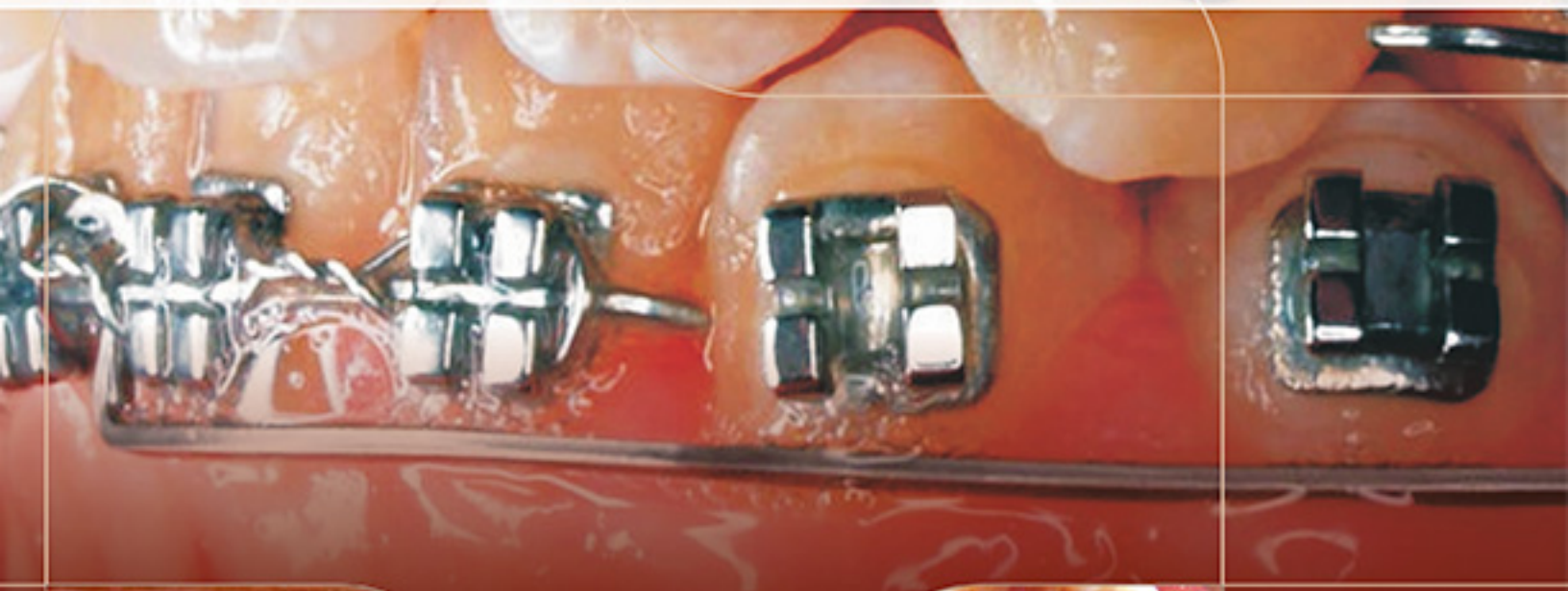
Pedodontics
Practice and Management







JAYPEE

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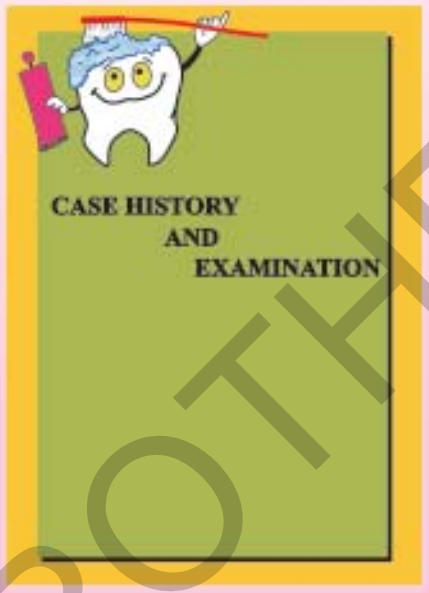

Case History, Examination, Diagnosis and Treatment Planning

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OBJECTIVES

This chapter attempts to give an insight into those aspects of history taking, examination, diagnosis and treatment planning that differ in the pediatric patient compared to an adult patient. There are certain considerations that have to be borne in mind with young patients prior to arriving at a definitive treatment plan.

