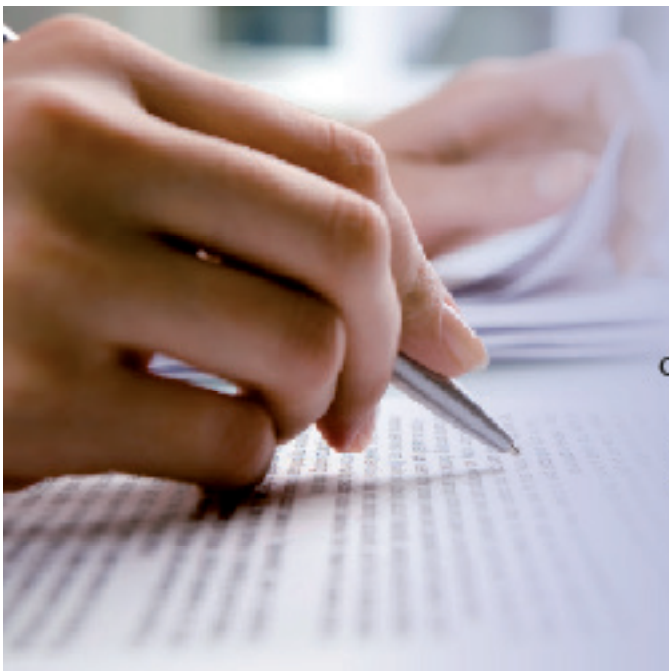
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