Compensated, Asymmetric Class II Malocclusion with Horizontal Impaction of Mandibular Second Molars

History and Etiology

A 19-year-10-month-old male presented for orthodontic consultation with chief complaints of delayed eruption of mandibular molars, poor masticatory function and irregular dentition. He was previously advised by several orthodontists that extraction of the bilateral impacted lower second molars and replacement with dental implants was the only viable option for correcting his malocclusion with facial asymmetry (*Figs. 1-3*). There were no contributing medical, dental or family histories. Because it was bilateral, the etiology of the malocclusion appears to be a genetically-related aberrant path of eruption or ectopic position(*s*) of developing teeth. This difficult malocclusion was treated to an optimal result, as documented in Figs. 4-6.

Cephalometric and panoramic radiographs illustrate the pretreatment condition and the post-treatment results (*Figs. 7-8*). Superimposed cephalometric tracings before and after treatment (*Fig. 9*), as well as a table of cephalometric measurements (*Table 1*), document the treatment. Two different approaches, utilizing OrthoBoneScrews (*OBS*) anchorage, demonstrated that extraction of the mandibular third molar, and recovery of the deeply impacted second molar, was superior to extracting the second molar and alignment of the third molar. Several

Fig. 1: Pretreatment facial photographs

Fig. 2: Pretreatment intraoral photographs

Fig. 3: Pretreatment study models (casts)

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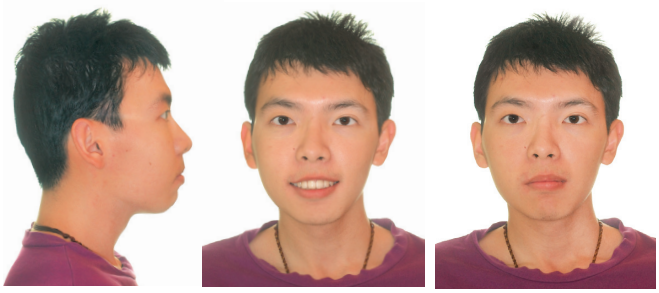

Fig. 4: Posttreatment facial photographs

Fig. 5: Posttreatment intraoral photographs

Fig. 6: Posttreatment study models (casts)

radiolucencies on the finish panoramic radiograph indicate that further treatment is needed on the side where the impacted mandibular molar was extracted.

Diagnosis

Skeletal:

- Skeletal Class II (*SNA 85°, SNB 80°, ANB 5°*)
- Mandibular plane angle (*SN-MP 30°, FMA 28°*) was within normal limits (*WNL*)
- Facial asymmetry: mandible deviated 3mm to the left

Dental:

- Left end-on Class II molar relationship
- Left Class II canine
- Both the OJ and OB were 4 mm
- 4 mm space deficiency for lower arch

Facial:

- Convex profile with protrusive lower lip (*Fig. 1*)

The American Board of Orthodontics (*ABO*) discrepancy index (*DI*) was 32, as documented in the subsequent DI worksheet, documents the complexity (*severity*) of the malocclusion. A DI >20 is considered a major malocclusion.