At the first appointment it is necessary to take a detailed history and carry out a full clinical and radiographic examination before a treatment plan can be formulated. It is important to establish the relationship between the child and the adult in order that a valid medical history and consent may be obtained.

Accurate diagnosis can only be achieved by a thorough systematic collection and evaluation of data from both patient and parent. This case history taking and clinical examination is the most critical and vital procedure which provides effective diagnosis of patient's disease/problem and helps the dentist to arrive at an appropriate treatment plan.

SYSTEMATIC APPROACH TO CASE HISTORY DOCUMENTATION

Vital Statistics

Vital statistics hold all useful information about patient for easy retrieval of information, maintenance of records and also for medicolegal communications; storage of data, etc. It includes the following:

Hospital Registration Number/Case Number

- For ease record maintenance
- Billing the individual
- Ease of follow-up for retrieval of data and
- For appointments.

Date

It records the day/month/year of patient. When first reported to clinic and also be used for maintaining and fixing up periodic visits/appointments.

Name

For entry into records with proper first and last name and first name to be included:

- For record maintenance
- To establish a verbal communication and good rapport with patient
- Even nick names can be included to increase a friendly rapport with patient.

Age

Should be recorded with date of birth which aids in calculating exact age of the patient.

- Calculation of age of the patient helps to arrive at various details.

Age of patient is important data because of the following:

- Presence of age related changes of dento-facial structures
- Presence of common age related diseases and lesions
- Useful indications growth spurts, pattern of the individual
- Also helps to use certain behavior management techniques appropriate to that age
- Prescription of drugs when needed
- To compare with the dental, skeletal and mental age of the individual
- To relate with eruption and exfoliation of teeth, etc.

Sex

It is important to differentiate sex related diseases; as certain conditions have sex predilection for, e.g. anorexia is more common in females; hemophilia is more common in males, juvenile periodontitis is common in females

- Timing of eruption sequence is different for males and females
- Healing is faster in males than females
- Probability of traumatic injuries are greater among males than females, etc.

School and Class

- Assess economic status of individual's parent/guardian

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- Assess the IQ of the child and his mental age
- For effective communication with the child and assess his/her ability of perception of procedures.

Name of Parent/Guardian; Occupation

- Provides data about socioeconomic status of the parent/guardian which reflects upon the parent/guardians attitude upon dental treatment.

Address

- For communication
- Reflects the socioeconomic status
- Helpful for scheduling appointments for example treatment can be completed within fewer visits for patient's coming from long distance and also scheduling appointments at appropriate timing
- Certain areas are endemic to certain diseases; thus helps in arriving at diagnosis.

Source of Referral

Source of referral is being now emphasized due to increasing trends of multidisciplinary approach in health management. In such cases the queries of the referral should be attended upon first and information about the patient can be obtained from referring physician/consultant and the need for referral.

Chief Complaint

It is the data given either by the child's parent/guardian or the child himself/herself regarding the child's visit to the dental clinic. It is important to note it down in patient's own words which often lead to easy and frank diagnosis. Patient's chief complaint can be a problem of the child which prompted to seek dental treatment or pain, swelling, trauma or referral from other consultants, etc.

History

Taking a good history is the key to accurate diagnosis and to appropriate treatment planning. **Standard forms can be used such as that shown in Table 2.1.** However, these forms do not replace, but rather facilitate, a good interview by acting as an aide-memoir. The time spent taking a thorough history is not only useful in terms of collecting information but is also invaluable in establishing a relationship with the child and the parent.

History of Presenting Illness

The most common presenting illness can be evaluated based on following criterion.

- Type of illness
- Onset of illness
- Duration of illness
- Location
- Quantity, quality, frequency of occurrence
- Aggravating and relieving factors
- Associated symptoms
- For instances of pain- the type of pain experienced will lead to appropriate diagnosis in most of cases. This information is either provided by parent or patients in the clinic.

Medical History

The importance of taking a thorough medical history lies in its relevance to the safe delivery of routine dental care under both local analgesia and general anesthesia, and in the targeting of preventive advice to children with special needs.

