

CASE REPORT

Injudicious extraction causing dilemma to retreatment in orthodontics: Two case reports

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Abstract

Now-a-day mostly commonly two-piece implant systems are used in dental implantology. Two orthodontic cases have been described which have been treated by general dental practitioner or visiting orthodontic specialists. Extractions have been carried out in all these cases. But due to the lack of planning, the outcome has not been as expected. When these patients finally came for retreatment, the problems faced by the orthodontist in dealing such cases have been described. The common iatrogenic in orthodontics are mentioned side by side. Thus, avoidable iatrogenic could be identified and dealt with by care. A message is wished to be sent to the general practitioner to be careful in orthodontic case selection. The need to quantify the severity of orthodontic problem is also stressed.

Keywords: Malocclusion, Injudicious extraction, retreatment, iatrogenic

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Introduction

With the increase of awareness and enhancement of need of self-esteem people for a high standard of life people are seeking orthodontic treatment in greater number than any other time. Increase in the financial capability is another factor influencing this. The number of orthodontists is lower in our country than required. Many general dental practitioners also perform orthodontic treatment irrespective of severity of malocclusion. In such cases injudicious extraction complicates such cases up to such an extent that correction and establishing a aesthetic and functional occlusion becomes really difficult. Orthodontist being a specialty of Dentistry has undergone through much modification and modernization like other brunches. One vision of this development is towards reducing chair side time.

Thus, reducing the needs of excessive wire bending. Anchorage management has also become simpler by use of TAD (Temporary anchorage device). Perfect bracket placement has become mandatory to keep track with different prescriptions of bracket system. Introduction of Invisalign and marketing of CAD CAM Orthodontics spread the news to the general dentist, even to the specialists of other branches of Dentistry that now orthodontic practice has turned into rather a robotic work. As a common perception that Orthodontics is good money so they are taking up cases in their personal practice and in some cases wrong treatment planning makes the case very difficult to establish an ideal, balanced and functional occlusion.

The hands-on courses have gained popularity in the field of dentistry for a decade or so. Which was introduced as a means to improve skill has turned into a primary course with attractive certificates. As repeating orthodontic treatment is expansive, extra taxing the patient and sometimes deleterious for the pulp and periodontal tissue so it becomes a headache for the Orthodontist community.

Case report: 1

A beautiful girl of 17 years came with an anxious look. She visited to a dental surgeon with the complaints of pain. She used to travel to some other place for her treatment with brace but this time changed to go there as it was an emergency. The dental surgeon looks into her mouth. He found a few brackets attached, a few were loose and floating with the arch-wire. To his astonishment he found her left canine extracted. She became suspicious and referred the patient after removing the loose brackets and bands.

Her intraoral examination showed anterior crossbite. Right canine is slightly buccally placed and right canine was absent which the patient stated was extracted due to Orthodontic treatment.

According to her statement her both upper canines were prominent though her upper anterior teeth were locked inside lower incisors.

Strangely her upper incisors were proximally stripped. Her treatment provider was perhaps thinking of aligning the upper right canine without paying attention towards correcting reverse bite. Photographs of her model

Her OPG Shows all her 3rd molars are impacted. Lower 3rd molars are horizontally placed. An overhanging filling in the lower left 1st molar may be the reason of her pain. Root resorption at some extent was seen. Root parallelism is absent in left side.

In her Lateral cephalogram:

