Review Article

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My Role as a Dentist: Before, During and After Orthodontic Treatment

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ABSTRACT

Background: The orthodontic treatment scenario in India is unique as most of the patients are treated at the clinic of a general dentist by a visiting orthodontic specialist.[1] Dental auxillaries like the dental hygienists, dental practice managers and orthodontics therapist[2] are also seldom incorporated in a general dental practice. The general dentist, hence, plays a pivotal role from selecting cases for orthodontic consultation to following them up until the end of the treatment and even afterwards. The aim of the article is to provide guidelines for the general dentist and orthodontist so as to ensure optimal quality orthodontic treatment and patient satisfaction in this scenario.

Keywords: Role of general dentist, Orthodontics, Indian scenario.

INTRODUCTION

In a 'visiting orthodontist type of general dental practice' scenario, simple guidelines regarding the role of the general dentist can be beneficial for the entire team, including the orthodontist and the general dentist. Most importantly, these will be beneficial for the patient.

The role of a general dentist can be considered into three parts:

1. Before orthodontic treatment
2. During orthodontic treatment
3. After orthodontic treatment

Before Orthodontic Treatment:

1. Look for who would benefit from orthodontic treatment:

Improvement in esthetics is the principal motivational factor for most of the orthodontic patients.[3] Esthetic need can be subjective and hence best decided by the patient. Improvement of functional efficiency and long-term health of the teeth and surrounding structures including the bone, periodontium, muscles and the temporomandibular joint, however, need the diagnostic acumen of the general dentist. Orthodontics is now widely used as an adjunct to successful periodontal and prosthetic treatments.[4] (Fig. 1 (a), (b), (c)) Awareness of the general dentist of the possible benefits of orthodontic treatment is critical so that the patient is given an option of this treatment modality. (Fig. 2 (a), (b), (c))

2. Make a comprehensive plan at the beginning:

Patients requiring multiple treatment modalities should be evaluated for a comprehensive plan at the beginning of treatment. This may involve certain investigations followed by the consultation from concerned specialists, including the orthodontist. For example, when a conservative dentist has decided the unsalvageable teeth, an orthodontic treatment plan may be modified so as

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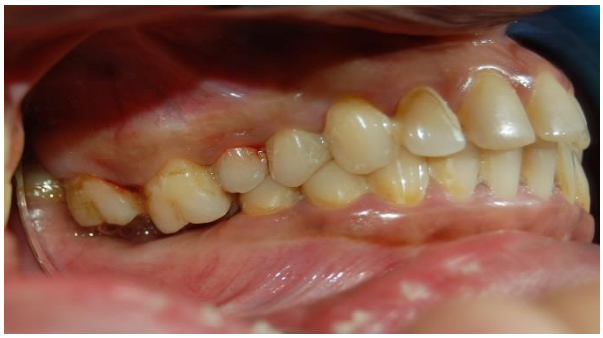

Fig 1 (a): Patient wanting replacement of lower molars with extruded first and second upper molar teeth.

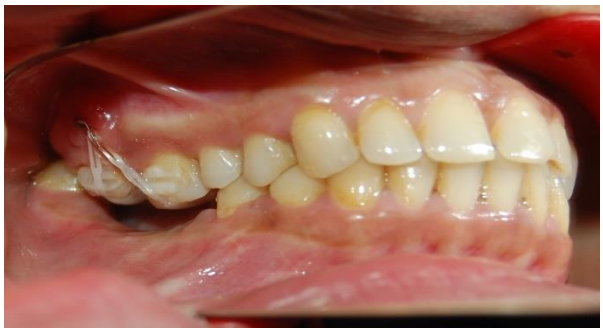

Fig 1 (b): Orthodontic intrusion of the extruded molars in progress.