A routine medical history should include:

- Queries about child's recent and past illness and health status
- History of previous medical treatments/surgeries/medication/allergies, etc should be noted
- In case of any previous hospitalization
- Age and cause of admission
- Operations
- Current status should be noted
- A thorough systemic review should be enquired as follows:

i. **Central nervous system:** Epilepsy, Neurological problems, Mental impairment
ii. **Cardiovascular system:** Congenital heart diseases, Subacute bacterial endocarditis, Prosthetic replacements in heart
iii. **Respiratory system:** Asthma, Hay fever, Repeated colds, Rhinitis, Nasal obstructions, etc.

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Table 2.1: An example of a standard case history form with some relevant key points

A.	**Social**		
		Name Address Date of birth School Parental occupation	Nick name/preferred name* Age
B.	**Medical**		
	Pregnancy/neonatal	Maternal health Details of birth Childhood illness	Weight, delivery Age, severity
	Systems review	Cardiac Respiratory Hematological Gastrointestinal Diabetes Epilepsy Hepatitis Mental or physical impairment	Subacute bacterial endocarditis risk factors Asthma, hay fever Anemia, bleeding, bruising Bowel habits Control Control
	Medication	Regular prescriptions Recent medication Allergies	Tablet, syrup, inhaler
	Hospitalization	Age and cause of admission Operations General anesthesia	
C.	**Dental**		
	Past history	Regular or irregular attender Previous experiences Experience of local anesthesia Previous co-operation levels	Prevention, restorations, extractions
	Home care	Oral hygiene habits Dietary habits Additional measures	Frequency of brushing Type and amount of toothpaste Parental assistance Baby bottle habits Favorite snacks and drinks Fluoride supplements Water fluoride levels
	Reason for attendance	Routine or emergency Presence of pain any Particular concerns	Duration, nature, relief Color, shape, position of teeth

iv. Hematological: Anemia, Bleeding disorders, Bruising, Leukemia, *etc*

v. Gastrointestinal: Bowel habits:

- Ulcers
- Gastric bleeding
- Acidity

vi. Excretory system: Urinary and renal disorders.

Other things to be noted include conditions like diabetes; hepatitis; jaundice; any acute illness, *etc*.

Prenatal History

Prenatal history includes details of mother's health during the pregnancy like:

- Any nutritional deficiency encountered
- Maternal health status
- Drugs used- some drugs are said to posses teratogenic potential affecting fetal growth and development, *e.g.* tetracycline

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- Any major illness during pregnancy like German measles and leads to cleft lip and palate viral infections
- Diabetes mellitus
- Any trauma/accidents of mother during pregnancy
- Fetal position and any history of previous abortions/ stillbirths, etc.

Natal History

It gives details about child's birth:

- Type of delivery, e.g. forceps delivery
- Presence of any Rh incompatibility may result in tooth discoloration leading to a condition called "Erythro-blastosis fetalis"
- Cyanosis at birth.

Postnatal History

It gives details such as:

- Amount of time the child was breastfed, bottle fed weaning
- Duration and frequency, method of feeding, feeding habits
- Trauma and childhood diseases
- Child's vaccination status (Table 2.2)
- Presence of any habit, if so:
  - Duration
  - Frequency and
  - Intensity to be evaluated
- Behavioral status can be assessed.

Dental History

It is important when treatment planning to try and evaluate both the child's and the parent's attitude to dental treatment. This assessment may be hard to make on the first visit, particularly if the child is in pain or has had an accident. However, gentle questioning concerning past dental experiences can give a good indication of how well the child is likely to cope with future dental treatment knowledge of the attitudes and home habits will facilitate realistic planning of a patient's management.

Likewise, it is useful to anticipate the parent's attitude towards restoration of the primary dentition, it is unrealistic to expect all parents to attach equal importance to dental health and it is appropriate to modify a treatment plan to accommodate these differences.

Table 2.2: Vaccination schedule—Recommended by Indian Academy of Pediatrics

Age	*Vaccine*
Birth	BCG Oral polio vaccine—1st dose Hepatitis B vaccine—2nd dose
6 weeks	DPT—1st dose Oral polio vaccine—2nd dose Hepatitis B vaccine—2nd dose
10 weeks	DPT—2nd dose Oral polio vaccine—3rd dose
14 weeks	DPT—3rd dose Oral polio vaccine—4th dose
6-9 weeks	Oral polio vaccine—5th dose Hepatitis B vaccine—3rd dose
9 months	Measles vaccine
15-18 months	MMR (Measles, Mumps, Rubella) DPT—1st booster dose Oral polio vaccine—6th dose
5 years	DPT—2nd booster dose Oral polio vaccine—7th dose
10 years	TT (tetanus)—3rd booster dose Hepatitis B vaccine—booster dose
15-16 years	TT (tetanus)—4th booster dose
Optional vaccines	Typhoid fever vaccine *Haemophilus influenzae* type-B vaccine Hepatitis A vaccine Varicella (chickenpox) vaccine

Family History

- Provides information of any familial/hereditary diseases if any
- Number and age of siblings
- Health status of the parent, etc.

