

ORTHODONTIC TREATMENT PLANNING: MY PHILOSOPHY



PADHRAIG FLEMING



Barts and The London
School of Medicine and Dentistry

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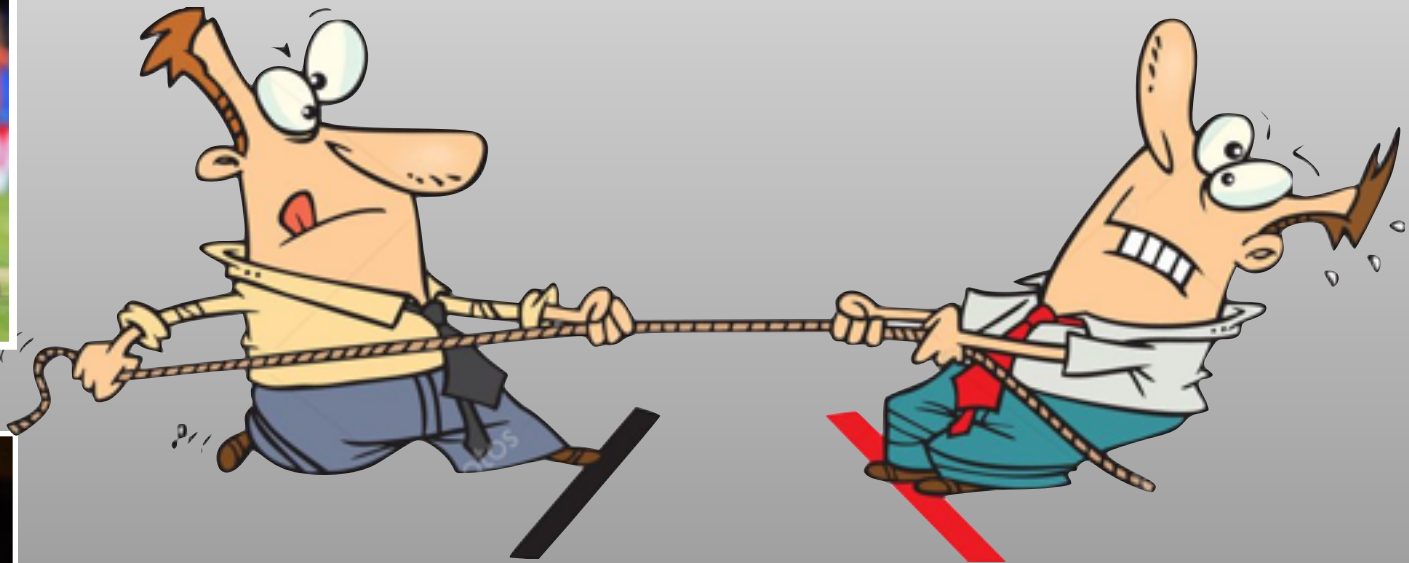
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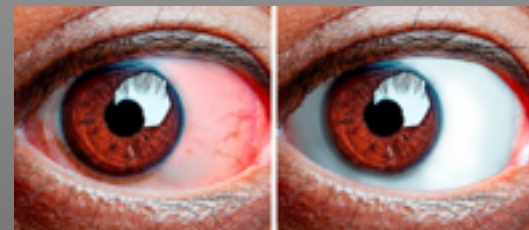
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... 6 LECTURES AT NZAO



RESEARCHER OR CLINICIAN ???

I'm
NERVOUS
Today





MY WEEK

TUESDAY
WEDNESDAY
FRIDAY

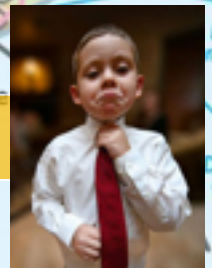
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THURSDAY
MONDAY (X1)

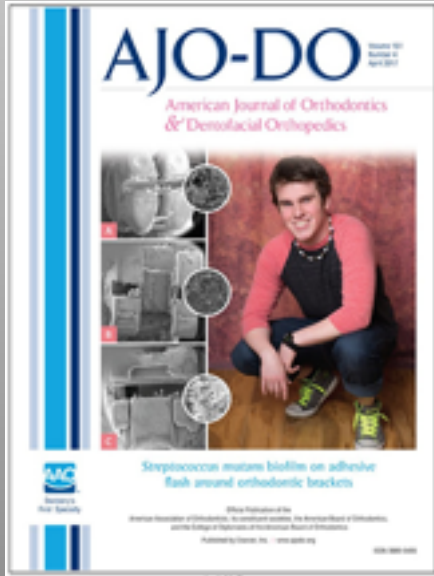
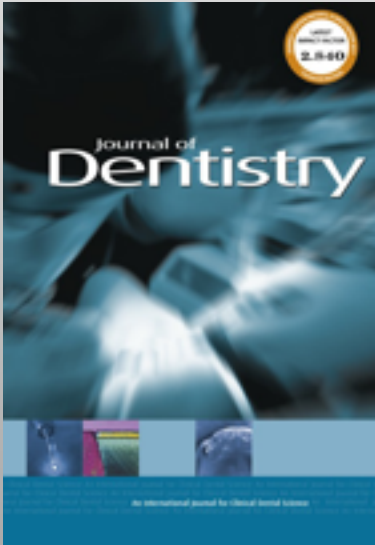
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MONDAY (X3)





ASSOCIATE EDITOR



REVIEWER

AJO-DO American Journal of Orthodontics & Dentofacial Orthopedics

Contact us  Help ? 

