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COMPARATIVE EVALUATION OF DIAGNOSTIC METHODS FOR DISEASES OF HARD TISSUES OF TEETH IN CHILDREN

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Annotation: Children are different from adults in term of physical, emotional and psychological maturation and childhood is the most significant period of growth and development. Dentists currently use visual, tactile and radiographic information to detect changes in the dental hard tissues. The patient assessment forms the essential basis of treatment. Good patient's history and careful examination are important to establish the correct diagnosis and provide appropriate treatment. This is divided into an extra-oral and intra-oral examination.The extra-oral examination is carried out first as this can fundamentally influence the treatment options. The skeletal pattern, soft tissue form and the presence or absence of habits must all be taken into account. The physical examination begins with an extraoral examination to identify possible lesions (such as rash, erythema, and pigmentation), swelling or facial asymmetry. The head and neck should be palpated to identify any tenderness, masses and lymphadenopathy. All muscles of mastication and temporomandibular joint should be palpated for tenderness; patients should be asked to open and close the mouth multiple times to evaluate any limited opening, deviations or asymmetries.

Key words: intra oral , dentis, adults, periodontal probe, lips, tongue.

The clinical intraoral examination is performed systematically in a clean, dry, well-illuminated mouth using the mouth mirror, explorer and periodontal probe.Specialized diagnostic aids: These are used for the diagnosis of specific dental problems like detection of dental caries, pulpal diseases and orthodontic problems. Advanced diagnostic technologies are increasingly playing a more vital role in this process, both in data collection and assessment capabilities, and the utilization of the information obtained. Diagnostic modalities available to clinicians today expand greatly on the foundation of a comprehensive visual assessment, which has been and will be the cornerstone of the diagnostic process.The armamentarium for the intraoral examination includes mirror, explorer, gauze, and periodontal probe. Additional materials are disclosing solution, dental floss, toothbrush, and scaler. The intraoral examination begins with an excursion around the oral cavity, noting its general architecture and function. The fingers should be used to identity soft tissue abnormalities of the cheeks, lips, tongue, palate, and floor of the mouth before instruments are placed in the mouth. Children in this age group often permit oral inspection with "just fingers," and the dentist can use this technique as a springboard to obtain cooperation for the use of mirror and explorer. The mirror should be the first instrument introduced. This is usually readily accepted by the child owing to its familiarity and nonthreatening shape.5- 7 Young children are sometimes uncooperative. If they are, a decision must be made early about how to manage the behavior. Parental assistance can be used to obtain an examination of the oral cavity. Use of physical restraint by the dentist without parental consent is risky and is not advisable. Parents are more likely to accept restraint in conjunction with an emergency examination than with a routine examination. An important portion of the intraoral examination is directed to the teeth. Each of the 20 primary teeth should be explored and scrutinized visually. Selective periodontal probing may be performed, but the yield is likely to be minimal because of

the infrequency of irreversible attachment loss in the primary dentition.8 Occlusal Evaluation Another portion of the intraoral examination is the systematic analysis of the occlusion in three spatial planes. In addition, each dental arch is analyzed individually to describe arch form and symmetry, spacing and crowding, and the presence or absence of teeth. Arch analysis is best performed on diagnostic study models; however, diagnostic casts are usually not indicated in this age group unless there is some need to further study the intraoral findings or if tooth movement is contemplated. Alignment Dental arches can be categorized as either U shaped or V shaped. The mandibular arch is normally U shaped, whereas the maxillary arch can be either shape. The dental arch should be symmetrical in the anteroposterior and transverse dimensions. Individual teeth are compared with their antimeres to determine if there is anteroposterior or transverse symmetry.Methods of Clinical Diagnosis Examination of Dental Caries Both the overall decline in the prevalence of caries and the greater reduction in the prevalence of smooth-surface caries are well documented. Epidemiological surveys since the early 1970s have shown age-specific reductions in the prevalence of caries, particularly in children of all ages, and evidence of a cohort effect into adulthood. A 50% reduction was documented for 17-year-olds over the period 1971–1985. The reported decline in proximal involvement of decayed and filled posterior teeth has revealed a shift away from smooth-surface caries and has implications for the causal role of fluorides. The greater reduction in smooth-surface caries has resulted in an increase in the proportion of primary caries in susceptible pits and fissures. Decay on occlusal surfaces currently accounts for the majority of new lesions in the dentition of the younger, post-fluoride generation.7 Clinical Method (Visual-Tactile Method) Caries occur when the tooth surface is damaged due to prolonged exposure to acids. These acids can arise from bacteria, or from our diet. The destruction of the tooth structure (dentine, enamel, and finally the pulp) leads to irreversible pathological changes in the tooth, which can be detected by visual inspection or by the sense of touch. Ideally, dentists should look out for good visual indicators that involve features which are purely associated with caries itself. This is to prevent misdiagnosis and confusion over the patient's oral health condition.8 The initial stage of caries is the dissolution of surface enamel crystals, leading to a change in its optic behaviour. Healthy enamel should be slightly translucent, but partially dissolving enamel is opaque. Dissolving enamel is more porous due to the acidic effect on the tooth, and hence scatters more light to give rise to it its opaque appearance. The difference between air's refractive index (1.00) and that of hydroxyappatite (1.66) (the substances which enamel is made of) is larger than that between hydroxyappatite and water (1.33). This means that a mildly demineralised tooth covered with water might not appear opaque, but might appear so when it is air dried. In other words, a lesion that has to be dried before opacities are observed has loss less minerals than a tooth which appears opaque even when wet. Combined Visual and Radiographic Diagnosis An investigation of the validity of diagnosis by means of optimal bite-wing radiography combined with careful visual clinical examination has shown that the majority of carious lesions and nearly all sound teeth can be correctly identified. The validity of each diagnostic method (visual and radiographic), used separately and together, was investigated for extracted teeth with questionable or borderline caries. Together, these methods had a sensitivity of 75% and a high specificity (90%), fulfilling the current recommendations to provide diagnoses that reduce the risk of unnecessary operative intervention when diagnostic uncertainties exist. However, the 75% sensitivity indicates that there remains a significant risk of missing early dentinal lesions, in teeth with non-overt disease, when conventional visual and radiographic diagnostic methods are used. Some diagnostic uncertainty is inherent in health care, and optimal patient care decisions should take into account all patient factors, including the probability of disease and the relative risks of delaying treatment

versus undertaking unnecessary operative intervention. Dental Caries Diagnosis: Radiographic Methods Radiographs can be classified into the conventional and advanced techniques. Though, conventional radiographs like bitewing and intraoral periapical radiograph are most frequently used for the detection of caries, they may cause overlapping of teeth due to faulty angulations and may also miss the initial lesion. During the primary dentition, the occlusal surface is most susceptible to caries attack, but with the eruption of first permanent molars the incidence of proximal lesions greatly increases. In such situation, bitewing radiographs are absolutely required to detect proximal lesions in primary molars. The Advanced radiographic techniques include digital radiography and xeroradiography. Digital radiography is a digital, filmless technique for intraoral radiography, utilizes very little of the radiation to which the patient has been exposed and avoids the need for developing films. Xeroradiography has the advantages of producing less radiation and edge enhancement along with its wide latitude of exposure.

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