LOWER INCISOR EXTRACTION - A CASE REPORT

By
IRFAN DAWOODBHOY* B.D.S., M.D.S (ST)
PROF ASHIMA VALIATHAN** B.D.S., D.D.S., MS (USA)

ABSTRACT

Case report of a girl 21 years of age having 4 mm crowding in the lower anterior region with Class I molar and canine relation. Her cephalometric values were in the ideal range of the routinely followed analyses. The Boltons anterior tooth size ratio showed a discrepancy of 4 mm in the mandibular arch. The case was treated by extracting the lower right central incisor and decrowding the remaining teeth. The case was completed in four months time. At the completion of treatment the pre-treatment and post-treatment records were compared.There was no change in the overjet and overbite and the cephalometric values. This supports the view of many authors who suggest treating cases of similar findings with the extraction of a single lower incisor without deepening the bite.

REVIEW OF LITERATURE

To extract or not to extract has always been and will always remain a controversy in Orthodontics. Two schools of thought exist, each backing the philosophy of the two pioneers in Orthodontics namely, Edward Angle and his student Calvin Case, the former for non-extraction and the latter for extraction.

Extraction of mandibular incisors for the purpose of decrowding the lower anteriors has its opposers and supporters. Salzmann[1] reviewing E.H. Angle's philosophy of extraction in orthodontics noted that Angle regarded the extraction of an incisor when the tooth was sound to be inexcusable. Angle warned that extracting one incisor as advocated by some would lead to less acceptable harmony between the occlusal planes of the remaining teeth.

Nearly a century ago, Jackson[2] in his text illustrated a case where one incisor had been previously extracted and he chose to extract a second incisor as the remaining three were still crowded-the intercanine width being too small to accommodate them and a closed occlusion which did not permit expansion.

Schwarz[3] reviewed twenty year post-retention records of a patient who had congenitally missing two mandibular incisors. He was surprised to observe good long term stability.

Riedel[4-7] suggested that in patients with severely crowded mandibular arches, the removal of one or more mandibular incisors was the only logical alternative which allowed increased stability of the mandibular anteriors without continued retention.

Extreme crowding or protrusion-conditions, often accompanied by loss of gingival tissue and bone overlying the labial surface of the incisor roots-may be indications for mandibular incisor extraction. Alleged problems include possible reopening of the extraction spaces in minimal crowding cases, increased overjet, increased overbite and unsatisfactory occlusion[6].

Kokich and Shapiro[8] presented four patients who were successfully treated with extraction of a single mandibular incisor. They argued that with careful case selection, single incisor extractions allowed the practitioner to use simpler treatment mechanics and achieve good results. Riedel[4-7] too has suggested that resolving mandibular anterior crowding by means of mandibular incisor extractions reduced treatment time.

Riedel, Little and Bui[9] in a study of post retention evaluation of cases treated with one or two mandibular incisor extractions reported acceptable esthetics, overjet and overbite in most cases.

CASE REPORT

A girl 21 years of age presented herself to the Department of Orthodontics, Manipal, with the complaint of crowding in the lower anterior region.

Extra-oral examination revealed an orthognathic profile with normal lip posture and tonicity. (Fig 1&2)

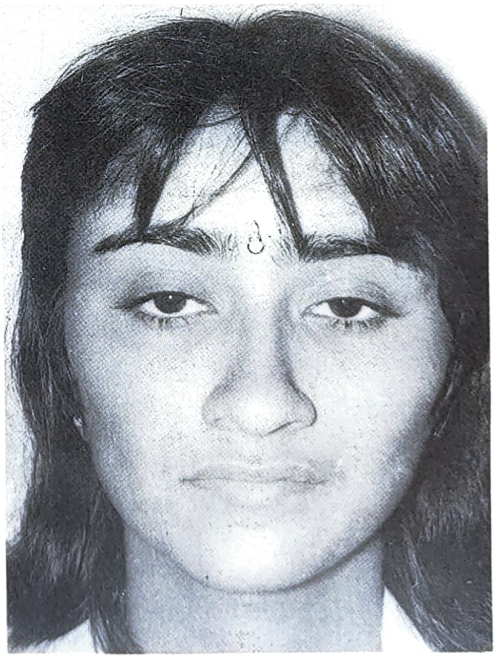

Fig. 1 : Good lip posture and lip competency.