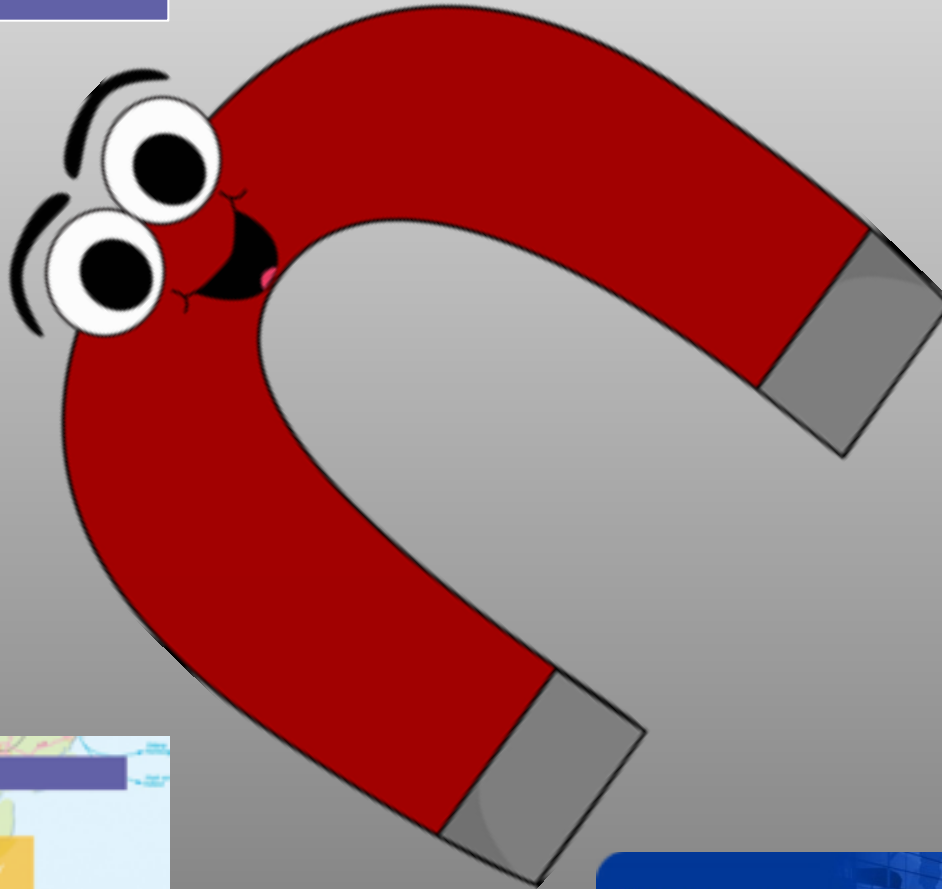
Username: padhraig.fleming@gmail.com
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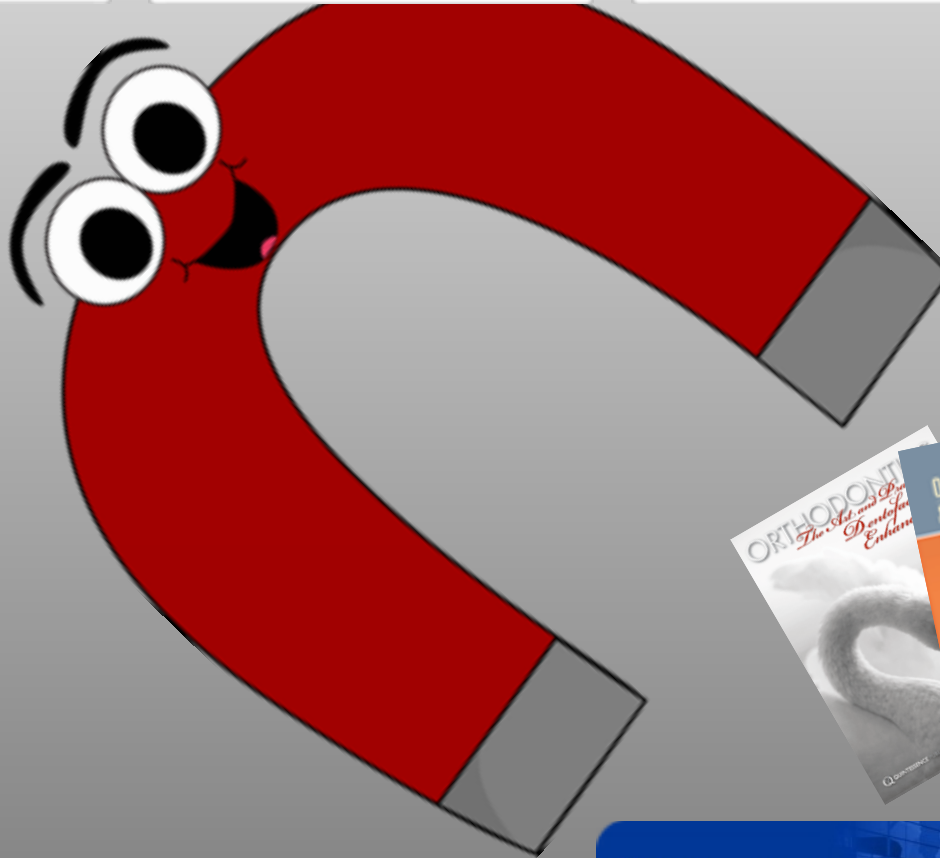
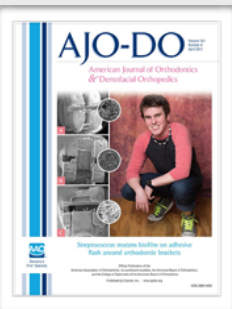
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Padhraig S. Fleming, MSc., MOrth RCS, FDS (Orth.) (Reviewer)	Yes	1 Class match with MS * 160: Treatment / biomechanics	Reviews in Progress: 0 Completed Reviews: 62 Un-invited After Agreeing: 1 Terminated After Agreeing: 0 Last Review Agreed: 01/27/2018 Last Review Completed: 01/27/2018 Last Review Declined: 01/29/2014 Avg Days Outstanding: 1 Manuscript Rating: 56.64 Reviewer Rating: 81.27	Outstanding Invitations: 0 Agreed: 63 Declined: 1 Un-invited: 0 Terminated: 0 Total Invitations: 64
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EXPERIENCE