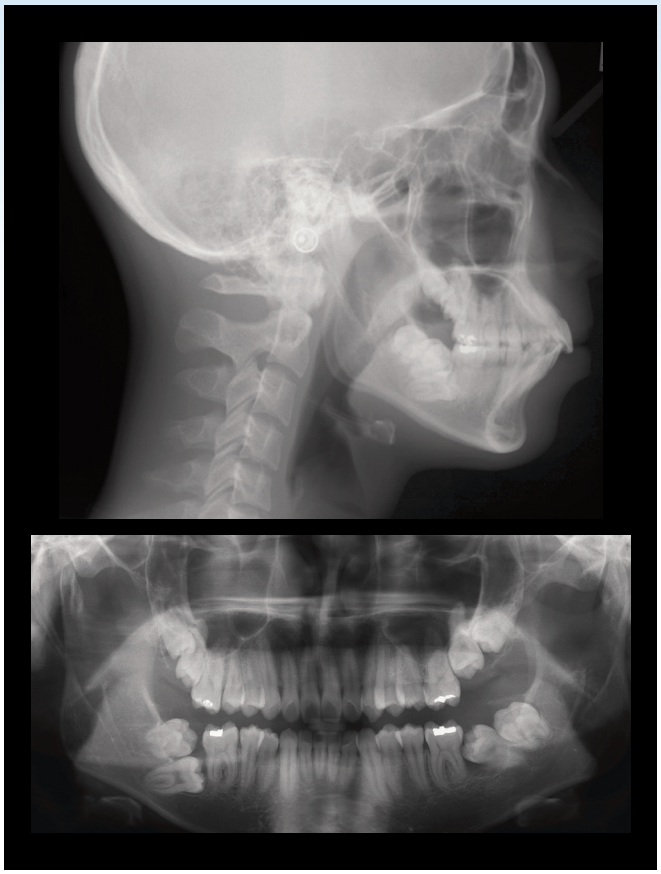

Fig. 7: Pretreatment pano and ceph radiographs

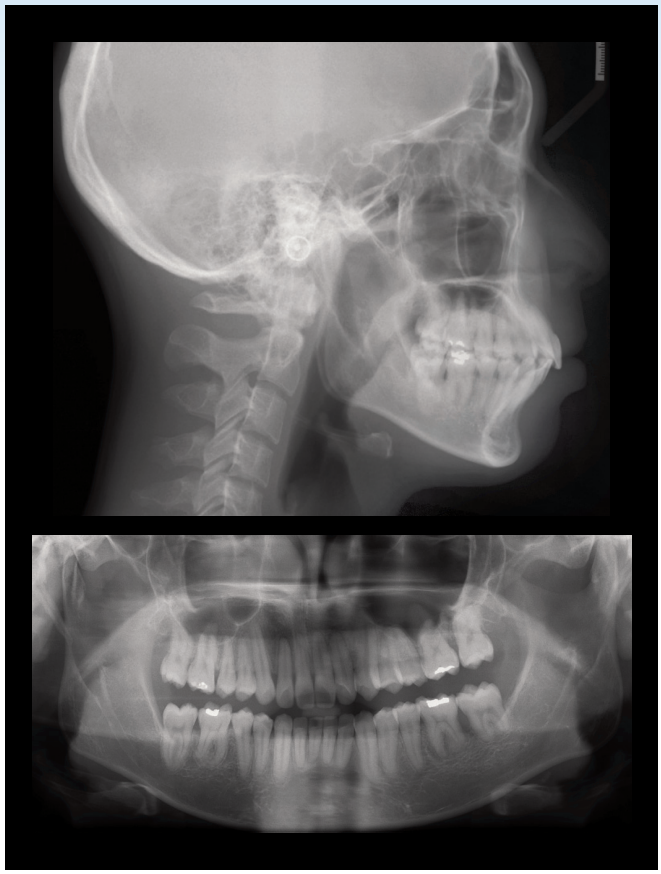

Fig. 8: Posttreatment pano and ceph radiographs

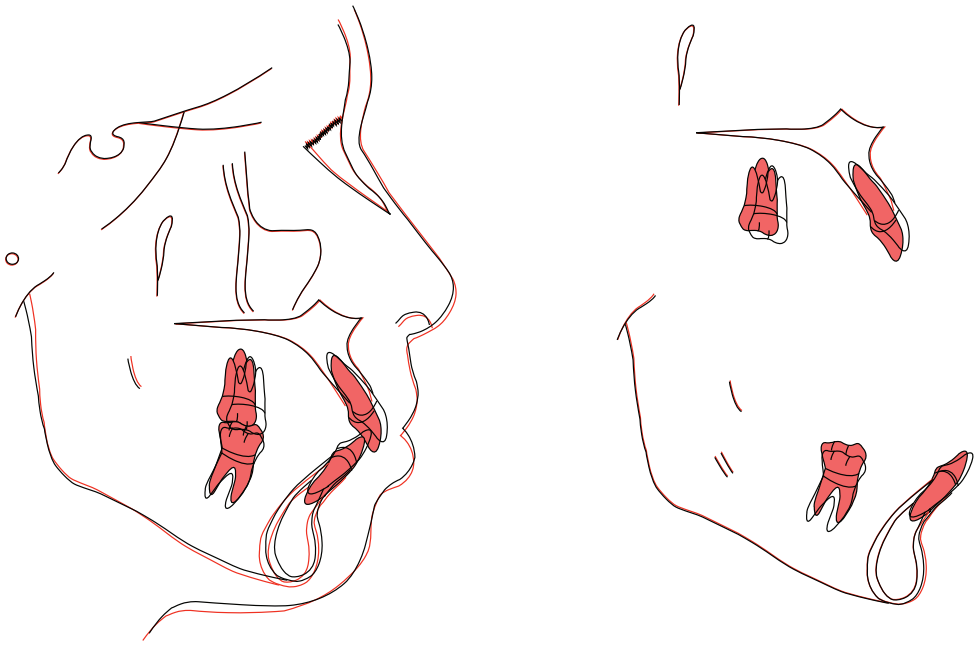

Fig. 9:

Superimposed cephalometric tracings show a slight opening of the vertical dimension of occlusion (VDO) and clockwise (posterior) rotation of the mandible. Superimposition on the maxilla revealed retraction of the entire arch, extrusion of the anterior segment, and intrusion of the molars. The mandibular superimposition documented retraction of the incisors and extrusion of the molars.

CEPHALOMETRIC			
SKELETAL ANALYSIS			
	PRE-Tx	POST-Tx	DIFF.
SNA°	85°	85°	0°
SNB°	80°	79°	1°
ANB°	5°	6°	1°
SN-MP°	30°	32°	2°
FMA°	28°	30°	2°
DENTAL ANALYSIS			
U1 TO NA mm	8 mm	5 mm	3 mm
U1 TO SN°	117°	107°	10°
L1 TO NB mm	12.5 mm	11mm	1.5 mm
L1 TO MP°	111°	105°	6°
FACIAL ANALYSIS			
E-LINE UL	0.5 mm	-0.5 mm	1 mm
E-LINE LL	5 mm	4 mm	1 mm

■ Table 1: Cephalometric summary

Specific Objectives of Treatment

The overall objective of treatment was aimed at achieving a full 28 tooth, bilateral Class I molar and canine relationships with ideal overjet and overbite. Specific treatment objectives were:

Maxilla (*all three planes*):

- A - P: Maintain
- Vertical: Maintain
- Transverse: Maintain

Mandible (*all three planes*):

- A - P: Maintain
- Vertical: Maintain
- Transverse: Maintain

Maxillary Dentition :

- A - P: Retract to correct Class II buccal segments and excessive overjet
- Vertical: Maintain
- Inter-molar / Inter canine Width: Expansion to relieve lingual cross-bite of LL 1st molar (#*19*)

Mandibular Dentition:

- A - P: Tip incisors distally
- Vertical: Maintain
- Inter-molar / Inter-canine Width: Expand constricted buccal segments to relieve crowding

Facial Esthetics:

- Retract lower lip to improve facial balance

Treatment Plan

Extract the upper 3rd molars (#*1, 16*), lower right 3rd molar (#*32*), and lower left 2nd molar (#*18*). Install the passive self-ligating bracket system (*Damon D3MX*). Utilize four extra-alveolar OBS (*2mmx12mm SS*): 1. right ascending ramus to recover #31, 2. bilatral infrazygomatic crests to correct asymmetric Class II, and 3. protract and rotate #17. Detail, remove fixed appliances, and finish with a positioner. Retain with a fixed anterior retainer in the lower arch and a clear overlay on the upper arch.