* *Postgraduate Student*
** *Prof & Head & Director of PG Studies, Dept of Orthodontics & Dentofacial Orthopedics, College of Dental Surgery, Manipal 576 119.*

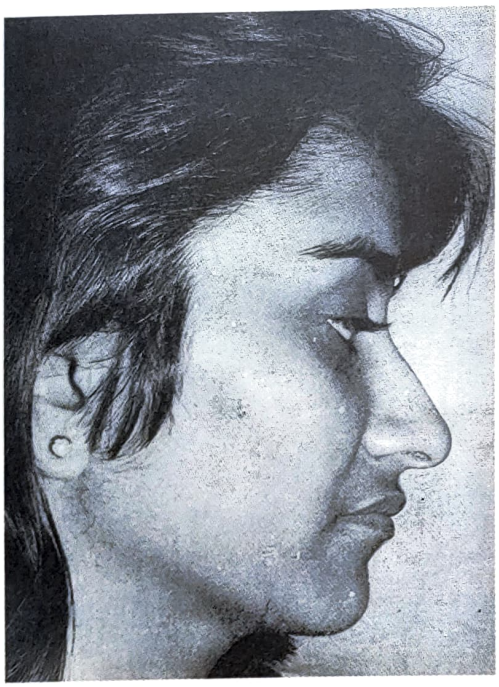

Fig. 2 : Ideal Profile

On Intra-oral examination all teeth excepting the third molars were present in each quadrant. The overjet was 2.5 mm and the overbite was 2 mm (Fig 3).

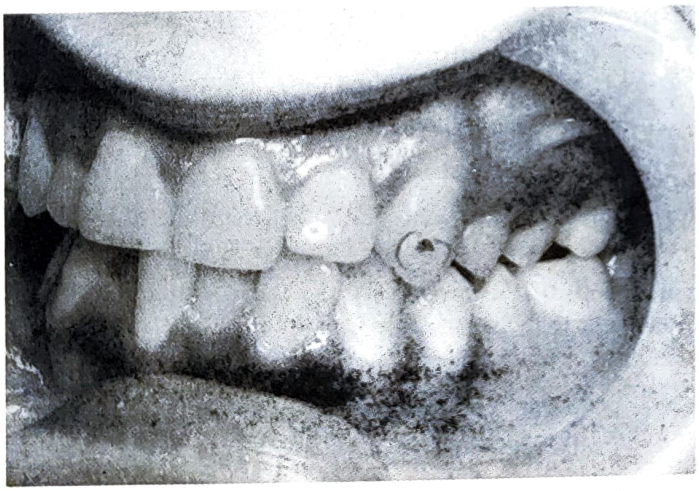

Fig. 3 : All teeth except third molars were present in each quadrant.

The lower anteriors were crowded by 4 mm (Fig 4) especially in the region of the lower right central and lateral region and the upper laterals were slightly out of alignment. Both the upper and lower arches were symmetrical and wel shaped.

The gingiva in relation to the lower right central was receded and if left untreated would have progressed to form a Stillmans cleft.

The molar and canine relation were Angles Class 1 on either side.

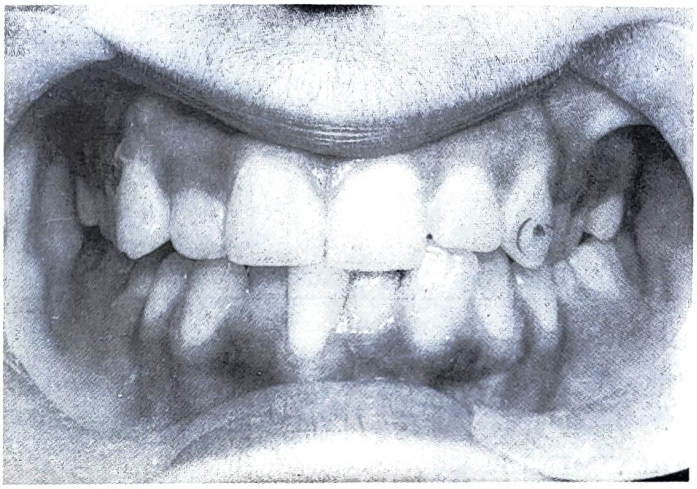

Fig. 4 : 4 mm crowding in the lower anterior region.