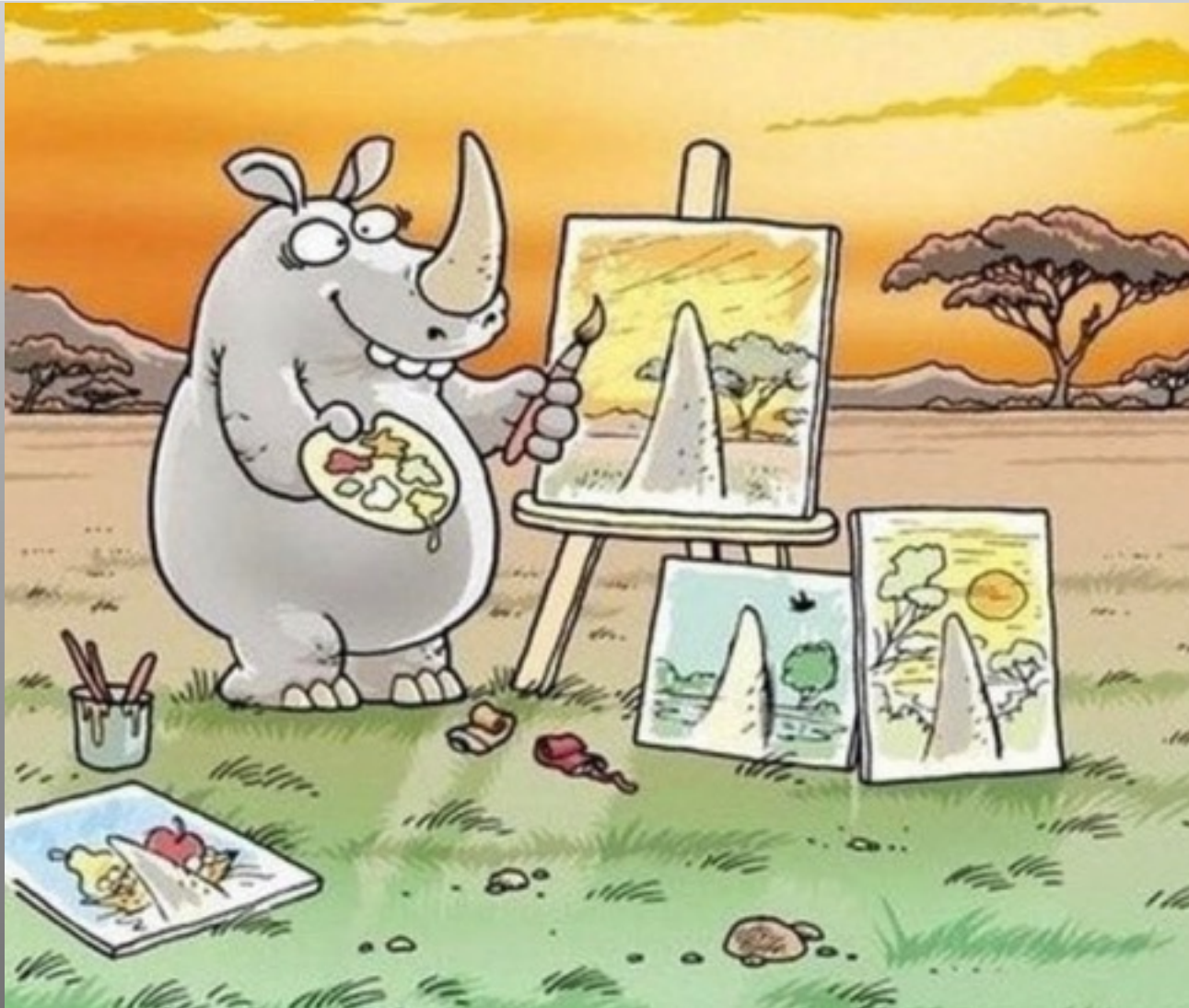
EVIDENCE



EVIDENCE

EXPERIENCE

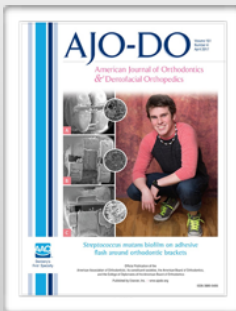
EVIDENCE



EXPERIENCE



EVIDENCE



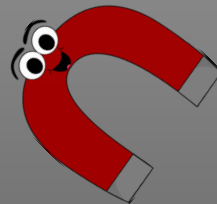
TREATMENT PLANNING

TREATMENT EFFICIENCY
FUNCTIONAL APPLIANCES
ADULT ORTHODONTICS
RETENTION PLANNING

EVIDENCE: MAKING IT RELEVANT



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EXPERIENCE

Barts and The London
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EVIDENCE



A
WALK
DOWN
MEMORY
LANE

ORTHODONTIC LANDSCAPE: 2008

- Risk vs. Benefit
- Social and psychosocial effects
- Direct/physical health?
- Aesthetics

A 20-year cohort study of health gain from orthodontic treatment: Psychological outcome

William C. Shaw,¹ Stephen Richmond,² Pamela M. Kennedy,³ Anne Kingston,⁴ and Helen Worthington⁵
¹Manchester, ²Cardiff, and ³London, United Kingdom