Appliances and Treatment Progress

The patient was referred to extract #1, 16, 18, and 32 before the start of orthodontic treatment. An .022" Damon D3MX® low torque brackets (*Ormco*) were bonded on both arches. The initial archwires were .014" CuNiTi. Bite turbos constructed with Fuji glass Ionomer cement were bonded on the mandibular 1st premolars to accelerate the correction of #19 lingual cross-bite and the level both arches (*Figs. 10-11*). In the 6th month of treatment, brackets were rebonded on #3 and 14 to correct an inadvertent reversal (*Figs. 12-13*). Radiographs were used to evaluate the

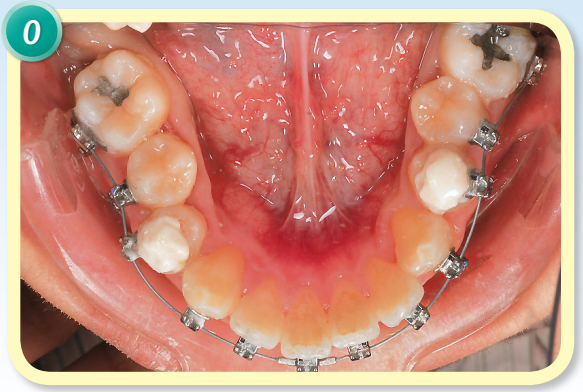

Fig. 10:

Bite turbos constructed with glass Ionomer cement (GIC) were bonded on the mandibular 1st premolars.

Fig. 11:

It is important that the bite turbos come into occlusion simultaneously. Note contact on left side (arrow) but a lack of contact on the right side. Add GIC until bilateral posterior contact is achieved to prevent TMJ discomfort.

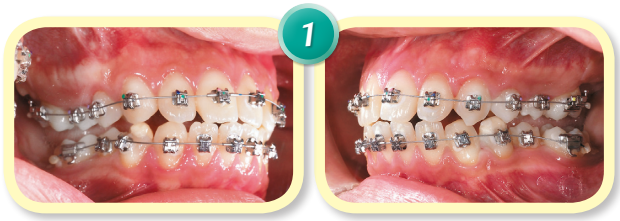

Fig. 12:

In the first month of treatment (1), it was noticed that brackets were inadvertently reversed for teeth #3 and 14. Note that the hooks are on the distal.

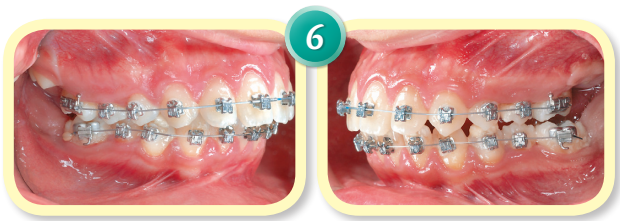

Fig. 13:

At six months of treatment (6), the maxillary first molar brackets were rebonded in the correct positions.

eruption of #31 following extraction of #32 (*Fig. 14*). After seven months of observation, it appeared that #31 was blocked from further eruption by the cortical bone of the ascending ramus. An OBS (*2mmx12mm SS*) was installed and bone was removed down to the CEJ on #31 (*Fig. 15*). The second molar was slightly luxated with an elevator to confirm that it was not

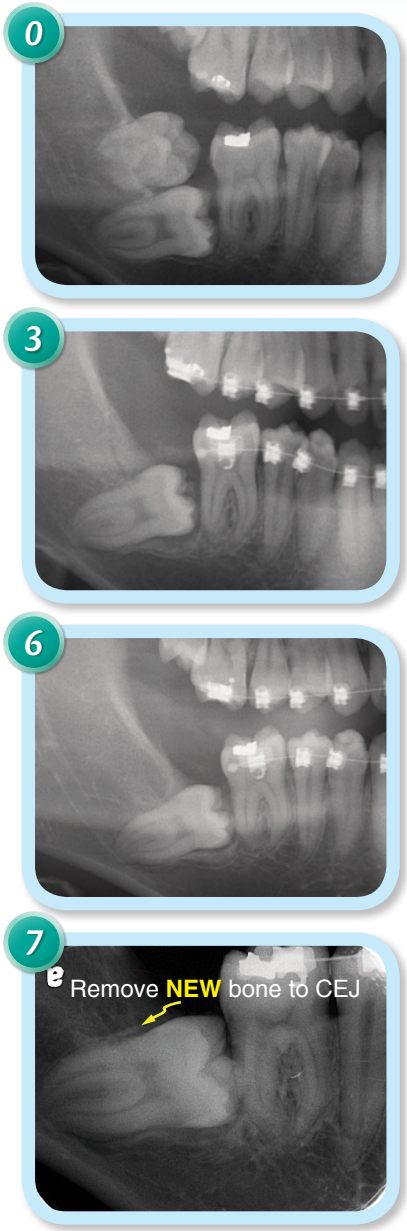

Fig. 14:

Radiographic summary of #31 recovery shows the pretreatment view (0 mo), followed by three months of healing after #32 was extracted (3 mo). Note #31 was starting to erupt and upright but was inhibited by cortical bone (6 mo). It is important to remove bone down to the CEJ (7 mo).