CEPHALOMETRIC ANALYSES

Her cephalometric findings were in the ideal range for the routinely followed Downs, Steiners and Tweeds analyses.

Table 1 : Downs analyses

DOWNS		
Facial Angle	:	87^0
Angle of Convexity	:	5^0
AB to N-Pg	:	8^0
Mandibular Plane	:	28^0
Y axis	:	59^0
Cant of occlusal plane	:	13^0
$\underline{1}\rfloor$ to $\lceil\overline{1}$	:	130^0
$\overline{1}\rceil$ to mandibular plane	:	94^0
$\overline{1}\rceil$ to occlusal plane	:	19^0
$\overline{1}\rceil$ to A-Pg line	:	5 mm

Table 2 : Steiners analyses

STEINERS		
SNA	:	78^0
SNB	:	75^0
ANB	:	3^0
SND	:	73^0
SE	:	25 mm
SL	:	43 mm
Go-Gn-Sn	:	35^0
Occ-Sn	:	20^0
$\underline{1}\rfloor$ to $\lceil\overline{1}$	:	130^0
$\underline{1}\rfloor$ to NA	:	24^0-4 mm
$\overline{1}\rceil$ to NB	:	23^0-4 mm
NB-PG	:	3 mm

Table 3 : Tweeds, Wits and Holdaways analyses

TWEEDS		
FMA	:	28^0
IMPA	:	94^0
FMIA	:	58^0
WITS	:	-0.5
Holdaway's Soft tissue	:	12^0

DIAGNOSIS

The case was diagnosed as skeletal and dental Class I with crowding in the lower anterior region.

TREATMENT PLAN

The profile was ideal photographically and cephalo-metrically and the patients main concerns was the crowding in the lower anterior region. Decrowding by extracting the premolars would have only lead to dishing in of the face and, a much longer treatment time. The intercanine width was 22 mm which was within the mean values shown in the study done by Thota & Valiathan[10]. Considering that the Boltons anterior tooth size ratio showed an excess of 4 mm in the mandibular (overall ratio was 90.3%) arch it was thought that the best possible way to decrowd the lower anteriors was to extract the lower right central as it was the most malaligned tooth in the anterior region. The upper laterals were also malaligned for which a leveling wire would suffice.

PROCEDURE

The patient was informed about the midline which would not correspond after treatment and the consent to extract the lower right central was obtained after which the patient was sent for extraction of the lower right central.

The upper and lower anteriors from canine to canine were bonded with 022x028 edgewise brackets.

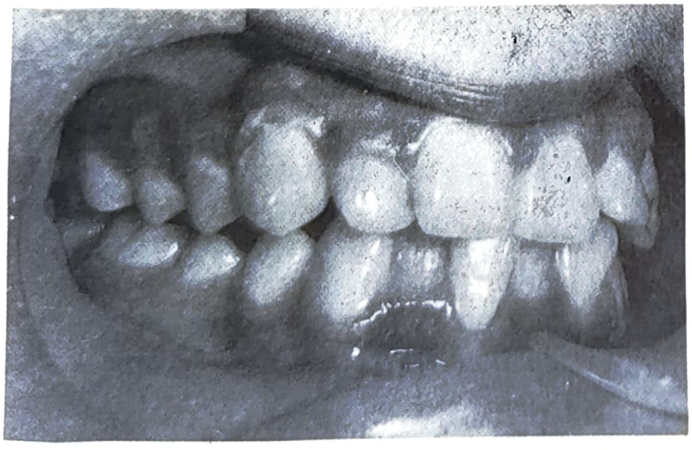

Fig. 5 : Gingival recession in region of lower right central.

