

## Dental Problems and Management in Adolescent Girls

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### Abstract

Health is a right that requires responsible individual actions. Oral health corresponds to an important part of general health, even if for a large majority of people healthy teeth are equal with beautiful teeth. For children and adolescents having an attractive smile is synonymous with social acceptance and success. Dental decay has a high incidence in children in our country and progress in decay prevention, diagnosis and treatment is not reflected in children and adolescents oral health. The time invested in prevention during childhood represents a real benefit for the future adult's oral health. Many a dental problems can be avoided if dental decay management relies on the link between medical science and every day practice. It is established by studies conducted by dentists and psychologists that dental problems (caries, malocclusion) can affect the quality of life by modulating specific eating behaviours, particular ways of speech or smile and unfortunately pain. The adolescent patient is influenced by many factors during their growth and development, which can give rise to some deviation from the normal behaviour and growth patterns. This review addresses the unique dental needs of adolescents and proposes general recommendations for their management.

**Keywords:** Adolescent; Caries; Dental; Health.

### Introduction

Adolescence is a grey zone between childhood and adulthood. Adolescents constitute about 1/5<sup>th</sup> of the total population of India. The health of this population has been neglected until recently. Adolescent gynaecology is a subspecialised area of gynaecology. The problems encountered are often unique to this age group, therefore the medical and surgical management requires particular expertise [1].

The World Health Organisation (WHO) defines "adolescents" as individuals between the age of 10 and 19 years. This age group constitutes 20% of the world's population [2]. Adolescence is deemed important for oral health, as individuals during this period gain independence in making personal and

diet related choices. In addition, oral health behaviours are established and habits are formed during adolescence, heavily influenced by the social environment related to peers [3]. Adolescents are considered as an important target group for oral health promotional activities due to two main reasons. Firstly, behaviours and attitudes formed during adolescence may last into adult life and secondly, most adolescents attend schools, therefore, it is easy to organise and target preventive care for this age group [4].

The oral health of an adolescent can be a reliable and expedient indicator of general health. Of all the health issues common to adolescents, oral health has not seemed to receive much attention. Adolescents rarely enter the healthcare system, but school and camp nurses and nurse practitioners have access to teens on a regular basis. They can screen adolescents for oral health problems and teach them practices that may prevent health problems with lifetime consequences. Capitalizing on this opportunity to educate adolescents can be critical to their long-term health [5].

The adolescent individuals are recognized as having distinctive needs due to: a potentially high

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caries rate; increased risk for traumatic injury and periodontal disease; a tendency for poor nutritional habits; an increased esthetic desire and awareness; complexity of combined orthodontic and restorative care (eg, congenitally missing teeth); dental phobia; potential use of tobacco, alcohol, and other drugs; pregnancy; eating disorders; and unique social and psychological needs.

Treatment of the adolescent patient can be multifaceted and complex. Accurate, comprehensive, and up-to-date medical and social histories are necessary for correct diagnosis and effective treatment planning. Familiarity with the patient's medical history is essential for decreasing the risk of aggravating a medical condition while rendering dental care. If the parent is unable to provide adequate details regarding a patient's medical history, consultation with the medical health care provider may be indicated. The practitioner also may need to obtain additional information confidentially from an adolescent patient [6].

### *Caries*

Dental caries is a chronic bacterial disease where bacterial processes damage hard tooth structure (enamel, dentin, and cementum). The tissues break down progressively, resulting in dental caries (cavities, holes in the teeth). The basic factors are the causal microorganism, the host (tooth), the substrate (diet), and the immune capacity of the patient. Bacteria gather around the teeth and gum in a sticky, creamy-coloured mass called plaque, which serves as a biofilm. Bacteria in an individual's mouth transform glucose, fructose, and most regularly sucrose into acids such as lactic acid through a glycolytic process called fermentation [7].

In direct relation with the tooth, these acids may lead to demineralization, i.e. the dissolution of its mineral content. However the process is dynamic. If the acid is neutralized by saliva or mouthwash, remineralization may arise. Fluoride toothpaste or dental varnish can help remineralization. If the demineralization process is continuous, enough mineral content could be lost so that the soft organic material left behind disintegrates, forming a cavity or hole [7].

Adolescence marks a period of significant caries activity for many individuals. Research suggests that the overall caries rate is declining, yet remains highest during adolescence. Immature permanent tooth enamel, a total increase in susceptible tooth surfaces, and environmental factors such as diet, independence to seek care or avoid it, a low priority for oral hygiene,

and additional social factors also may contribute to the upward slope of caries during adolescence. It is important for the dental provider to emphasize the positive effects that fluoridation, professional topical fluoride treatment, routine professional care, patient education, and personal hygiene can have in counteracting the changing pattern of caries in the adolescent population [8].

### *Dental Decay Management*

Currently, treatment of dental caries is reconsidered. Modern methods of detection and early diagnosis allow the individualization of clinical stages that can benefit from remineralization, if oral ecosystem parameters changes in a positive manner. To achieve this, the treatment of dental caries should be approached in a holistic manner, positioned in a sequence that lay stress on preventive methods and patient active involvement [9,10].