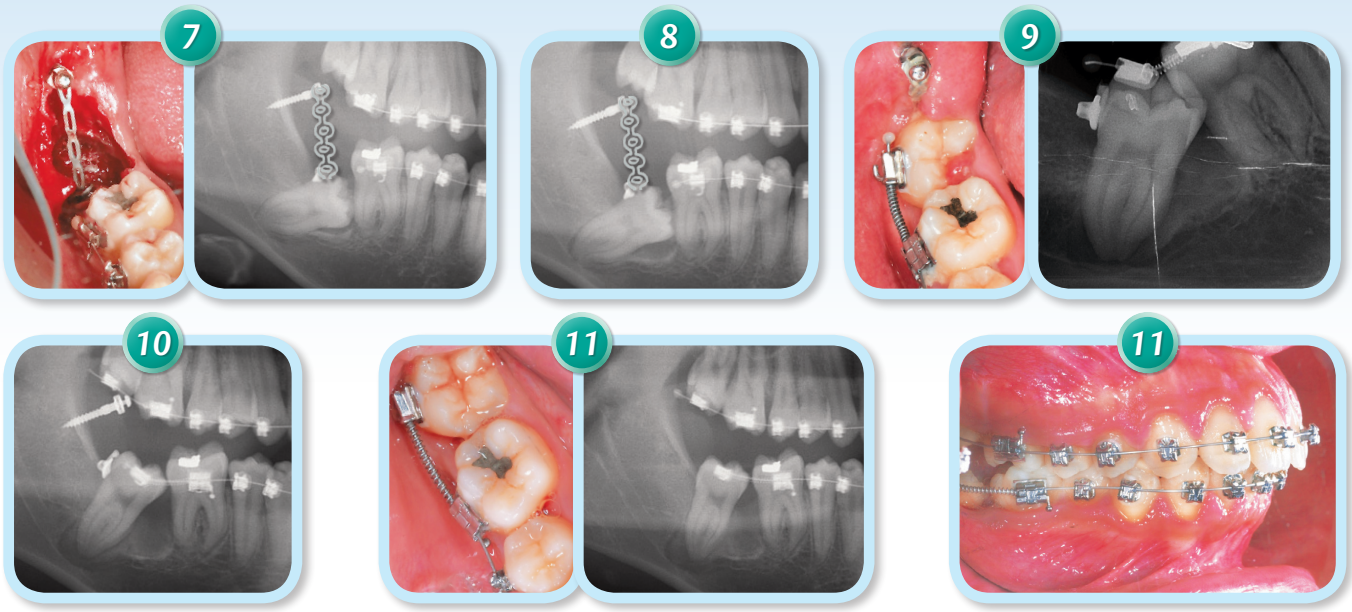

Fig. 15:

Documentation for the treatment of the lower right second molar from 7-11 months shows the uprighting and alignment sequence.

ankylosed. An eyelet was bonded on the distal surface of #31 and a power-chain was stretched between the eyelet and the OBS to achieve extrusion and uprighting (*Fig. 15*). One month later (*8 months of treatment*), a panoramic radiograph revealed #31 had moved ~2mm occlusally. In the 9th month of treatment, #30 was rebonded, #31 was bonded on the buccal surface, and an open coil spring applied between the molars to upright #31 (*Fig. 15*).

Figs. 16-18 show the steps for alignment and retraction of the maxillary buccal segments. At 9 months, #2 and 15 were sufficiently erupted for bonding brackets and placing a .014 CuNiTi archwire (*Fig. 16*). By 11 months the upper 2nd molars had erupted considerably (*Fig. 17*).

Seventeen months into treatment, bilateral infrazygomatic OBSs were installed and elastic chains were stretched between the miniscrews and the maxillary canines bilaterally (*Fig. 18*).

Fig. 16:

After extraction of #1, 16, both maxillary 2nd molars (#2, 15) are erupting spontaneously nine months into treatment. They were bracketed and a .014" CuNiTi arch-wire was inserted from teeth #2-15.

Fig. 17:

At 11 months of treatment (two months later) #2 and 15 are much closer to occlusion.

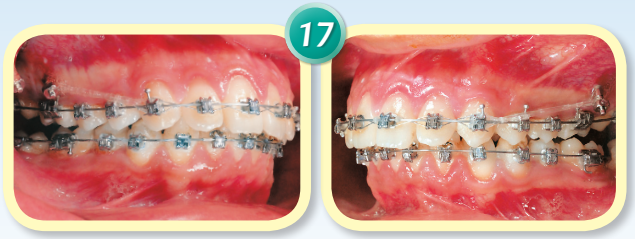

Fig. 18:

At 17 months of treatment, two bone screws (2mm x 12mm SS) were installed in the infrazygomatic crests and the power chains were applied to retract ("distalize") the whole maxillary arch.

Nine months into treatment, a diode laser was used to remove soft tissue covering #17 so that a tube could be bonded on the occlusal surface. In the 10th month of treatment, the impacted #17 was surgically uncovered down to the cementoenamel junction (*CEJ*), and uprighting was activated with an .016 CuNiTi arch-wire (*Fig. 19*). In the 12th month of treatment, the upper arch-wire was changed to .014x.025" CuNiTi, the lower arch-wire was

Fig. 19:

Summary of the lower left third molar treatment from 9-37 months demonstrates the technical problems in achieving optimal alignment.

changed to .018" CuNiTi, with an open coil spring applied between #17 and 19 to upright the partially impacted #17 (*Fig. 19*). In the 16th month of treatment, the upper arch-wire was changed to .017x.025" low friction TMA. In the 17th month of treatment, infrazygomatic bone screws (*2mmx12mm SS*) were installed and activated with power chains to retract the whole upper arch (*Fig. 18*). In the 20th month of treatment, a panoramic radiograph was exposed to evaluate the #17 position relative to the occlusal plane (*Fig. 19*).