Introduction: Despite the widespread expectation that orthodontic treatment improves psychological well-being and self-esteem, there is little objective evidence to support this. The aim of this study was to compare the dental and psychosocial status of people who received, or did not receive, orthodontic treatment as teenagers. **Methods:** A prospective longitudinal cohort design was adopted. A multidisciplinary research team evaluated 1018 participants, aged 11 to 12 years, in 1989. Extensive assessments of dental health and psychosocial well-being were conducted; facial and dental photographs and plaster casts of dentition were obtained and rated for attractiveness and pretreatment need. No recommendations about orthodontic treatment were made, and an observational approach was adopted. At the third follow-up, 807 subjects (80-81 years old) were reexamined in 2007. One-way ANOVA was used to explore differences between the 4 groups (healthy need, treatment need, results, and no need). **Results:** The percentage changes in index of complexity, outcome and need scores for the 4 groups were healthy treatment (12.7%), no healthy treatment (-11.11%), need treatment (21%), and no need treatment (-11.67%). Participants with a prior need for orthodontic treatment as children who obtained treatment had better tooth alignment and satisfaction. However, when self-esteem at baseline was controlled for, orthodontic treatment had little positive impact on psychological health and quality of life in adulthood. **Conclusions:** Lack of orthodontic treatment when there was need did not lead to psychological difficulties in later life. (Am J Orthod Dentofacial Orthop 2007;132:148-52).



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the safe starter[™]
clean in | clean out

VALUE OF ORTHODONTICS



- Valued .. but less than other areas
- QoL and social effects .. Relate to aesthetics



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Cosmetic Dentistry
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SIX MONTH SMILES®
Cosmetic Braces System



ORTHODONTIC LANDSCAPE: 2008

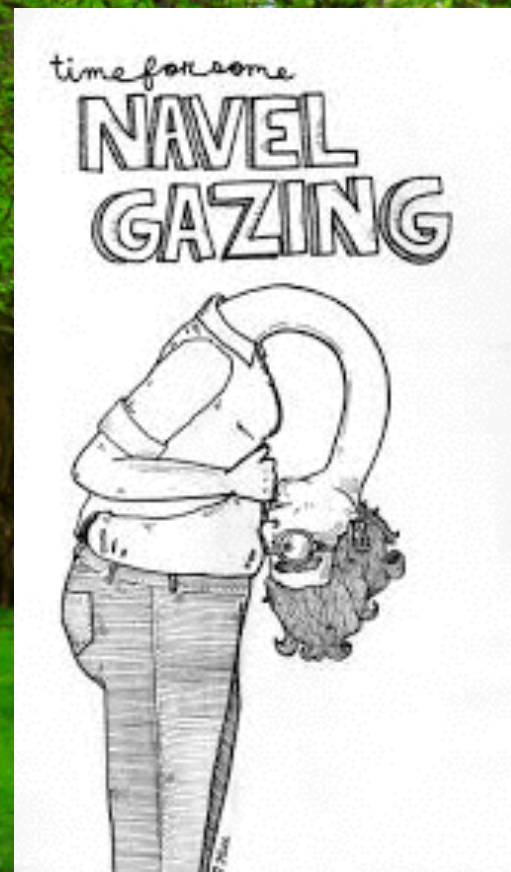
PRIMACY OF AESTHETICS?

- Precision
- Limit deleterious effects
- Improve predictability



2008: WHERE WAS I?

A
WALK
DOWN
MEMORY
LANE



MY WEEK IN 2008

FRIDAY

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MONDAY-
THURSDAY



2008-19: FAST-FORWARDING EXPERIENCE



- Have I stood still?
- But what and why have I changed?

Three white ceramic cups filled with chocolate pudding, each topped with a dusting of brown powder. The cups are arranged on a dark surface, with one in the foreground and two in the background. A white napkin is visible under the cup on the left. A semi-transparent grey banner with the text "The Proof is in the Pudding" is overlaid across the middle of the image.

The Proof is in the Pudding

**CLINICAL
SECTION**

BOS MOrth cases prize 2008

Padhraig S. Fleming

Royal London Dental Institute, London, UK

This paper describes the clinical orthodontic treatment of two cases that were successfully entered for the 2008 intercollegiate MOrth cases prize. The first case describes the management of a 12-year-old female with an increased overjet treated using a Dynamax functional appliance followed by fixed appliances. The second case involves the management of a class II division I malocclusion complicated by an unerupted maxillary central incisor and a mandibular first molar of poor prognosis.