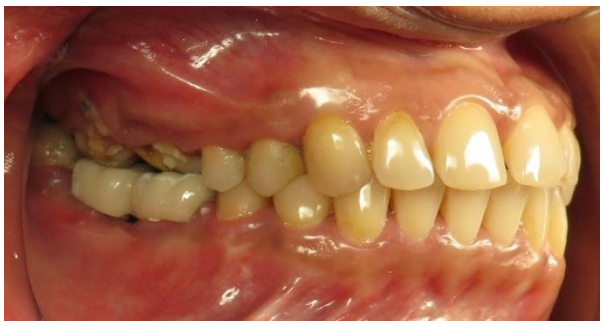

Fig 1 (c): Intruded molars with lower implant prosthesis in place.

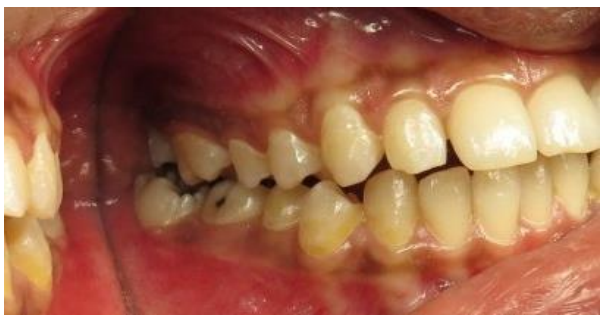

Fig 2 (a): Patient complaining of muscle pain along the angle of mandible. Note the initial contact position of the teeth.

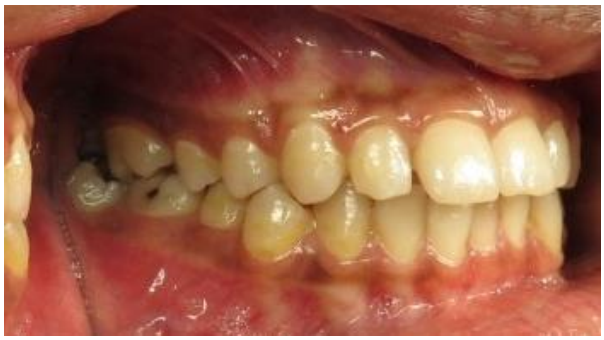

Fig 2 (b): Patient deviates to close in centric occlusion.

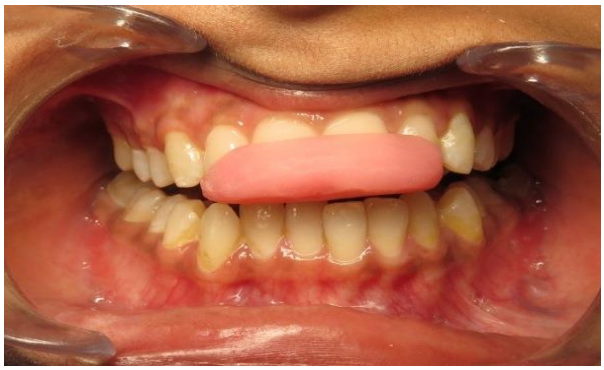

Fig 2 (c): Chair-side muscle deprogrammer in place for therapeutic diagnosis of occlusal disturbance.

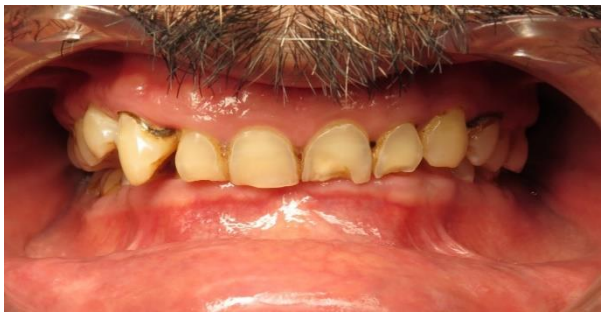

Fig 3 (a): Case showing deleterious effects of an uncorrected deep bite.

