

Relationships of dental arch relationships and speech outcomes

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Scientific outline

Background

Several national studies have collected data at various time points on outcomes using relatively standardised measures, including dental arch relationship, naso-labial aesthetics, speech, alveolar bone graft and dental outcomes. Whilst such studies have been important in guiding services in individual countries, they also provide an opportunity for collaborative work carrying out individual pooled data (IPD) analyses to maximise sample sizes and provide evidence that would be generalizable to most other Westernised countries.

Initial discussions with Jonathan Sandy and questions raised during his time in New Zealand as visiting professor in February 2020, led to further thoughts about analyses looking at the association of outcomes. Some preliminary work on the NZ data suggested that whilst results appeared promising that the lack of overlap in some of the outcome measure (because they are measured at different time points) meant a potential lack of power to be conclusive. As a result, it was proposed that collaboration be further developed in relation to collected data.

Data

It is proposed that the data for this project will include dental arch relationships and a range of speech outcomes.

Dental arch relationships and speech

Primary repair of the cleft is generally carried out in the first year of life (though the timing of protocols and which components of the cleft are repaired together vary). The primary reason for early closure, particularly of the palate is for the development of speech. It is therefore reasonable to propose that the quality of the repair, as measured by the dental arch relationship, would be related to the speech outcomes.

There are a range of primary outcomes in relation to speech. From a community perspective the broad measures of intelligibility and acceptability are important. From a more detailed speech perspective measures of velopharyngeal insufficiency and hypernasality would be primary measures considered to be most likely to be affected as a results of a poor surgical outcome.

Data from NZ which shows similar results in terms of poor outcomes to those of CSAG, data from these two studies will be combined with data from CCUK to assess these relationships. This will also enable an assessment of any effect on an association because of the centralisation of services and as a result improved outcomes in general in the UK.

This project has the potential to link two important outcomes for children born with cleft. We already know that outcomes have an influence on how well children do at school. The more bad outcomes they have, the worse they appear to do. Speech development is an early indicator of educational attainment and we wish to understand the relationship between speech and another important outcome, dento-alveolar relationships. We hypothesise that speech outcomes will be worse in those with poorer dental arch relationships.