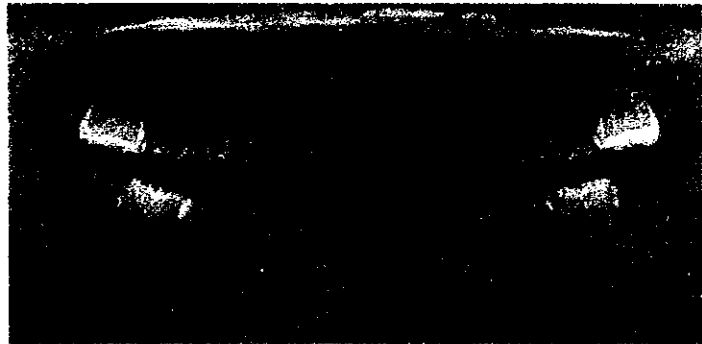


1. The timing of orthodontic interventions has been a contentious topic for many years. Early orthodontic treatment (EOT) or interceptive orthodontics constitutes any measure performed prior to the late mixed dentition phase to correct a developing malocclusion or to aim for simplifying later orthodontic care. However, EOT has also been shown to cause additional burdens and provide no superior effectiveness. Based upon current consensus, for each of the following malocclusions, please indicate whether the condition fits the indication of EOT and provide rationales. For those EOT is indicated for, please also specify their treatment modalities (30%)
- (a) Skeletal Class II malocclusion with large overjet and frequent traumatic dental injuries
 - (b) Skeletal Class III malocclusion with a family history of mandibular prognathism
 - (c) Anterior cross-bite with functional shift of mandible
 - (d) Large diastema between maxillary central incisors
 - (e) Bilateral posterior cross-bite with a deep palatal vault and habitual mouth breathing
 - (f) Unilateral posterior cross-bite with functional shift of mandible and chin deviation

2. An 11-year-old teenage female was a case of rhabdomyosarcoma who had undergone a course of 1-year-long chemotherapy when she was little. Clinically, she has a full set of permanent dentition except for third molars. While most teeth appear normal, all second molars are apparently microdontic. The figure shows the panoramic radiograph she took at the examination appointment.

- (a) Please describe all the dental abnormalities you observe from the panoramic radiograph and provide plausible explanations for these anomalies. Please also specify, most likely, at which age he underwent chemotherapy. (5%)
- (b) Please describe in detail all essential considerations, precautions, and managements of dental treatments and oral hygiene maintenance for a pediatric patient before, during, after chemotherapy. (25%)



3. Recently, it was reported that 52 percent of American children, ages 6 to 17, are getting fewer than 9 hours of sleep per night recommended by pediatricians due to early school start times, screen related distractions, and other external pressures. The lack of sufficient sleep may disturb children's development and cause behavioral problems. Our department at NTUH has long been wondering whether there are potential effects of sleep deprivation on children's behaviors during dental appointments as well as their caries experiences (status). We expect that the sleep-deprived kids may have a higher caries rate, more caries-contributing risk factors, and negative behaviors in office. Please design a research project to investigate these potential impacts of sleep deprivation on children's oral health. Please specify the followings: (40%)
- (a) the hypothesis of the research
 - (b) specific aims of the research
 - (c) the approaches of the research (Please describe in detail the experimental design, subjects, processes, evaluation methods of children's behavior, and statistics.)
 - (d) the expected results and potential pitfalls of the research