Personal History

History of oral habits:

- Type of habit
- Duration
- Frequency and intensity, etc.

Oral hygiene:

- Frequency and method of brushing
- Type of brush used and its frequency of replacement
- Use of fluoridated or non-fluoridated dentifrices, etc
- Assessment by recording debris and calculus index.

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Dietary status:

- A detailed diet chart has to be recorded
- Usually a 24 hour diet chart is recorded
- Indicates
  - Cariogenicity of diet
  - Frequency of snacking
  - Nutritional deficiency if any

Clinical Examination

It is very important during the clinical examination to bear in mind the child as a whole. The dental practitioner may well see a child more often than any other medical professional and is, therefore, in an excellent position to notice any changes in a child's general health.

Clinical examination begins as soon as the dentist meets the child when an overall impression of the child's health can be formed. Table 2.3 is an example of an examination sheet that can be used in young patients.

General Examination

It is often useful to monitor a child's growth pattern and evaluation of the patient begins with the first appearance of the child and parents themselves. Following factors are to be assessed in general examination:

- Height
- Weight
- Posture
- Gait
- Co-ordination
- Speech.

Local Examination

Extraoral examination

In extraoral examination following features have to be noted:

a. Shape of the head
   - Mesocephalic

Table 2.3: An example of a standard examination sheet with some relevant key points

A.	**Extraoral**		
	General appearance	Height/weight Posture Co-ordination Malaise/fever	
	Head and neck	Skull Hair Ears Eyes Face Temporomandibular joint	Asymmetry Quality, quantity Tags, hearing aids Sclera Lacerations, scars bruises, swellings Opening, deviation, discomfort
B.	**Intraoral**		
	Soft tissue	Mucosa Inflammation Swelling White/red patches Ulcers Frenal attachments	Palate, tongue, cheeks Size, location, texture Number, site, size
	Periodontal tissues	Oral hygiene Inflammation/bleeding Attached mucosa Pocketing/dehiscence Tooth mobility	Plaque, calculus ± deposits Color, stippling
	Occlusion	Skeletal pattern Molar relationship Overjet/overbite Crowding	
	Teeth	Number	Hypodontia, supernumeraries

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- Dolichocephalic or
- Brachycephalic

b. Shape of face
- Mesoprosopic
- Euryprosopic
- Leptoprosopic

c. Symmetry of the skull
d. Facial symmetry
e. Facial profile – Straight, concave, convex
f. Facial divergence – Orthognathic, anterior divergent, posterior divergent
g. Hair – Quality, quantity
h. Ears – Tags, hearing aids if any
i. Eyes – Sclera
j. Face – Lacerations, cars, bruises, swellings
k. Temporomandibular joint: Functional examination of TMJ by palpation of each condylar head in various positions is highly recommended to diagnose any:
   - Deviations
   - Path of opening and closure
   - Discomfort
   - Tenderness
   - Auscultation of TMJ might give information about any clicking sound if any present. Which may be early or initial clicking, intermediate clicking or late/terminal clicking?

l. Lymph nodes: Palpation of all lymph nodes of head and neck recommended. However commonly involved submandibular and submental lymph nodes are given importance.
m. Lips:
   - Competence/incompetence
   - Any defects
   - Dryness
   - Texture
   - Tonicity
   - Any ulcers, vesicles, fissures, crusts, abrasions are to be noted if present.