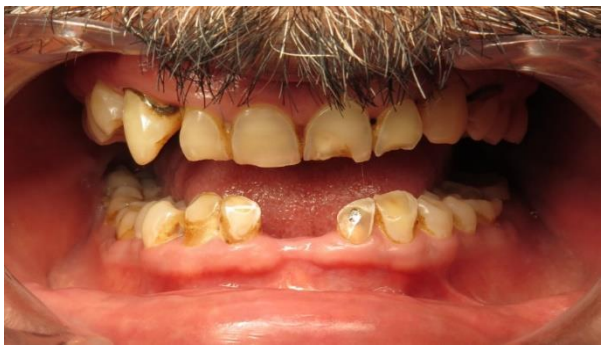

Fig 3 (b): Note the excessive attrition of the lower incisors and canines.

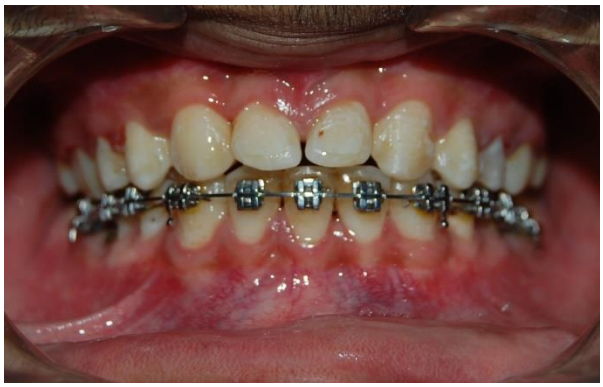

Fig 4 (a): Post orthodontic result in a case with avulsed central incisors treated by shifting the lateral incisors in the place of the central incisors.

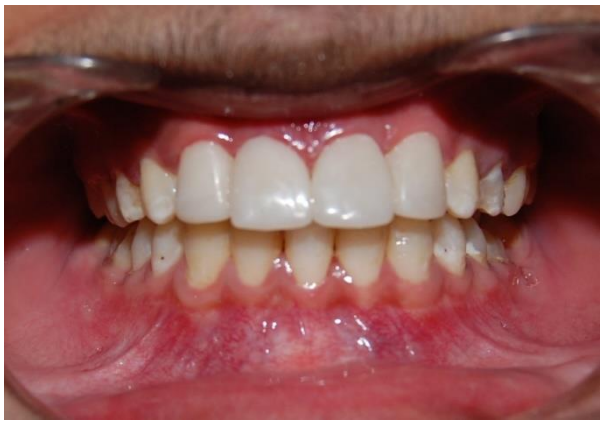

Fig 4 (b): Transitory composite veneers to convert laterals into central incisors and canines into lateral incisors.

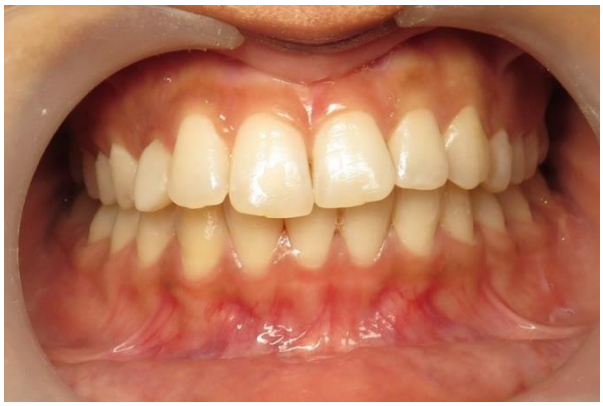

Fig 5 (a): Post orthodontic result showing unequal gingival zeniths, unbalanced smile line and under-torqued right canine (intraoral view).