SNA: 82 degrees

SNB: 87 degrees

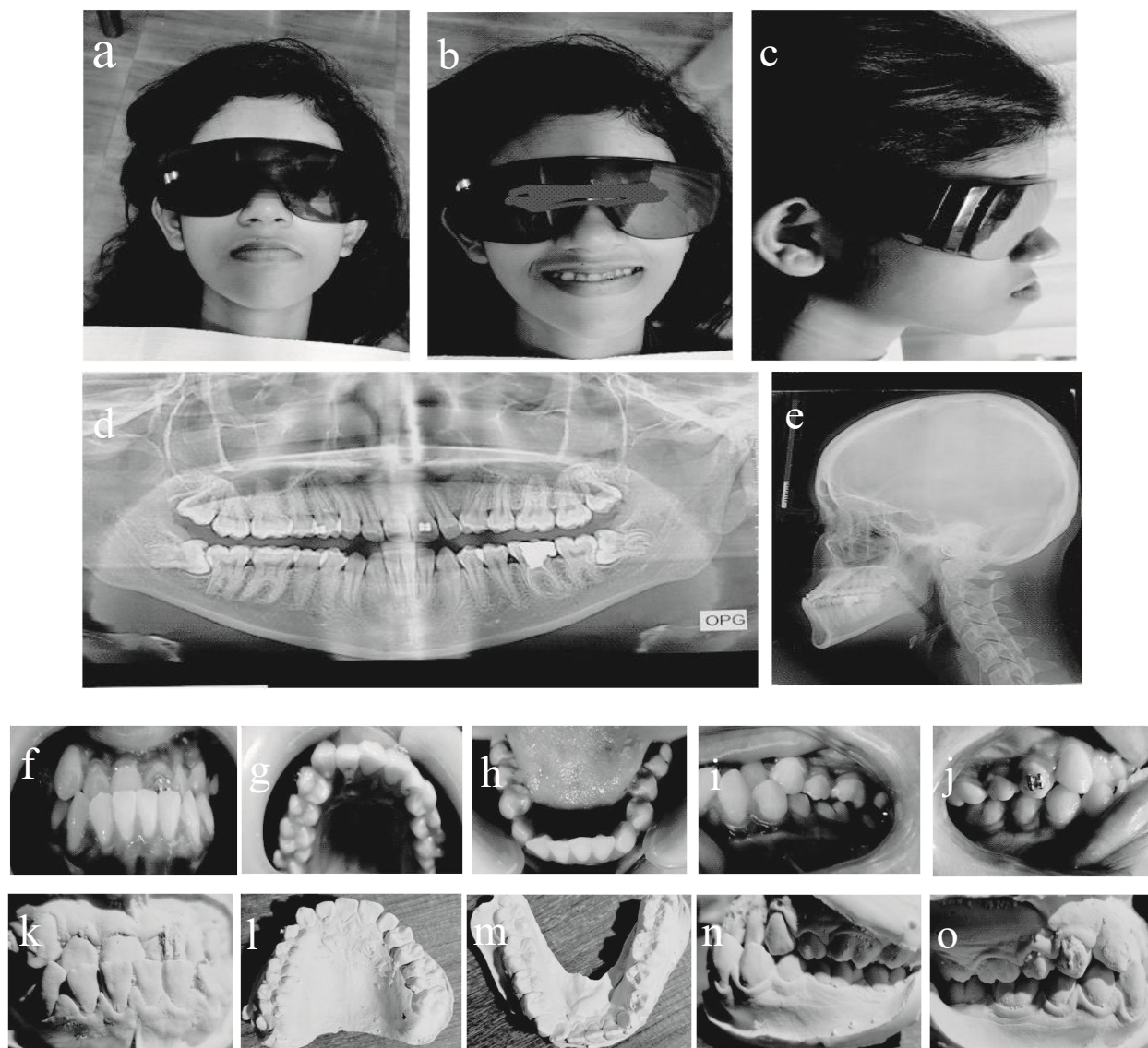
Upper incisor to Maxillary plane: 125 degrees

Gonial angle: 123 degrees

Lower incisor to mandibular plane: 85 degree

Maxilomandibular angle: 22 degree Her Study Model shows:

Molar relation is class I. Canine relation is class I in right side. Left canine relation is not establish due to extraction of upper canine. Crowding is present in both upper and lower anterior segment.



Case report 2

A girl of 15 years came after completion of treatment as she was not happy with the outcome. Upon discussion it was known that she went to a dental chamber with the complaint of too much teeth showing during smiling. The dentist brings an orthodontist to consult with the patient and gave a treatment plan of extraction of right premolar only. She received two years treatment and spent a handsome amount of money. Then she was supplied with a retainer. But she was not convinced with the end result.

OPG of the patient Orthopantomography shows all third molars are impacted. Blunting of roots of lower incisors root crowding in upper anterior segment with righty sided tilt of upper central incisors.

Lateral cephalogram:

SNA: 84 degrees

SNB: 77 degrees

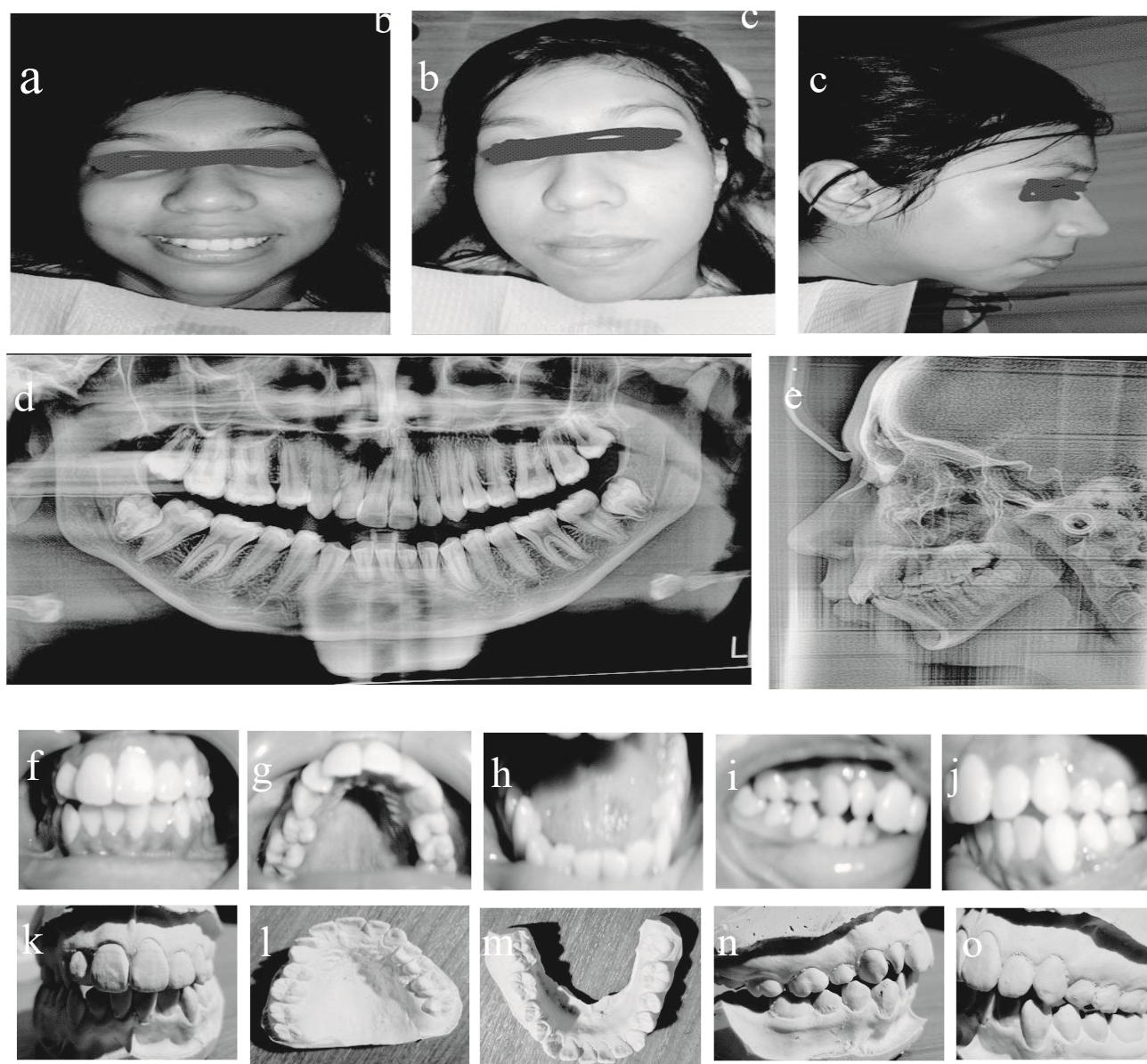
Upper incisor to Maxillary plane: 121 degrees

Gonial: 125 degrees

Lower incisor to mandibular plane: 101-degree Maxillo mandibular angle: 30 degrees

Study model:

Molar relation is class II in both sides. Canine relation is class I in right side and class II in left side. Right upper arch is collapsed. Crowding present in upper right side and lower anterior segment. Upper incisors are tilted towards right side with severe mid line discrepancy.



Discussion

A well-balanced smile is an important contributor to facial attractiveness and the appearance and arrangement of the teeth have a substantial influence on how a smile is perceived. In contemporary society, increasing emphasis is placed on physical appearance and self-confidence. Consequently, the desire to improve dental aesthetics is an important factor that motivates many individuals to seek orthodontic treatment.^{1,2} Although orthodontic therapy can improve facial aesthetics, oral hygiene and masticatory efficiency, treatment is not entirely free from adverse effects. Even when appropriate diagnostic and therapeutic procedures are followed, complications may occasionally develop. Patients should therefore receive adequate information about the possible risks and limitations before treatment begins. This enables them to understand their responsibilities, participate appropriately in treatment and develop realistic expectations regarding the achievable outcome.³ Effective communication at the outset also facilitates cooperation between the patient and the treating clinician.

Treatment objectives should remain consistent with what can realistically be achieved within the biological and clinical limitations of the individual case. Several adverse effects have been reported in association with orthodontic therapy. Commonly described complications include the following:^{2,3,7}