Key words: Pre-adjusted edgewise appliance, functional appliance, Dynamax



The Proof is in the Pudding



- Dynamax
- ULFA: UR5, UL5, LR5, LL5
- 30 months



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The Proof is in the Pudding



- ULFA:
 - Expose UR1
 - Extraction UR4, UL4, LR6, LL6
- 20 months

CLINICAL SECTION

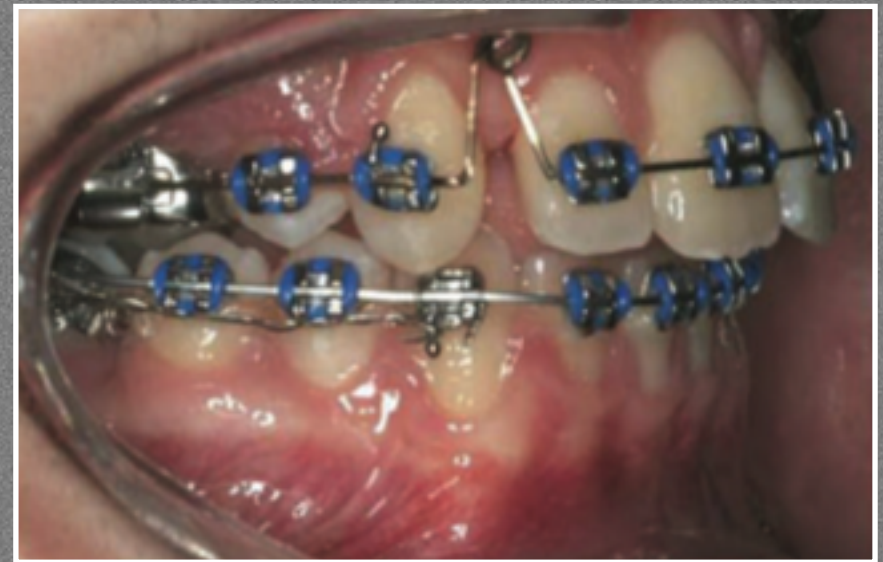
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The image shows three white ceramic cups, each containing a chocolate soufflé. The soufflés are dark brown and have a slightly cracked, airy texture on top. They are placed on white saucers. The cup in the foreground is slightly out of focus, while the one in the background is sharper. The background is dark and out of focus.

The Proof is in the Pudding

BUT WHICH ONE???

2008

2019

FUNCTIONAL CASE



2008

2019

FUNCTIONAL CASE



2008

2019

FUNCTIONAL CASE



2008

2019

FUNCTIONAL CASE



2008

2019

FUNCTIONAL CASE



2008

2019

FUNCTIONAL CASE



2008

2019

FUNCTIONAL CASE



34 MONTHS



23 MONTHS

DURATION: 12 MONTHS

An extended period of functional appliance therapy: a controlled clinical trial comparing the Twin Block and Dynamax appliances

Robert T. Lee*, Emma Barnes*, Andrew DiBiase**, Ravichandram Govender* and Usman Qureshi***

*Department of Orthodontics, Bart's & The London NHS Trust, London, **East Kent Hospitals University NHS Foundation Trust, ***Department of Orthodontics, Q.M.U.L., London, UK

Correspondence to: Department of Orthodontics, Bart's & The London NHS Trust, New Road, Whitechapel, London, E1 1BB. E-mail: r.t.lee@qmul.ac.uk

SUMMARY The aim of this clinical trial was to compare the hard- and soft-tissue effects of 15 month full-time functional appliance therapy with Twin Block (TB) and Dynamax (Dx) appliances. The effects on both hard and soft tissue were analysed using cephalograms and three-dimensional optical surface laser scans. One hundred and three subjects with a class II division 1 malocclusion, and a minimum overjet of 7mm were available for analysis following stratified randomization according to gender and age. Data was collected at the start of treatment, 15 month therapy, and after 3 month post-treatment observation. Statistical analysis was conducted using analysis of covariance. The results demonstrated both appliances corrected the overjet with significantly increased skeletal dimensional changes with the TB compared with the Dx with forward movement of pogonion of 5.2mm (TB) and 0.7mm (Dx) $P = 0.003$. In addition, significant changes occurred particularly in the vertical dimension where there was also an increase in total anterior face height in both groups (TB = 6.4mm, Dx = 5.5mm) and significant ($P = 0.003$) mandibular length changes were also observed (TB = 7.2mm, Dx = 3.8mm). The cephalometric soft-tissue changes were significantly different between the two appliances at soft-tissue pogonion (TB = 9.8mm, Dx = 4.6mm, $P = 0.001$). Laser scan three-dimensional changes showed significant difference in the lower labial sulcus region where forward movements were observed (TB = 8.2mm, Dx = 6.2mm; $P = 0.04$). Overall these changes appear to be greater and more stable than those achieved in a previous 9 month study.



CAR CRASH CASE (2008)

**NO
HAPPY
ENDING
!!!!!!!!!!!!**



● Squeamish attendees may wish to turn away for a minute or 2 ...