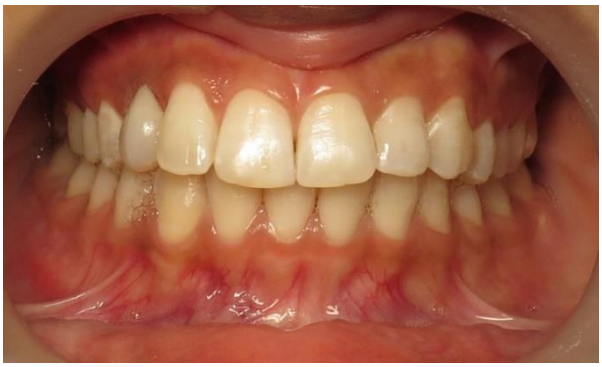

Fig 5 (b): After gingival zenith equilibration, recontouring of the smile line and composite veneer on the right canine (intraoral view).

Fig 5 (c): Post orthodontic result showing unequal gingival zeniths, unbalanced smile line and under-torqued right canine (extraoral view).

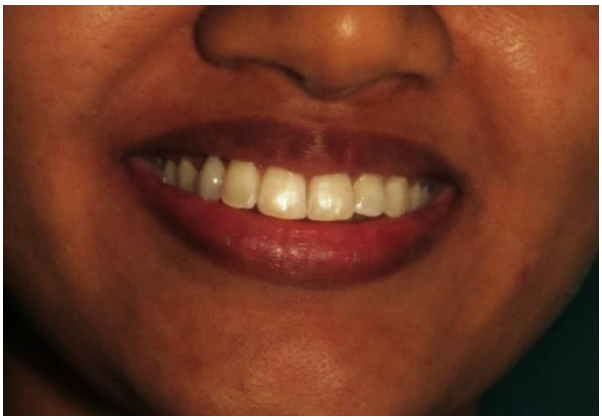

Fig 5 (d): After gingival zenith equilibration, recontouring of the smile line and composite veneer on the right canine (extraoral view).

to extract the unsalvageable teeth rather than another healthy tooth. If changes in occlusion are foreseen, final prosthetic work should be deferred. Heroic attempts to save a badly carious tooth may be avoided if it can be extracted for space required for orthodontic treatment.

1. Cost range:

Most, if not all, patients want to know the cost of orthodontic treatment at the initial visit to the general dentist. It is advisable that the cost be decided only after a thorough evaluation of the case by the orthodontist, as cases can range from simple cross-bite correction to complex surgical corrections. The general dentist should give a range to the patient at the initial visit and emphasize the importance of investigations like radiographs and study models so that the orthodontist can make a detailed diagnosis and cost estimation. The cost range should be given for all possible options namely, removable appliances, fixed appliances (metal, tooth-colored, lingual) and aligners.

3. Listen to the patient's concerns:

The general dentist should listen to the concerns that the potential orthodontic patient may have. Sometimes, the patient will voice his/ her concern upfront, while sometimes the dentist may need to establish a communication to understand the apprehension, if any. The concerns can be one of the following:

a. Cost: Dental treatments in general and orthodontics in particular can appear to be expensive, although the Indian scenario is a lot different than that in the western countries. Discussing that although the payment is told as an aggregate, it is not to be paid upfront but in small installments over the treatment period can be beneficial in allaying the cost concerns.

b. Time: Orthodontic treatments are lengthy. It helps to focus on the long-term gain to be achieved by the treatment, so that the time investment is worthwhile. (Fig. 3 (a), (b)) Although braces remain in the mouth for a long period, ensure that the patient does not need to visit the dentist more than once in a month. The average interval between appointments during active orthodontic treatment is 6 weeks.[5] Under special circumstances like wedding, the braces can be temporarily removed and then replaced.

c. Looks: When 33% of the world's population has undergone orthodontic treatment at some point of their life[4], and 80% of the teenagers in the United States are currently undergoing orthodontic treatment[5], braces cannot be a social stigma. Giving invisible orthodontic options can be effective for patients concerned with looks.