In the 21th month of treatment, #17 was rebonded, placing the bracket on the buccal surface of the tooth which was oriented to the distal (*90° rotation*), and the lower arch-wire was changed to .018" CuNiTi with a power chain to rotate #17 (*Fig. 19*). In the 23th month of treatment, a bone screw (*2mmx12mm SS*) was installed in the left mandibular buccal shelf and a chain of elastics was applied to rotate #17 (*Fig. 19*). In the 30th month of treatment, the bracket on #17 was removed and a lingual button was bonded to upright #17 with a cross elastic. In the 33th month of treatment, the OBS in the buccal shelf and lingual button were removed (*Fig. 19*).

In the 34th month of treatment, the upper arch-wire was changed to .019x.025" SS, the lower arch-wire was changed to .016x.025" SS. To expand the upper arch-wire and constrain the lower for coordination of the inter-arch relation. In the 37th month of treatment, a panoramic radiograph was exposed to evaluate bracket positions relative to the axial inclinations of all teeth. A large radiolucency was noted between #17 and 19. Brackets were rebonded on #21, 28, 30 for final detailing and the lower arch-wire was changed to .014x.025" CuNiTi. In the 39th month of treatment, a tooth positioner was fabricated for final alignment (*Fig. 20*). After 40 months of active treatment, all appliances were removed (*Fig. 21*). Upper clear and lower fixed anterior retainers were delivered as planned.

Fig. 20:

At 39 months of treatment, a tooth positioner was fabricated for final detailing of the occlusion. The upper photograph shows the non-active position, the lower view shows the active position (clenching).

Fig. 21:

At 40 months of treatment (after one month of positioner wear) an optimal final alignment is achieved.

Results Achieved

Maxilla (*all three planes*):

- A - P: Maintained
- Vertical: Maintained
- Transverse: Maintained

Mandible (*all three planes*):

- A - P: Maintained
- Vertical: Clockwise rotation and a slight opening of mandibular plane angle ~ 2 degree
- Transverse: Maintained

Maxillary Dentition:

- A - P: Incisors were extruded and tipped lingually
- Vertical: Extrusion of the incisors and intrusion of the molars, steepening the plane of occlusion
- Inter-molar / Inter-canine Width: cross bite corrected with arch expansion in the first molar area

Mandibular Dentition:

- A - P: Slight lingual tipping of the incisors
- Vertical: molars extruded, steepening the plane of occlusion
- Inter-molar / Inter-canine Width: Expanded 2-3mm to correct constricted archform

Facial Esthetics:

- Little change in facial profile or lip protrusion

Retention

Upper clear overlay and lower fixed 3-3 retainers were delivered, and the patient was instructed to wear them full time for the first six months and nights only thereafter. In addition, instructions in proper home hygiene and maintenance of the retainers were provided.

Final Evaluation of Treatment

The ABO Cast-Radiograph Evaluation score was 28 points and IBOI Pink & White score resulted in score of 6, as documented on forms appearing later in this report. The major discrepancies were uneven marginal ridges (*5 points*), buccolingual inclination of posterior teeth (*6 points*), loss of some occlusal contacts (*6 points*) and inadequate root parallelism existed between #12- 13, #21-22 and #28-29 (*3 points*). The latter resulted primarily from the uprighting, rotation and transposition of impacted molars in the lower arch. The OB was 3 mm, OJ was 3 mm, molar relationship was Class I bilaterally, but the profile was unchanged. Overall, the treatment results for this challenging case were pleasing for both the patient and the clinician, but there is concern about the loss of supporting bone on the mesial of #17. Using passive self-ligating brackets (*i. e., the Damon system*) and bone screws as anchorage was effective for managing this very difficult malocclusion (*DI = 32*) that was treated to an acceptable alignment result (*CRE = 28*). However, in retrospect it may have been wise to extract #32 and upright #31 to avoid the bone defect.

Discussion

Impaction of second molars is very uncommon in the maxillary arch, but the problem has an incidence

of 0.03% to 0.21% in the mandibular arch.[1,2] According to Andreasen et al.,[3] three main causes have been proposed for eruption disturbances: ectopic position, obstacles in the eruption path, and failures in the eruption mechanism. Failure of tooth eruption is associated with various systemic and local factors.[4] Heredity is also mentioned as an etiologic factor. Recently mutations in parathyroid hormone receptor 1 have been identified[5,6] in several familial cases of primary failure of eruption. Local factors related to the failure of eruption include malocclusion disturbances of the deciduous dentition, the position of the adjacent teeth, space deficiency in the dental arch, idiopathic factors, supernumerary teeth, odontomas, or cysts.[1,7,8] In the present case, impactions of all the third and second molars may be attributed to obstacles in the eruption path or ectopic position.[4,8,9] Since the problem is bilateral, and involves both arches, a genetic etiology is likely; however, there is no clear documentation for similar problems in the literature.

Impacted second molars hinder masticatory function and dental arch integrity. Treatment options for this difficult problem include extraction, surgical uprighting, transplantation, surgical-orthodontic intervention, dental implant replacement and innovative tip-back cantilever treatment.[7,8,10,11,12] The most aggressive method for treating the impacted mandibular molars is extraction. For the present case, extraction of #31 required careful technique to avoid injury to the inferior alveolar nerve and periodontal damage in the extraction site. It is unknown if the extraction or follow-up soft tissue surgery contributed to the bone loss mesial to #17 (*Figs. 8, 19 and 24*).