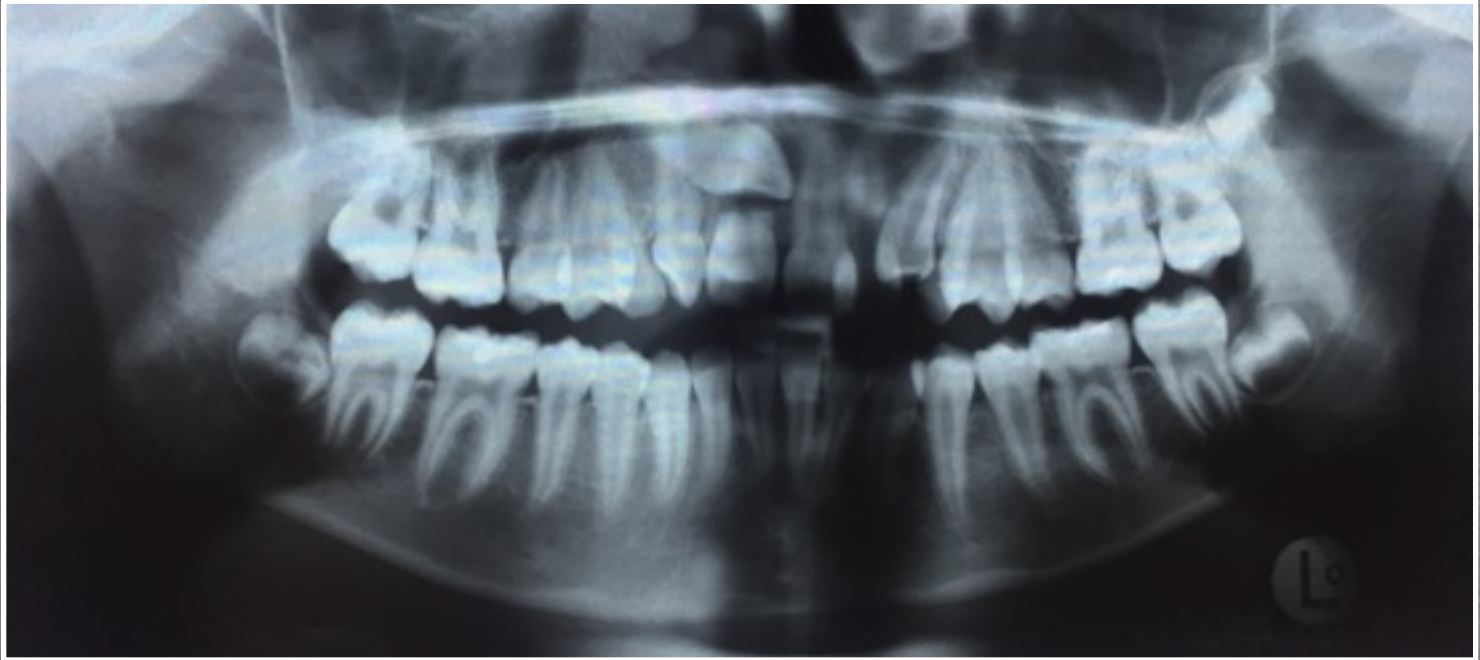


CAR CRASH CASE (2008)

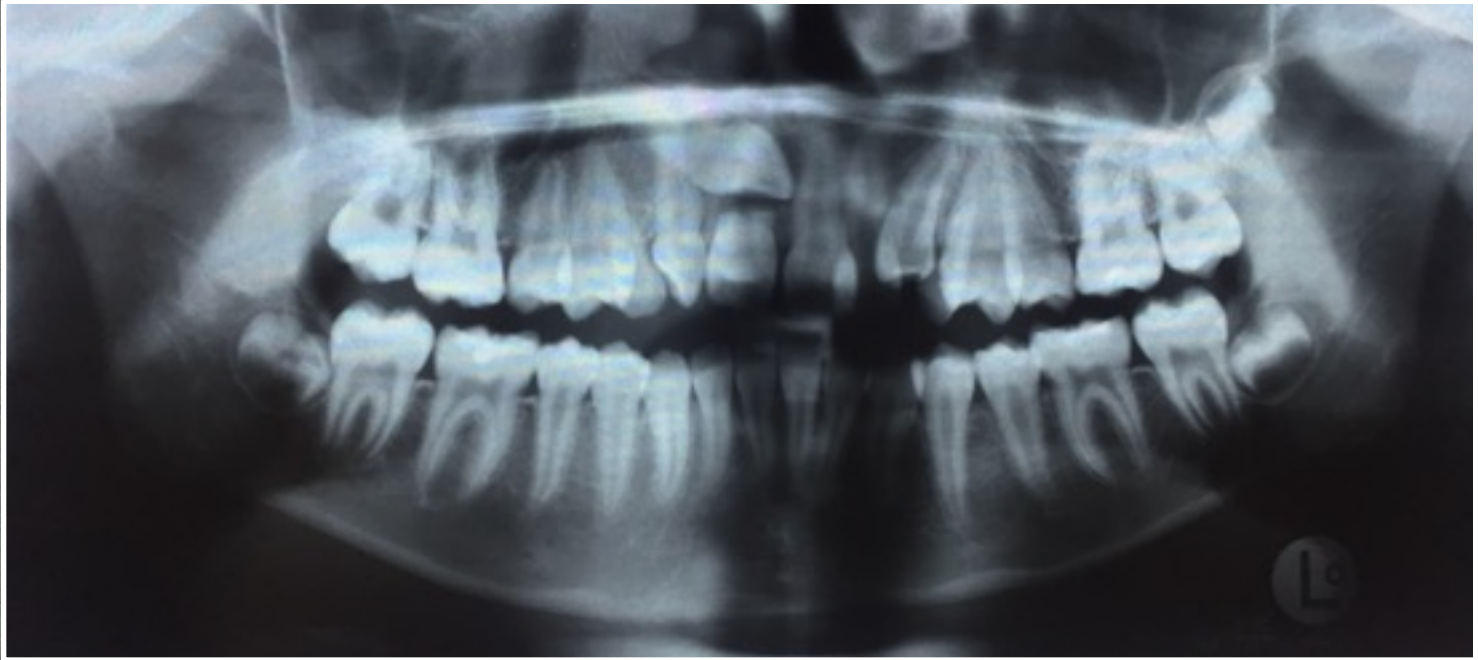


● Squeamish attendees may wish to turn away for a minute or 2 ...

CAR CRASH CASE (2008)



CAR CRASH CASE (2008)



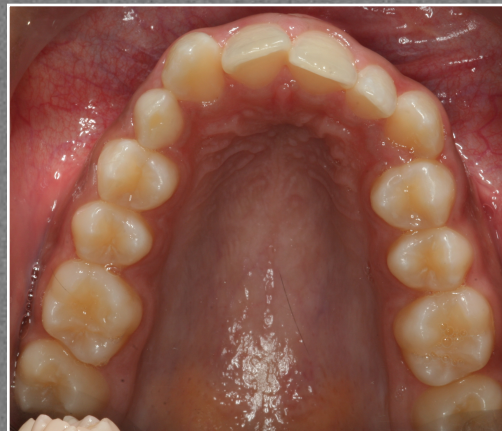
CAR CRASH CASE (2008)



IT'S 2008 AGAIN



12-YEAR-OLD: MISSING UR2, MR II



6 YEARS POST-TREATMENT



EVIDENCE-BASED?