- a. Enamel Decalcification due to extra cementation material, poor oral hygiene
- b. Enamel fractures and chipping during de-bonding procedure
- c. Adverse involvement of the periodontal tissues - gingival inflammation, attachment Loss, gum recession and black triangle due to faulty bracket placement and poor hygiene
- d. Root resorption to some extent is a regular phenomenon in orthodontic treatment and may turn irreversible if excessive or against natural forces
- e. Pulpal damage and loss of tooth vitality is a rare complication unless done without care.
- f. Dentin hypersensitivity and increase in caries incidence is common after interproximal enamel reduction.
- g. Damage to the intra-oral tissues may occur during work due to accidental prick or in the process by gradual extension of wire through molar tube, bracket dislodgement et.
- h. Accidental swallowing of appliance components may also occur.
- i. Enamel abrasion during removal of cement after debonding may occur
- j. Allergic reaction to nickel may lead to adverse consequences.
- k. Long duration of treatment often burns patient cooperation
- l. Relapse is the common night mare for

orthodontist

- m. The problem may occur or exaggerate after or during orthodontic treatment

Iatrogenic effects in orthodontics may arise from several interacting factors. These include inaccurate assessment of facial growth, inappropriate selection of appliances, technical shortcomings during treatment, inadequate patient cooperation and ineffective management of space or anchorage. The risk may become particularly important when extractions are incorporated into treatment without adequate diagnostic and biomechanical planning.¹ In general terms, an iatrogenic effect refers to unintended harm that develops as a consequence of a therapeutic intervention. Behrents described iatrogenics in orthodontics as an unintended consequence arising from treatment.¹

Orthodontic treatment is influenced by numerous patient- and treatment-related variables. These include the individual's pattern of facial growth and development, the biomechanical relationship among the dentition, supporting tissues and orthodontic appliances, the interaction between the clinician, patient and family, the treatment philosophy selected for the case and the quality and continuity of follow-up, particularly during the retention period.¹ Because these factors interact throughout treatment, failure to recognise one or more of them may adversely influence the final result.

Treatment-related problems may also develop when the diagnostic procedure or treatment indication is inappropriate, an unsuitable therapeutic strategy is selected, or the planned mechanics are not executed correctly. Additional difficulties may arise when treatment duration is poorly estimated, necessary modifications to the original plan are not made, the malocclusion is not adequately resolved, retention is insufficiently monitored, or communication with the patient is inadequate.⁶ Such shortcomings can compromise the quality, functional adequacy and long-term stability of the orthodontic result.

Inadequate treatment may produce undesirable dental, gingival and facial outcomes, while the correction of the original malocclusion may remain incomplete or unstable.^{2,7,9} An unnecessarily prolonged treatment period may further increase the risk of adverse effects involving the teeth, pulp, periodontal tissues and facial structures and may place an additional burden on the patient's overall well-being.³⁻⁵ These considerations demonstrate that orthodontic treatment is a multifactorial clinical process in which apparently minor errors in diagnosis, planning or execution can interact and ultimately produce significant iatrogenic consequences.

Not every adverse event can be eliminated completely; however, careful diagnosis, appropriate treatment planning and sound clinical technique can substantially reduce preventable errors. Recognising the limitations of one's own treatment approach is an important component of responsible clinical practice. When an unexpected problem becomes evident, the clinician should address it promptly and openly rather than allowing reluctance to acknowledge the error to contribute to further deterioration. Early recognition and appropriate management may prevent a manageable problem from becoming substantially more difficult to correct.

At the same time, post-treatment relapse should be distinguished from true iatrogenic damage. Relapse is a recognised biological and clinical phenomenon that may occur even after carefully planned and competently performed orthodontic treatment. Therefore, recurrent tooth movement or loss of alignment should be assessed systematically before being attributed to treatment-related error.^{6,7,9}

The 1st patient visited to the dentist with crooked teeth who claimed to have a foreign degree. He called a visiting orthodontist who actually has no authentic orthodontic degree but claims to have learned orthodontics by self-education. He gave a plan to extract her left upper canine and later proximally stripped upper incisor to push inside the right upper canine. For lower jaw he gave him a lower removable appliance with labial bow to retrocline lower incisor. The cephalometric values clearly show, this is a surgical case. Excessive growth of mandible and horizontal

growth pattern surely makes it a case for surgery.^a

As surgery is still not well accepted, at least if camouflage treatment should have been considered taking the advantage of buccally placed upper canines and by extraction of lower 1st premolars it could have been an acceptable finish. The complexity of retreatment in this case is extraction of a canine means a proper canine guided occlusion is not possible any more. Proximal slicing makes it critical to maintain anterior ratio. The midline shift is very difficult. Lower anterior segment was still present. In case of the second case which looks to be a bimaxillary proclination case where by extracting a right premolar and retraction of the adjacent canine the midline has been badly shifted to right. Irrational use of power chain caused rotation and crowding of right incisor and canine. There is anchorage loss on the right side and crowding in Conclusion:

Conclusion

These two cases clearly show how a wrong extraction and wrong line of treatment cases adverse change to the occlusion and take patient to such a difficult level that correction becomes quite impossible, using different index procedures if mal occlusion could be quantified and certain limits could be drawn for the general dental practitioner it may help the patient from becoming the prey of orthodontic mal treatment.

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