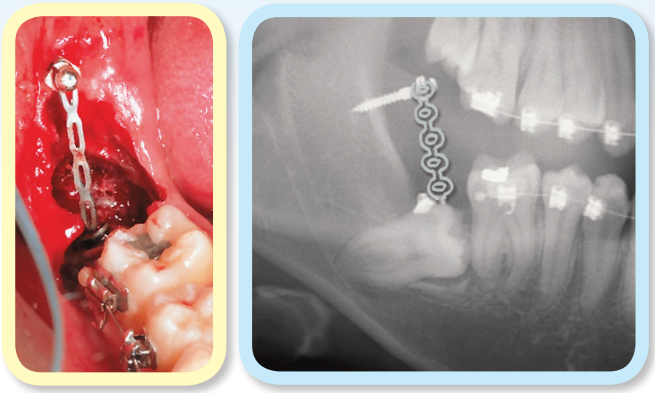

Fig. 22:
In recovering he impacted #31, the power chain to the OBS extrudes and uprights the molar because the force is applied occlusally to the center of resistance of the molar.

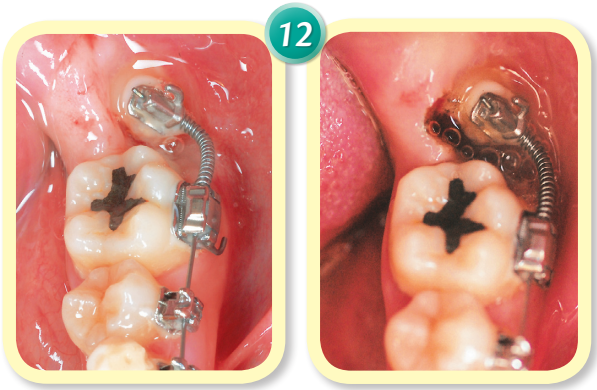

Fig. 23:
Gingivoplasty with a diode laser was necessary to remove the excessive mucosa lingual and occlusal to tooth #17.

Fig. 24:
Unfortunately, a bony defect was noted between #17 and 19. See text for details about this significant problem.

There are some important aspects for the successful recovery of second molar impactions. First, the lower 3rd molar should be extracted before the start of orthodontic treatment to provide a path of eruption. Second, it is important to remove all bone around the crown down to CEJ junction and leave an opening in the flap for the tooth to erupt.[13] Moreover, any obstacles in the designed pathway of eruption should be removed during the surgical procedure[14] and the impacted tooth should be slightly luxated with an elevator.[15] Third, a long bone screw (*2mm x 12mm SS*) is required for the ascending ramus to penetrate the thick soft tissue and resist motion due to temporalis muscle firing. Fourth, once the impacted second molar has been uprighted sufficiently, it should have a bracket bonded on the buccal surface to expedite alignment.[15]

At the end of active treatment, the tooth positioner was effective for improving occlusal and interproximal contacts.[16] There is no literature supporting the extraction of healthy impacted molars in favor of placing implants.[17] A healthy tooth has a life-long survival rate, which may or may not be true for a dental implant.

Numerous orthodontic appliances and techniques have been suggested for uprighting impacted molars. Some of the better documented methods are a variety of bonded attachments, spring fixed in a vertical lingual sheath, push coil springs, intermaxillary vertical elastics, removable appliance with an uprighting spring, as well as various applications of miniscrews and miniplates.[18-22] All of these methods have limitations when managing deeply impacted teeth.[23]

For the current patient, a mandibular second molar (#*18*) was extracted instead of the third molar. Because of the ectopic position, rotation and compromised axial inclination of #17, a long period of difficult treatment was required to align the third molar (*Fig. 19*). Furthermore, there was an excessive accumulation of fibrous mucosa overlying the the crown of the tooth that required a second gingivectomy with a diode laser (*Fig. 23*).[13] All of these procedures consumed considerable treatment time which risks the periodontal health of the affected area (*Fig. 24*) as well as the entire dentition (*Fig. 8*). In retrospect, it would have been wise to obtain a 3D image the area of the impactions. The buccolingual alignment problems with the impacted #17 are not apparent in the 2D pano or ceph (*Fig. 7*).

The response to orthodontic uprighting (*Fig. 22*) in the right mandibular posterior segment was gratifying, but the large bony defect between the left mandibular molars was disappointing (*Fig. 19*), and will require additional treatment. A careful reconsideration of the differential response to the two variations in treatment is in order. The bilateral second molar impaction problems appeared similar in the pretreatment panoramic radiograph (*Fig. 7*), but in retrospect subtle differences are evident. Although #31 was more deeply impacted than #18, the adjacent bone pattern was more favorable for orthodontic uprighting and alignment. The

large radiolucent area inferior to the crown of #18 was a concern because it may be a pathologic lesion such as a cyst that will not resolve when the tooth is uprighted. Based on 2D images, the decision was made to extract #18 with its follicle and orthodontically align #17. However, the position and alignment of #17 presented a formidable task as illustrated in Fig. 19. In addition, by the 13th month it was clear that the bone fill where #18 was extracted was much less favorable than for extraction of #32 (*Fig. 15*). Moving #17 into the defect did not resolve the problem (*Figs. 8 and 19*). Twelve months into treatment, it was necessary to again remove soft tissue to expose the crown of #17, and a closed coil spring was used for uprighting (*Fig. 23*). Although the bone defect was not obvious until 37 months, a compromised bone response on the mesial of #17 was evident by 20 months (*Figs. 8, 19 and 24*).

The extensive treatment necessary to resolve the molar alignment problems contributed to the relatively high score of 28 using the ABO Cast-Radiograph Evaluation. The major problems were poor axial inclination, marginal ridge discrepancies, and lack of occlusal contacts.