d. Treatment considerations: Extractions of permanent teeth are required in about 50% of all patients.[6] Fear of pain during and after extraction of teeth can be a concern for many patients. Assurance from the general dentist that the extractions are now painless can be useful. In India, most parents have a misconception that extraction will have a deleterious effect on the eyesight. Stating that extensive research has proven that no such connection exists can help deal with this concern.

e. Age: Orthodontic treatment can be done at any age[7], as long as the periodontal ligament is healthy. In India, patients and even some dentists believe that orthodontics is not possible after a certain age, usually about 25 years. Discussion on this issue may be needed to assure the adult patient. The future effects of malocclusion may also be highlighted to overcome such concerns.

4. Making records:

Proper diagnosis requires some records to be ready before the orthodontic consultation appointment. Following records may be made:

i. Study models: make sure to record all the erupted teeth as well as the labial sulcus.
ii. OPG: in most cases of comprehensive orthodontics
iii. Lateral Cephalogram: In growing patients, incompetent lips, skeletal problems
iv. Postero anterior Cephalogram: In facial asymmetry cases
v. IOPA: specific tooth with pathology if not clear on the OPG

vi. CBCT: Impacted teeth, cleft palate, orthognathic surgery cases[8], retreatment cases
vii. Photographs: for reference and future patient consultations

5. Orthodontic consultation:

   a. Put forth ALL the options: Do not decide for the patient.

   b. Make sure that the orthodontist has taken into account the relevant medical, dental history, especially bone/ blood/ hormonal issues, allergies.

   c. Ensure that the patient has understood the treatment options, limitations and his/ her responsibilities.

   d. Ensure that the cost and payment schedules are clearly discussed and agreed to. If post-orthodontic treatment is planned, inform the patient that the cost of that treatment is not included in the orthodontic estimate.

   e. Help the patient make an informed choice after presenting all possible treatment alternatives. The patient trusts the general dentist more than the visiting orthodontist.

6. Treatment sequencing:

This step is especially important in cases requiring multidisciplinary treatment. Complete all conservative, endodontic work, periodontal treatments, followed by interim prosthetic treatments before starting orthodontic treatment. Even with regards to the orthodontic treatment, the sequencing of bonding, extractions needs to be decided taking into account the treatment needs as well as patient factors like upcoming exams, etc. The general dentist is the best person to oversee this treatment sequencing.

7. Prepare to start orthodontic treatment:

   a. Complete control of infection should be done so as to have optimal orthodontic results.

   b. In absence of a qualified dental hygienist, the onus of oral hygiene counseling for a patient scheduled to start orthodontic treatment lies with the general dentist. Brushing more frequently, avoiding carbonated drinks, rinsing after every meal/ snack and learning the correct brushing technique can be a valuable asset to the patient.[9]

   c. When dental extractions are planned, it is advised to perform as atraumatic extractions as possible and conserve the alveolar bone to optimize orthodontic tooth movement.

During orthodontic treatment:

1. Oral prophylaxis at least once every 3 months[9]: Meticulous oral hygiene maintenance protocols must be established so that demineralization and periodontal infections secondary to orthodontics are kept under control. The recurrent cost of oral prophylaxis should be discussed at the beginning of orthodontic treatment.

2. Show the patient what to look for: Unsightly white spot lesions can ruin patient satisfaction after orthodontic treatment. Making the patient aware of how they look may help him/ her spot them early and also avoid them completely. Bleeding gums due to hypertrophied gingiva can be also shown. Catching these secondary problems in time is the key.

3. Use of agents and aids: Supplementary agents like varnishes, prescription fluoride toothpastes[8], tooth mousse, fluoride mouthwash, power brushes[9], interdental cleaning aids have been shown to improve oral hygiene.

4. Diet counseling: Control over the intake of sugary foods can go a long way in controlling secondary infections in relation to orthodontics[9]. Keep an eye on excessive consumption of chocolates, gums, sweets, aerated drinks.