Early treatment for Class II Division 1 malocclusion with the Twin-block appliance: A multi-center, randomized, controlled trial

Kevin O'Brien, Jean Wright, Frances Conboy, Priscilla Appelbe, Linda Davies, Ivan Connolly, Laura Mitchell, Simon Littlewood, Nicola Mandall, David Lewis, Jonathan Sandler, Mark Hammond, Stephen Chedelick, Julian O'Neill, Catherine McDade, Mojtaba Oskoui, Badri Thiruvengatchari, Michael Read, Stephen Robinson, David Birnie, Alison Murray, Iain Shaw, Nigel Harradine, and Helen Worthington
Manchester, United Kingdom

Prosthetic replacement vs space closure for maxillary lateral incisor agenesis: A systematic review

Glendani Santos Silveira,^a Natália Valli de Almeida,^a Daniele Masterson Tavares Pereira,^b Cláudia Trindade Mattos,^c and José Nelson Mucha^a
Niterói, Rio de Janeiro, Brazil

Outcomes in a 2-phase randomized clinical trial of early Class II treatment

J. F. Camilla Tulloch, BDS, FDS, DOrth,^a William R. Proffit, DDS, PhD,^a and Celis Phillips, PhD, MPH^b
Chapel Hill, NC

Soft tissue changes: a comparison between changes caused by the construction bite and by successful treatment with a modified Twin-block appliance

Erfan Salloum¹, Declan T. Millett¹, Niamh Kelly¹, Grant T. McIntyre² and Michael S. Cronin³

Background/objectives: Functional appliances are commonly used to correct Class II malocclusion. This study aimed to compare the facial soft tissue changes in Caucasians between pre-treatment and with the construction bite versus pre-treatment and completion of treatment with a modified Twin-block appliance (MTBA).

Materials and methods: Fifty-eight Caucasian subjects with Class II division 1 malocclusion had 3D stereophotogrammetric images captured pre-treatment (T1), with the construction bite (T2), and on completion of MTBA treatment (T3). Twenty-six landmarks were located on each image and 10% were re-landmarked 1 month later. Soft-tissue linear and volumetric changes (T1-T2 and T1-T3) were analyzed using linear mixed effect models (SAS® Version 9.4, www.sas.com).

Results: Forty-seven subjects [mean age 13.2 (SD 1.7) years] completed treatment [mean duration 9.8 (SD 3.8) months]. Differences between the changes from T1 to T2 versus T1 to T3 for upper facial and upper lip landmarks were insignificant (all $P > 0.05$) except for nasion, orbitale right, pronasale, and subnasale. For the same comparisons, lower lip and chin landmarks changed significantly (all $P < 0.05$) as did facial soft tissue volume ($P < 0.0001$).

Limitations: There was no control group.

Conclusion: The facial soft tissue changes from pre-treatment to with the construction bite were considerably more than those from pre-treatment to completion of treatment with a MTBA.

Implication: With MTBA treatment, the soft tissue changes from pre-treatment to with the construction bite *in situ*, overestimate those from pre- to post-treatment.

EVIDENCE-BASED?



Soft tissue changes: a comparison between changes caused by the construction bite and by successful treatment with a modified Twin-block appliance

Erfan Salloum¹, Declan T. Millett¹, Niamh Kelly¹, Grant T. McIntyre² and Michael S. Cronin³

Early treatment for Class II Division 1 malocclusion with the Twin-block appliance: A multi-center, randomized, controlled trial

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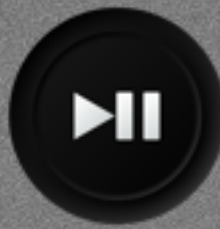
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Prosthetic replacement vs space closure for maxillary lateral incisor agenesis: A systematic review

Giordani Santos Silveira,^a Natália Valli de Almeida,^a Daniele Masterson Tavares Pereira,^b Cláudia Trindade Mattos,^c and José Nelson Mucha^d
Niterói, Rio de Janeiro, Brazil

Introduction: Defining the best treatment for maxillary lateral incisor agenesis is a challenge. Our aim in this study was to determine, with the evidence available in the literature, the best treatment for maxillary lateral incisor agenesis in the permanent dentition, evaluating the esthetic, occlusal (functional), and periodontal results between prosthetic replacement and orthodontic space closure. **Methods:** Electronic databases (CENTRAL, PubMed, Web of Science, Scopus, and LILACS) were searched in September 2014 and updated in January 2015, with no restriction on language or initial date. A manual search of the reference lists of the potential studies was performed. Risk of bias was assessed by the Newcastle Ottawa Scale. **Results:** The search identified 2174 articles, of which 1196 were excluded because they were duplicates. Titles and abstracts of 978 articles were accessed, and 957 were excluded. In total, 21 articles were read in full, and 9 case-control studies were included after applying the inclusion and exclusion criteria. Data were extracted from the articles selected, and a table was compiled for comparison and analysis of the results. There were no randomization and blinding, and the risk of bias evaluation found gaps in compatibility and outcome domains in almost all selected studies. **Conclusions:** Tooth-supported dental prostheses of maxillary lateral incisor agenesis had worse scores in the periodontal indexes than did orthodontic space closure. Space closure is evaluated better esthetically than prosthetic replacements, and the presence or absence of a Class I relationship of the canines showed no relationship with occlusal function or with signs and symptoms of temporomandibular disorders. (Am J Orthod Dentofacial Orthop 2016;150:228-37)

PRINCIPLES IN 2019



- Clear aims
 - Outcomes AND Process: Patient-based
- Extractions:
 - Frequency
 - Choice
 - Management
- Overbite: Reduce early
- Reduce effective hypodontia
- Retention

TREATMENT PLANNING IN 2019

- Three pillars: Health, Stability and Aesthetics
- Realistic timeframe
- Limit burden:
 - QoL
 - Dental health:
 - Adults: Periodontal
 - All: Root resorption
 - Children: Demineralisation

OUTCOME

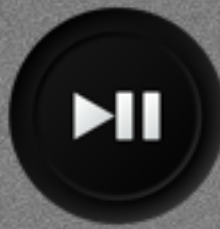
PROCESS

PREDICTABILITY

WHY?