### *Periodontal Diseases*

Adolescence can be a critical period in the human being's periodontal status. Epidemiologic and immunologic data suggest that irreversible tissue damage from periodontal disease begins in late adolescence and early adulthood. Adolescents have a higher prevalence of gingivitis than pre-pubertal children or adults. The rise of sex hormones during adolescence is suspected to be a cause of the increased prevalence. Studies suggest that the increase in sex hormones during puberty affects the composition of the subgingival microflora [11]. Other studies suggest circulating sex hormones may alter capillary permeability and increase fluid accumulation in the gingival tissues. This inflammatory gingivitis is believed to be transient as the body accommodates to the ongoing presence of the sex hormones [12,13].

Conditions affecting the adolescent are not limited to gingivitis, puberty gingivitis, but also include hyperplastic gingivitis related to orthodontic therapy, gingival recession that may or may not be related to orthodontic therapy, drug-related gingivitis, pregnancy gingivitis, necrotizing ulcerative gingivitis, localized aggressive periodontitis, and periodontitis. Personal oral hygiene and regular professional intervention can minimize occurrence of these conditions and prevent irreversible damage [14].

### *Recommendations*

The adolescent will benefit from an individualized preventive dental health program, which includes

the following items aimed specifically at periodontal health:

- Patient education emphasizing the etiology, characteristics, and prevention of periodontal diseases, as well as self-hygiene skills [12,14,15].
- A personal, age-appropriate oral hygiene program including plaque removal, oral health self-assessment, and diet. Sulcular brushing and flossing should be included in plaque removal, and frequent follow-up to determine adequacy of plaque removal and improvement of gingival health should be considered [14-16].
- Regular professional intervention, the frequency of which should be based on individual needs and should include evaluation of personal oral hygiene success, periodontal status, and potential complicating factors such as medical conditions, malocclusion, or handicapping conditions.

### **Habits**

Oral habits have been regarded as an inane behaviour for infants to collect information from the environment and can lead to malocclusion. Malocclusion may result in esthetic impairment and functional disorders such as bad chewing, speech and swallowing, with a negative impact on quality of life. Several studies evaluated the etiological factors responsible in the initiation of non-nutritive sucking habits and suggested some situations that may stimulate digit sucking habits including; fatigue, boredom, excitement, hunger, fear, physical, emotional stress and insufficient satisfaction of sucking need in infancy. Interruption of these habits as early as possible is very important to prevent severe dentofacial problems [17].

Oral habit behaviours include, among others, digit sucking, pacifier sucking, lip sucking and biting, nail-biting, bruxism, self-injurious habits, mouth breathing, and tongue thrust. Non-nutritive sucking behaviours (eg, finger or pacifier sucking) are considered normal in infants and young children and usually are associated with their need to satisfy the urge for contact and security. Because persistent non-nutritive sucking habits may result in long-term problems, professional evaluation has been recommended for children beyond the age of 3 years, with subsequent intervention to cease the habit initiated if indicated [18].

The dentist can provide the patient and parent with information regarding consequences of a habit. Treatment modalities to control habits may include

patient/parent counseling, behavior modification techniques, myofunctional therapy, and appliance therapy.

### **Occlusal Considerations**

Malocclusion can be a significant treatment need in the adolescent population as both environmental and/or genetic factors come into play. Within the area of occlusal problems are several tooth/jaw-related discrepancies that can affect the adolescent. The problems of malocclusion can affect the social adjustment of the individual due to the unsightly appearance of the teeth, thereby making them insecure about their future development and progress. The age between 6-14 years is the time for the eruption of the permanent teeth and also the development of the oral cavity, where many of the malocclusions can be prevented. Therefore the parents should be educated and motivated about the prevention and interception for the normal occlusal appearance of the teeth.

### **Malocclusion**

Any tooth/jaw positional problems that presentsignificant esthetic, functional, physiologic, or emotional dysfunction are potential difficulties for the adolescent. These can include single or multiple tooth malpositions, tooth/jaw size discrepancies, and craniofacial disfigurements. Malposition of teeth, malrelationship of teeth to jaws, tooth/jaw size discrepancy, skeletal malrelationship, or craniofacial malformations or disfigurement that presents functional, esthetic, physiologic, or emotional problems for the adolescent should be referred for evaluation when the treatment needs are beyond the treating dentist's scope of practice [19].

### **Eruption of Third Molars**

Third molars can present acute and chronic problems for the adolescent. Impaction or malposition leading to such problems as pericoronitis, caries, cysts, or periodontal problems merits evaluation for removal [20-22]. The role of the third molar as a functional tooth also should be considered. Evaluation of third molars, including radiographic diagnostic aids, should be an integral part of the dental examination of the adolescent.