5. Orthodontics related emergency care:

a. Management of pain/ discomfort may require analgesics in certain cases, especially when orthodontic implants have been placed. Most of the times, however, warm water gargles are

helpful for dull discomfort due to tooth movement.

b. Ulceration of the mucosa can be managed by using soft wax. The wax is placed over the areas of braces that are causing ulceration until the patient can see the dentist/ orthodontist. In cases when such wax is not available, clean wet cotton can be placed on the area (bracket/ wire/ implant) causing ulceration.

c. Poking of wires: Extended wire ends may cause laceration of mucosa and must be cut. Even if the wire-ends are properly cut at the time of wire placement, the distal movement of wire during retraction phase usually results in poking wires after about a month into treatment. The dentist can cut the ends in such cases. In cases of super-elastic wires during the initial alignment phase, the wires may shift to one side as the teeth align. In such cases, merely shifting the wire back into its place can solve the problem.

d. Dislodged brackets or bands: If a bracket or band is dislodged and is not causing discomfort to the patient, the same can be left in place until the orthodontist sees the patient. In case the dislodged appliance is causing discomfort, removal of the moving part of the appliance with minimal disturbance to the other parts is advised. The advice of the orthodontist may be sought in such cases.

e. Armamentarium: Basic orthodontic pliers like the pin & ligature wire cutter, distal end cutter, band removing plier, etc may be maintained at the clinic for managing emergencies.

6. Preserve and add to the records: Preserving the pretreatment study models, photographs and radiographs is required to evaluate the treatment progress. Sometimes, mid-treatment records may be needed to reevaluate or document a case.

7. Missed appointments: In the Indian scenario, a visiting orthodontist may not be in a position to keep track of patients at every clinic he/ she visits. To ensure that prolonged absence from treatment does not occur, missed appointments should be meticulously monitored by the general dentist. Counseling and recreating the reasons for starting the treatment may be needed in patients who have lost their motivation for treatment.

8. Preparing for debonding:

a. Most cases may be advised fixed bonded retainers before debonding. This bonding procedure may be done either by the orthodontist or the general dentist. In case the fixed bonded retainer is to be maintained for a long duration, it is better that the general dentist places the retainer so that the follow up treatment including incidental repairs can be managed in the clinic.

b. Minor surgical procedures like frenectomy or extraction/ disimpaction of third molars may be needed for maintaining the results of orthodontic treatment. This should be done preferably prior to debonding.

After orthodontic treatment:

1. Post treatment retainers: Impression making and delivery of post-treatment retainers is an important part of orthodontic treatment. Inadequate attention in this phase accounts for many relapse cases. The general dentist should make sure that the retainers are made, delivered and worn by the patient as advised.

2. Removal of excess bonding material: The orthodontist generally will remove the excess bonding material after debonding. In certain cases, if it remains on the teeth, the general dentist may need to remove it. A non-cross-cut 18 fluted tungsten carbide bur should be used without water jet so that the bonding material can be distinguished from the underlying enamel.

3. Oral prophylaxis: Post-treatment oral prophylaxis is a must. This will ensure complete removal of bonding material, screening for white spot lesions and frank carious cavities, which can be dealt with immediately.

4. Esthetic corrections: Modification of tooth shape/ size by laminates or veneers, recontouring of the smile line, gingival zenith equilibration, bleaching are few of the esthetic

treatments which may be needed for a better result in certain cases. (Fig. 4 (a), (b), Fig. 5 (a), (b), (c), (d))

5. Final prosthesis: Definitive prosthesis should be done at this stage.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

CONCLUSION

The role of the general dentist in the success of orthodontic treatment has not been adequately documented, especially in the Indian scenario. When the general dentist, in whose clinic the orthodontic treatment is being done by a visiting orthodontist, works in collaboration with the orthodontist, better treatment results and patient satisfaction can be achieved.

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