A 0.016 round Australian wire with a closed helical coil was used for the lower arch (Fig 6 & 7). For the upper arch a

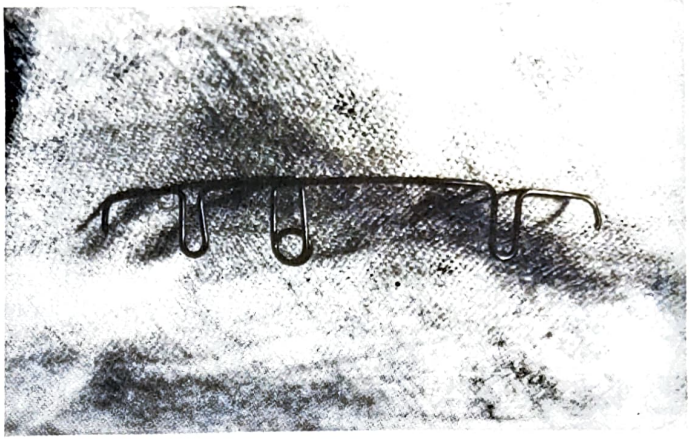

Fig. 6 : 0.016 round Australian wire with closed helical loop.

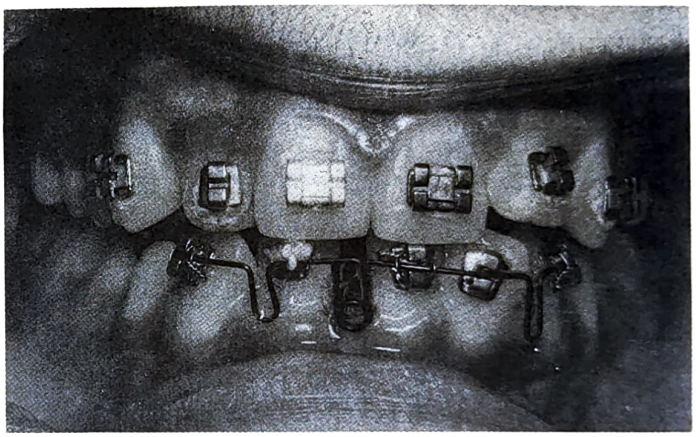

Fig. 7 : Lower arch wire ligated in place.

continuous 0.018 round Australian wire was used with lateral insets to facilitate correct positioning of the laterals (Fig 8 & 9).

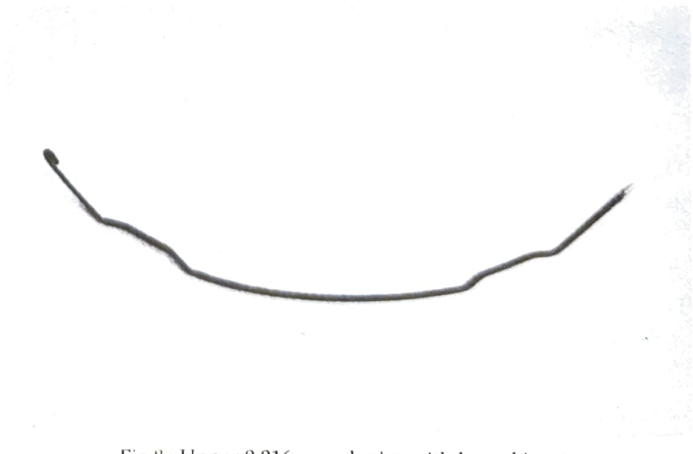

Fig 8 : Upper 0.016 round wire with lateral insets.

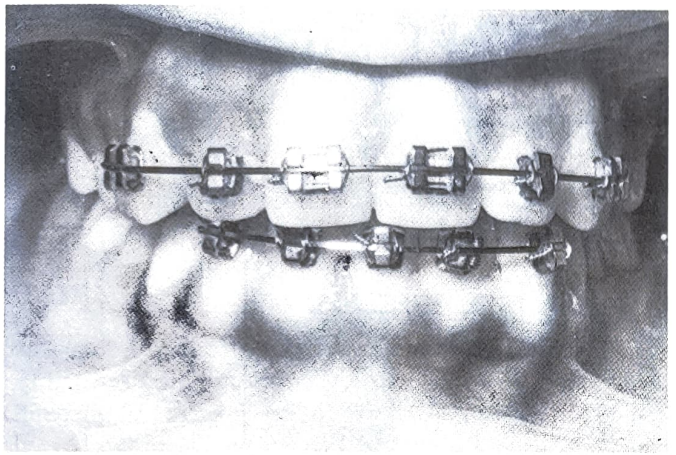

Fig. 9 : Upper round wire & lower 0.018 x 0.022 rectangular wire for finishing.