### **Temporomandibular Joint (TMJ) Problems**

Disorders of the TMJ can occur at any age, but symptoms appear more prevalent in adolescence. Evaluation of the TMJ and related structures should

be a part of the examination of the adolescent. An adolescent comprehensive dental examination should include a screening evaluation of the TMJ and surrounding area. This evaluation will include a screening history for symptoms, clinical examination and evaluation of jaw movements, and if indicated, radiographic imaging. Referral should be made when the diagnostic and/or treatment needs are beyond the treating dentist's scope of practice [23,24].

#### *Congenitally Missing Teeth*

The impact of a congenitally missing permanent tooth on the developing dentition can be significant. When treating adolescent patients with congenitally missing teeth, many factors must be taken into consideration including, but not limited to, esthetics, patient age, and growth potential, as well as orthodontic, periodontal, and oral surgical needs [25-27].

#### *Traumatic Injuries*

Dental trauma is a significant problem in young people and the incidence of trauma will exceed that of dental caries and periodontal disease in the coming time [28]. The earliest causes of traumatic dental injuries are increased overjet with protrusion and inadequate lip coverage [29]. These oral injuries can cause irreparable dental loss, not only at the time of accident, but also during the post treatment period [30].

Fracture of anterior teeth by trauma is the most frequent type of injury in the permanent dentition, especially among children and adolescent affecting majority of the patient population [31].

Trauma in children and adolescents require greater attention due to the physical and emotional characteristics of both the patient and family alike [32]. Dentists are confronted with managing dental trauma and restoring fractured teeth on a regular basis. Techniques that speed and simplify treatment, restore aesthetics, and improve long term success rates are therefore of potential value and should be considered [31].

#### *Hormonal Changes*

During puberty, the adolescent girls have higher levels of progesterone and estrogen driving more blood to circulate through the gums. This delicate imbalance makes gums more sensitive to irritants such as food particles and plaque, and they may swell, turn red and feel tender. Some girls may experience a temporary form of "menstruation gingivitis" (swollen or bleeding gums) in the days before the onset of each

period. And, certain medications, health conditions or even brushing too aggressively can put teens at greater risk for getting periodontal (gum) disease. Therefore, at this stage the parents should take the opinion of the paediatric dentist to resolve the condition and thereby preventing further progress of gingivitis to periodontitis, which may affect the eruption of the permanent teeth.

#### *Additional Considerations in Oral/dental Management of the Adolescent*

The adolescent can present particular psychosocial characteristics that impact the health status of the oral cavity, care seeking, and compliance. The self-concept development process, emergence of independence, and the influence of peers are just a few of the psychodynamic factors impacting dental health during this period [33].

#### *Tobacco Use*

Significant oral, dental, and systemic health consequences and death are associated with all current forms of tobacco use. These include the use of products such as cigars, cigarettes, snus, hookahs, smokeless tobacco, pipes, bidis, kreteks, dissolvable tobacco, and electronic cigarettes. Smoking and smokeless tobacco use are initiated and established primarily during adolescence.

The oral and systemic consequences of all current forms of tobacco use should be part of each patient's oral health education. For those adolescent patients who use tobacco products, the practitioner should provide or refer the patient to appropriate educational and counselling services [34].

#### *Psychosocial and Other Considerations*

Behavioural considerations when treating an adolescent may include anxiety, phobia, and intellectual dysfunction. Referral should be made when the treatment needs are beyond the treating dentist's scope of practice and consultation with non-dental professionals or a team approach may be indicated.

### **Discussion**

As adolescent patients approach the age of majority, it is important to educate the patient and parent on the value of transitioning to a dentist who is knowledgeable in adult oral health care. It is

important that the parents are aware of the oral condition and development of the adolescent, so as to address them and accordingly seek the dentist's opinion for the tooth related problems and discrepancies for the adolescent. Accordingly, the adolescent girls should be consulted with a paediatric dentist at an early age for the specific diagnosis and treatment plan as deemed necessary. Later, towards the end of the growth and development, the adolescent girls can then be referred to a general dentist for further intervention and treatment needs.

The first consultation dentist-patient is crucial to establish adequate communication, the basis of effective treatment. The information provided by the physician to the child and parents should be tailored to their educational and cultural context. What may seem like a "waste of time" in the first treatment session is actually a true valuation of our profession, because in the absence of preventive attitudes, the long-term prognosis of dental restorations is unfavourable and may be a failure [35,36]. Adequate oral health requires a collective effort of everyone involved: medical team, child, family, and teachers, and if we consider the heterogeneity of those involved in this process we can comprehend why it is so difficult to move forward effective programs for dental caries prevention and treatment [37].

Compliance for dental care and regular dental follow up in the absence of subjective complaints indicate the interests of the child and family in favour of oral health. A minimum rate of 2-4 check-ups per year for children and adolescents would maintain the results of previous treatments, reversible forms diagnosis and treatment of dental caries with minimal tissue removal [38]. This goal requires close co-operation with children and family and in the particular case of our country it must overcome educational barriers.

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