Intraoral examination:

i. Soft tissue examination:
- **Gingiva** - Change in color
  - Consistency
  - Contour
  - Abnormal swelling
  - Inflammation
  - Abnormal discoloration
  - Bleeding
  - Ulcers
- **Tongue** - Size, shape, color, movements
  - Frenal attachment
  - Any abnormalities if present
- **Mucosa** - Palate, cheeks, tongue.

ii. Hard tissue examination:
- **Teeth** - Number of teeth present
  - Size and shape
  - Teeth numbering is done according to FDI scoring as follows:
- **Primary teeth**

55	54	53	52	51	61	62	63	64	65	
85	84	83	82	81	71	72	73	74	75	

- **Permanent teeth**

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

The first number denotes the quadrant and second number denotes the tooth

Primary teeth quadrant

5	6
8	7

Permanent teeth quadrant

1	2
4	3

Occlusion

Molar relationship (Fig. 2.1)
- Permanent teeth classified based on Angle's class I
- Deciduous teeth classified based on Baumes terminal plane (distal surface of second deciduous molars)
- Flush terminal plane
- Mesial step
- Distal step

Canine relationship (Fig. 2.2)

Incisor relationship:

i. Overjet (Fig. 2.3)
- Horizontal overlapping of upper and lower anterior teeth
- Measured from labial surface of lower anteriors to incisal edge of upper anteriors

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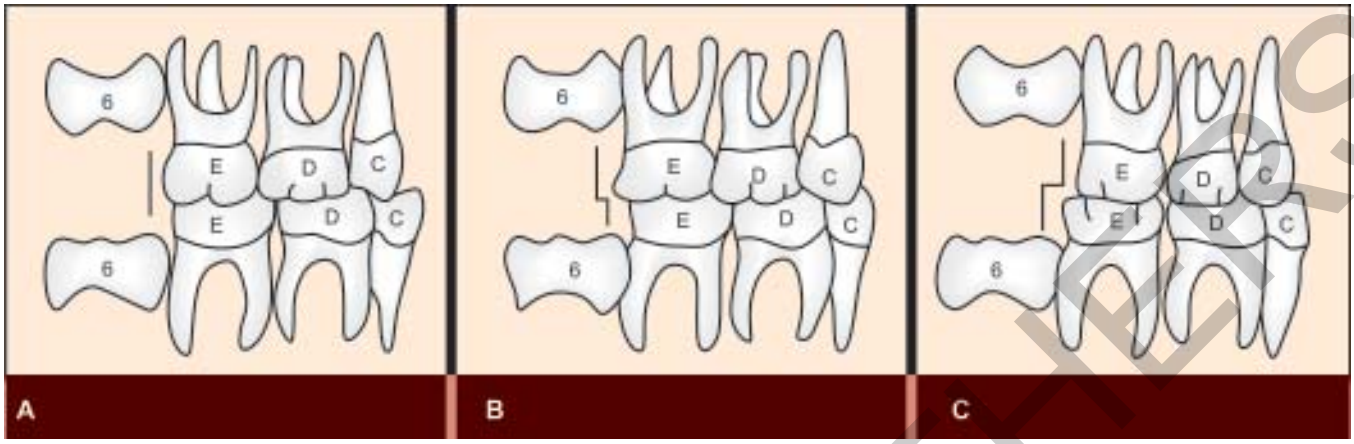
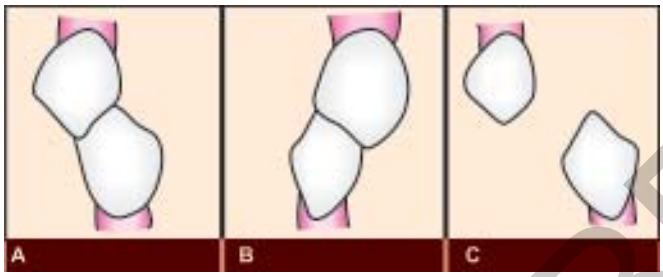


Figs 2.1 A to C: Molar relationship—Primary teeth. (A) Flush terminal plane, (B) Mesial step, (C) Distal step



Figs 2.2 A to C: Canine relationship. (A) Class I, (B) Class II, (C) Class III

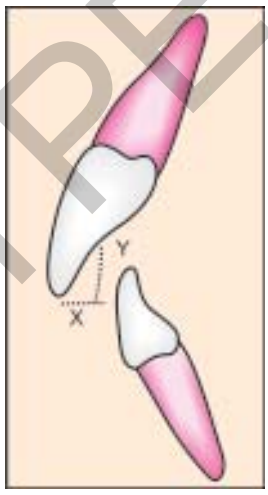


Fig. 2.3: Incisor relationship. X—Overjet Y—Overbite

- Expressed in either 'mm' or '%'
- Normal overjet is 2-3 mm.

ii. Overbite:

- Vertical overlapping of upper anteriors over lower anteriors
- Normal 2-3 mm
- Expressed either in 'mm' or '%'
- It is deep bite when vertical distance is greater than 3 mm
- Open bite is described when there is no contact between incisors.