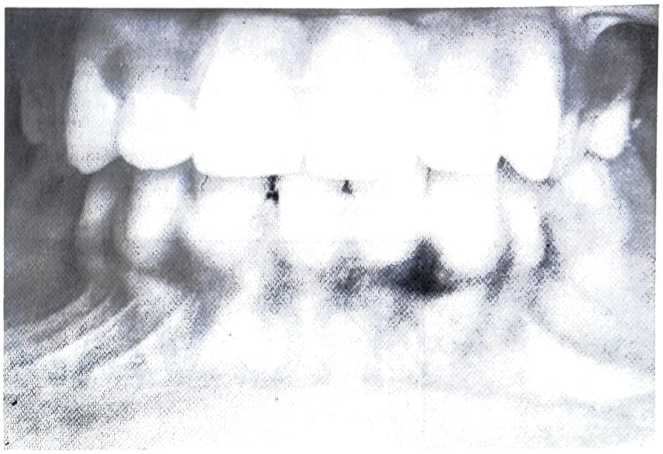

Fig. 10 : Frontal appearance at completion of treatment.

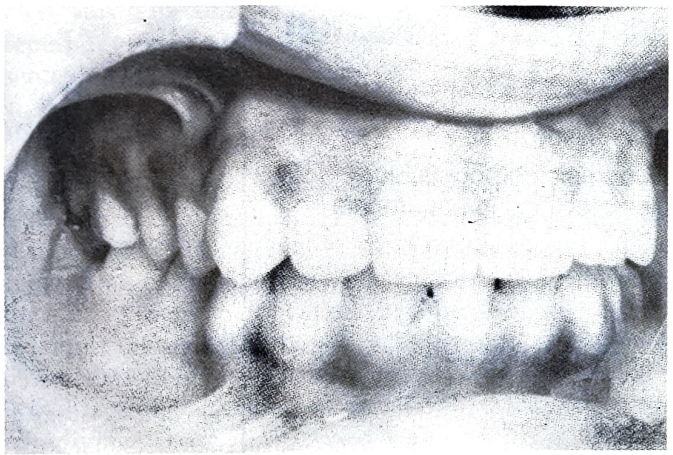

Fig. 11 : Right occlusion at end of treatment.

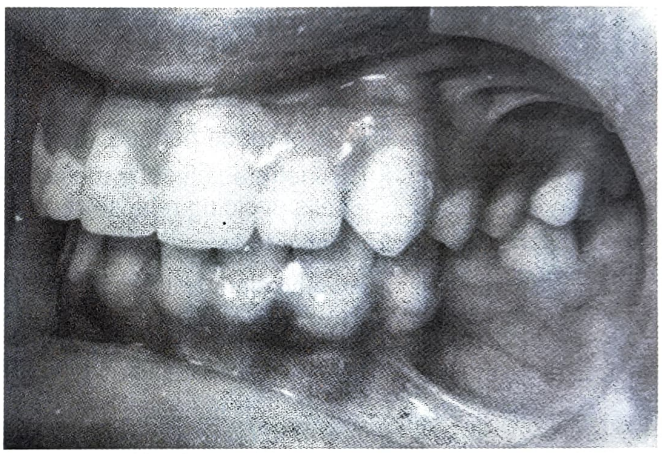

Fig. 12 : Left occlusion at end of treatment.