It is unclear what caused the bone loss between #17 and 19, but the most likely candidates are a low grade postoperative infection associated with one of the surgical procedures in the area, and/or a localized manifestation of periodontitis. Careful evaluation of the post-treatment panoramic radiograph reveals other areas of concern. Another area of bone loss is noted between #14 and 15, suggesting active periodontitis. There is also an unusual radiolucency involving the apical half of the mesial root of #19 which may be a periapical granuloma or cyst. Clearly these problems require immediate attention to preserve the benefits of orthodontic treatment. In particular, a through periodontal assessment is indicated. If the bone loss on the mesial of #17 cannot be corrected, it may be wise to extract #17 along with its antagonist #15. Otherwise the periodontal problem to like to compromise #19.

Conclusion

This case report is a comparison of two extraction patterns to resolve a challenging bilateral impaction of mandibular second molars. Extracting the third molar and uprighting the second molar produced the most ideal result. Extracting the second molar, combined with subsequent gingivectomy and extensive mechanics to align the third molar, resulted in severe bone loss on the mesial of the third molar. A bone screw installed in the ascending ramus was effective anchorage to recover the deeply impacted second molar. This very difficult malocclusion (*DI = 32*) was treated to an acceptable final alignment (*CRE = 28*), but several radiolucencies noted in the final panoramic radiograph require further evaluation and treatment.

Acknowledgment

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Discrepancy Index Worksheet

Total DI Score 32

OVERJET

0 mm. (edge-to-edge)	=	
1 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
7.1 – 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. per tooth =

Total = 2

OVERBITE

0 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 2

ANTERIOR OPEN BITE

0 mm. (edge-to-edge), 1 pt. per tooth
then 1 pt. per additional full mm. per tooth

Total = 0

LATERAL OPEN BITE

2 pts. per mm. per tooth

Total = 0

CROWDING (only one arch)

1 – 3 mm.	=	1 pt.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 2

OCCLUSION

Class I to end on	=	0 pts.	
End on Class II or III	=	2 pts. per side	2 pts.
Full Class II or III	=	4 pts. per side	pts.
Beyond Class II or III	=	1 pt. per mm. additional	pts.

Total = 2

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 1

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° _____ x 1 pt. = _____

Each degree > 6° _____ x 1 pt. = _____

SN-MP

≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.

Each degree < 26° _____ x 1 pt. = _____

1 to MP ≥ 99° = 1 pt.

Each degree > 99° 12 x 1 pt. = 12

Total = 13

OTHER (See Instructions)

Supernumerary teeth	_____	x 1 pt. =	_____
Ankylosis of perm. teeth	_____	x 2 pts. =	_____
Anomalous morphology	_____	x 2 pts. =	_____
Impaction (except 3rd molars)	2	x 2 pts. =	4
Midline discrepancy (≥3mm)		@ 2 pts. =	2
Missing teeth (except 3rd molars)	_____	x 1 pts. =	_____
Missing teeth, congenital	_____	x 2 pts. =	_____
Spacing (4 or more, per arch)	_____	x 2 pts. =	_____
Spacing (Mx cent. diastema ≥ 2mm)		@ 2 pts. =	_____
Tooth transposition	_____	x 2 pts. =	_____
Skeletal asymmetry (nonsurgical tx)		@ 3 pts. =	_____
Addl. treatment complexities	2	x 2 pts. =	4

Identify: Lower 2nd molars blocked out by 3rd molars

Total = 10

IMPLANT SITE

Lip line : Low (0 pt), Medium (1 pt), High (2 pts) = _____

Gingival biotype : Low-scalloped, thick (0 pt), Medium-scalloped, medium-thick (1 pt), High-scalloped, thin (2 pts) = _____

Shape of tooth crowns : Rectangular (0 pt), Triangular (2 pts) = _____

Bone level at adjacent teeth : ≤ 5 mm to contact point (0 pt), 5.5 to 6.5 mm to contact point (1 pt), ≥ 7mm to contact point (2 pts) = _____

Bone anatomy of alveolar crest : H&V sufficient (0 pt), Deficient H, allow simultaneous augment (1 pt), Deficient H, require prior grafting (2 pts), Deficient V or Both H&V (3 pts) = _____