Curve of Spee

Deciduous teeth normally presents with a steep curve of Spee.

Spacing

Presence of spaced or non-spaced dentition is suggestive of orthodontic management that may be needed in future. Other factors to be assessed in hard tissue examination includes:

- Number of decayed teeth
- Incipient caries lesions
- Rampant caries
- Grossly decayed teeth should be identified
- Staining either extrinsic or intrinsic
- Any tooth dislocation, rotation, missing teeth have to be noted
- Existing restorations.

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Provisional Diagnosis

It is a general and primary/preliminary impression of a clinical situation without any appropriate laboratory investigations.

Investigations

Percussion

- Reveals the periodontal status of the tooth
- Percuss lightly either with the handle of mouth mirror or with index finger.

Positive response on vertical percussion indicates:

- Apical periodontitis
- Irreversible pulpitis
- Cuspal fracture, etc.

Positive response on lateral percussion:

- Lateral space inflammation

Radiographic Examination

As per requirement IOPA, Bitewing and occlusal radiographs, OPG's are recommended.

Pulp Testing

The clinical condition of pulp can be evaluated by thermal stimuli, percussion and vitality testing in adults but their value in children is questionable due to difference in perception of pain in children and pain anxiety may lead to false responses and interpretations.

Conventional Pulp Testing Methods

Thermal test—cold and heat test:

- Use of ethyl chloride spray/ice sticks/air blast/hot water spray/heated gutta percha stick are advocated.

Electric pulp testing

- Use of odontometer
- Does not provide information on health, integrity or vascular supply of pulp.

Other novel methods of pulp testing includes

- Laser Doppler flowmetry
- Pulseoximetry in evaluation of vitality
- Dual wavelength spectrometry.

Final Diagnosis

It is the final ultimate and concrete evaluation and confirmed diagnosis of the clinical situation after a thorough and systematic analysis of collected data with adequate laboratory proofs and findings.

Treatment Planning

Having obtained a full history, undertaken a complete clinical examination, and carried out necessary investigations the clinician is armed with all the information required to draw up an appropriate treatment plan. It should be explained in detail to the parent and also to the child in his/her understandable manner to gain his/her acceptance and co-operation. Following factors to be included:

a. Treatment required of their child:
   - Restorative
   - Surgical
   - Preventive or
   - Therapeutic
b. Time duration, number of visits
c. Total cost of the dental treatment
d. Any precautionary measures and home care as per the case.

Definitive Treatment Planning

Definitive treatment planning is achieved based upon 5 basic phases:

Medical phase

- Patients with positive medical history are referred to related consultants for thorough medical evaluation and their consent
- Drug dose modification is done as and when needed.

Systemic phase

- Advocate required pre-medication
- Antibiotic prophylaxis
- Drug modifications are done.

Preventive phase

- Oral prophylaxis, fluoride therapy
- Diet counseling
- Sealant therapy
- Orthodontic intervention to prevent malocclusion, etc.

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Corrective phase

- It's a restorative or treatment phase
- It includes procedures like restorations,
  - Stabilization,
  - Extractions
  - Minor surgical procedures
  - Orthodontic management
  - Aesthetic management, etc.

Maintenance phase

Completion of the initial course of treatment is merely the start of a long-term relationship with the patient. Reassessment and recall are essential to the treatment planning process.

- Establishment of exact time and treatment recall.
- Patients at high-risk recalled at 2-3 months interval will low-risk individuals at 6 month's period.
- Establish appropriate home care program that will work for the particular child and the parent.
- Check the effectiveness of home care program at recall visits and advice necessary reinforcements as per case dictates.
- Also helps in patient and parent motivation.

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Pedodontics
Practice and Management

Salient Features

- An excellent text
- Deals with all aspects of pediatric dentistry from basics to the recent developments in child management
- Covers unique topics like cariology, child abuse, normal and pathologic orodental and general health and behavior management of children
- Includes forensic pedodontics, pediatric genetics and epidemiology in great detail
- Presentations with striking layout and colorful illustrations and photographs
- Useful for undergraduate/postgraduate students and teachers as well as practicing dental surgeons.

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