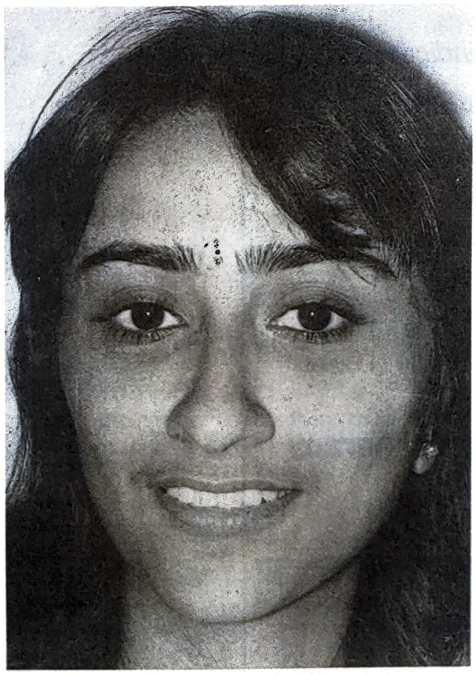

Fig. 13 : Smiling face six months later.

The lower wire was activated I mm by cinching back the wire at the canine. The lower left lateral was derotated with a rotation tie.

After 5 weeks the lower wire was changed to a rectangular wire of 018x022 followed by a 0215x0275 wire for finishing and uprighting of the lower right lateral and lower left central.Good finishing was obtained in both the upper and lower arches in 4 months (Fig 11-14).

On completion of treatment the cephalometric values, the over jet and the overbite were compared and observed that they had virtually remained unchanged.

ACKNOWLEDGMENTS

We are extremely grateful to Dr Ramdas M. Pai, Director, Manipal Academy of Higher Education for his continued support and to Dr. K. S. Bhat, Principal, College of Dental Surgery, Manipal for helping the Department on every occasion.

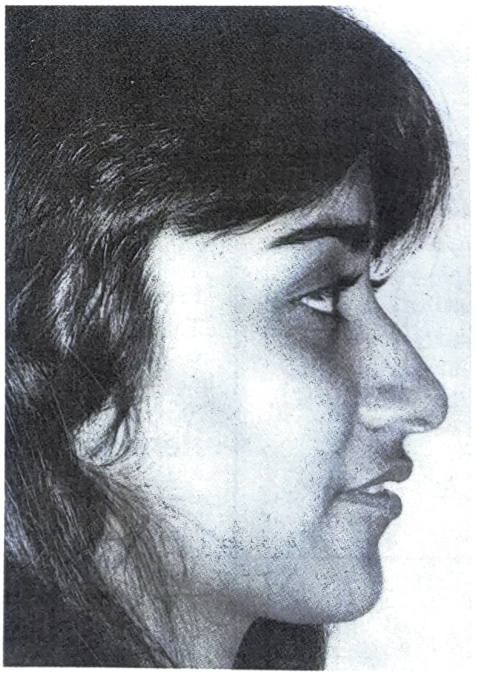

Fig. 14 : Profile maintained till the end of treatment.

References

1. Salzmann: Editorial: EH Angle on extraction in orthodontics. Am J Orthod 1963; 49 (6): 464-466.
2. Jackson VH: Orthodontia and orthopaedia of the face. Philadelphia: JB Lippincott Co., 1904.
3. Schwarz: Post-treatment appraisal of orthodontic results. Trans Europe Orthod Soc; 1961; 87-89.
4. Riedel RA; Retention. In: Graber TM, editor, Current orthodontic concepts and techcniques. Philadelphia: WB Saunders Co, 1969.
5. Riedel RA: Retention. In: Graber TM, Swain BF, editors. Current orthodontic concepts and techniques. Philadelphia; WB Saunders Co, 1975.
6. Riedel RA: Retention and relapse. J Clin Orthod 1976; 10: 454-472.
7. Joondeph DR: Riedel RA, Retention. In Graber TM, Swain BF, editors Orthodontics, Current principles and techniques, St. Louis, CV Mosby Co., 1985.
8. Kokich VG. Shapiro PA: Lower incisor extraction in orthodontic treatment. Angle Orthod 1984; 54:139-153.
9. Riedel RA, Little RM and Bui TD: Manidibular extraction-Post Retention evaluation of stability and relapse. Angle Orthod 1992, 62: 103-116.
10. Thota GL, Valiathan A: Variations in Intercanine, Interpremolar and Intermolar width-A comparative study between Indian and Chinese population, J.P.F.A.; 1992; 6: 109-114.