Soft tissue anatomy : Intact (0 pt), Defective (2 pts) = _____

Infection at implant site : None (0 pt), Chronic (1 pt), Acute(2 pts) = _____

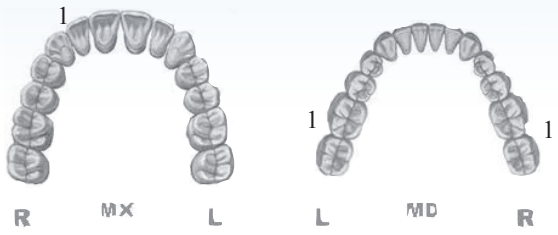
Total = 0

Cast-Radiograph Evaluation

Total CRE Score 28

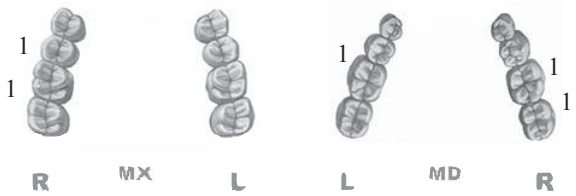
Alignment/Rotations

3



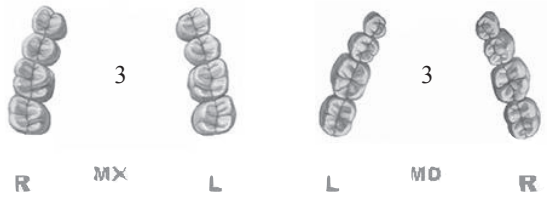
Marginal Ridges

5



Buccolingual Inclination

6

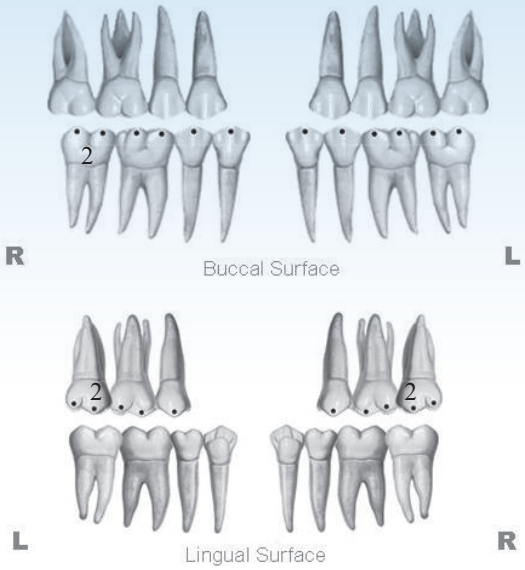


Overjet

1

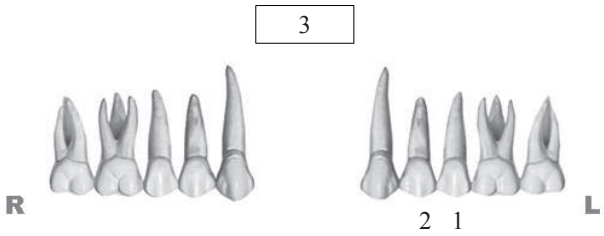
Occlusal Contacts

6



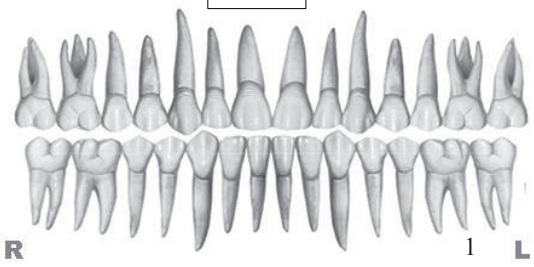
Occlusal Relationships

3



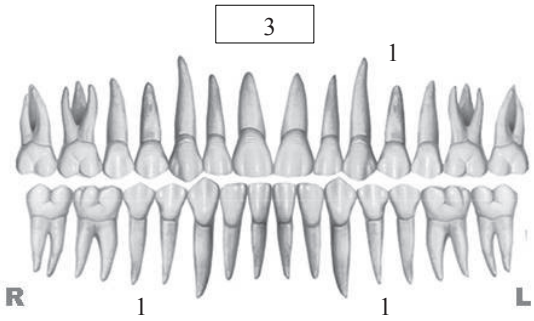
Interproximal Contacts

1



Root Angulation

3



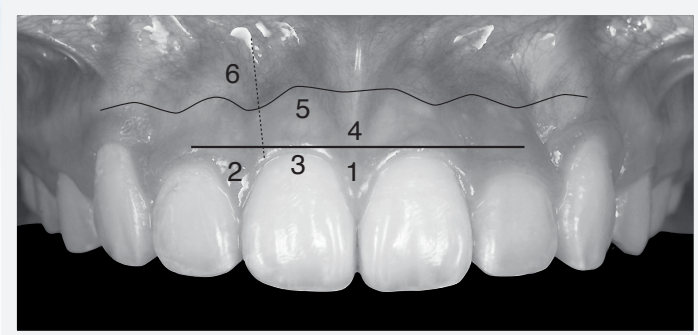
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI Pink & White Esthetic Score

Total Score: = 6

1. Pink Esthetic Score

Total = 3

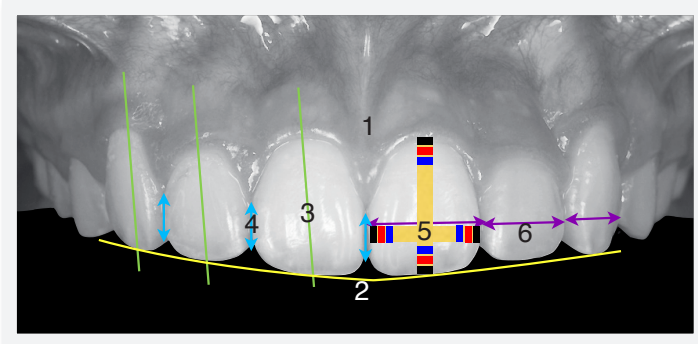


1. Mesial Papilla	0	1	2
2. Distal Papilla	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

1. M & D Papillae	(0)	1	2
2. Keratinized Gingiva	(0)	1	2
3. Curvature of Gingival Margin	0	(1)	2
4. Level of Gingival Margin	0	(1)	2
5. Root Convexity (Torque)	0	(1)	2
6. Scar Formation	(0)	1	2

2. White Esthetic Score (for Micro-esthetics)

Total = 3



1. Midline	0	1	2
2. Incisor Curve	0	1	2
3. Axial Inclination (5° , 8° , 10°)	0	1	2
4. Contact Area (50%, 40%, 30%)	0	1	2
5. Tooth Proportion (1:0.8)	0	1	2
6. Tooth to Tooth Proportion	0	1	2

1. Midline	(0)	1	2
2. Incisor Curve	0	(1)	2
3. Axial Inclination (5°, 8°, 10°)	(0)	1	2
4. Contact Area (50%, 40%, 30%)	0	(1)	2
5. Tooth Proportion (1:0.8)	0	(1)	2
6. Tooth to Tooth Proportion	(0)	1	2