PRINCIPLES IN 2019



- Clear aims
 - Outcomes AND Process: Patient-based
- Extractions:
 - Frequency
 - Choice
 - Management
- Overbite: Reduce early
- Reduce effective hypodontia
- Retention

PREDICTABILITY



TUESDAY
WEDNESDAY
FRIDAY

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SURREY
COUNTY CRICKET CLUB

What's the answer? What should I do ...



SURREY
COUNTY CRICKET CLUB

What's the answer? What should I do ...

I don't have THE answer. But I have AN answer .. there is often more than one answer



HOW DO WE PRACTICE SAFELY?

DECISION-MAKING

PREDICTABILITY



EXPERIENCE



EVIDENCE



TARGET



ROADMAP

HOW DO WE PRACTICE SAFELY?

DECISION-MAKING

PREDICTABILITY



EXPERIENCE



EVIDENCE



TARGET

- FACIAL
- OCCLUSAL
- PROCESS-RELATED



ROADMAP



TARGET

- FACIAL OBJECTIVES
- OCCLUSAL OBJECTIVES



ROADMAP



The Royal London Space Planning: An integration of space analysis and treatment planning

Part I: Assessing the space required to meet treatment objectives

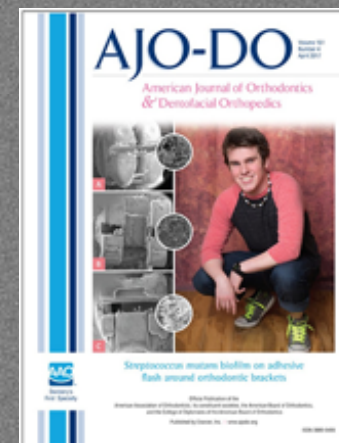
Robert H. Kirschen, BDS, FDSRCS, MSc, MOrthRCS,* Elizabeth A. O'Higgins, BDS, FDSRCS, MSc, MOrthRCS,[§] and Robert T. Lee, BDS, FDSRCS, MOrthRCS[‡]
London, UK



The Royal London Space Planning: An integration of space analysis and treatment planning

Part II: The effect of other treatment procedures on space

Robert H. Kirschen, BDS, FDSRCS, MSc, MOrthRCS,* Elizabeth A. O'Higgins, BDS, FDSRCS, MSc, MOrthRCS,[§] and Robert T. Lee, BDS, FDSRCS, MOrthRCS[‡]
London, UK



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TREATMENT PLANNING

- Upper or lower incisor position?

- Consider both
- Increasing emphasis on upper incisor position



Br Dent J, 1966 Apr 19;120(8):355-63.

The long-term results of the proclination of lower incisors.

Mills JR.

JL Ackerman
WR Proffit
DM Sarver

The emerging soft tissue paradigm in orthodontic diagnosis and treatment planning

TREATMENT PLANNING

Objectives:

- Facial
- Occlusal



Determines Incisor Positioning



Treatment Planning



The Royal London Space Planning: An integration of space analysis and treatment planning

Part I: Assessing the space required to meet treatment objectives

Robert H. Kirschen, BDS, FDSRCS, MSc, MOrthRCS,* Elizabeth A. O'Higgins, BDS, FDSRCS, MSc, MOrthRCS,*
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The Royal London Space Planning: An integration of space analysis and treatment planning

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London, UK

- Overjet
- Degree and location of crowding
- Overbite
- Inclination of anterior teeth
- Natural growth

- Angulation of posterior teeth
- Angulation of anterior teeth
- Centrelines

Space Requirement	Upper arch	Lower arch
Crowding/Spacing	0	0
Levelling occlusal curve	0	0
Arch width change	0	0
Incisor AP change	-16	0
Incisor inclination change	+2	0
TOTAL	-14	0
Space Creation		
Tooth reduction	0	0
Extraction (UR4, UL4)	+14	0
Mesial molar movement	0	0
Distal molar movement	0	0
Growth	0	0
Residual	0	0

- Overjet
- Degree and location of crowding
- Overbite
- Inclination of anterior teeth
- Natural growth



- Discipline: Back to basics
- Plan incisor position
- Realistic goals
- Realistic and predictable planning

Space Requirement	Upper arch	Lower arch
Crowding/Spacing	0	0
Levelling occlusal curve	0	0
Arch width change	0	0
Incisor AP change	-16	0
Incisor inclination change	+2	0
TOTAL	-14	0
Space Creation		
Tooth reduction	0	0
Extraction (UR4, UL4)	+14	0
Mesial molar movement	0	0
Distal molar movement	0	0
Growth	0	0
Residual	0	0



SNA	82
SNB	78
ANB	4
SN Mx	3
Wits Appraisal	5
FMA	14
MMPA	22
UI Mx	119
LI Md	99
Interincisor Angle	119
LI to APo	-2
Upper lip E-plane	-4
Lower Lip E-Plane	-2
Nasolabial Angle	118
TAFH	136
UAFH	59
LAFH	77
% LAFH	56



Class II Treatment

17-year-old

Mild skeletal II
Average FMPA

OJ 10mm
Average OB
Mild crowding



Class II Treatment

17-year-old

Mild skeletal II
Average FMPA

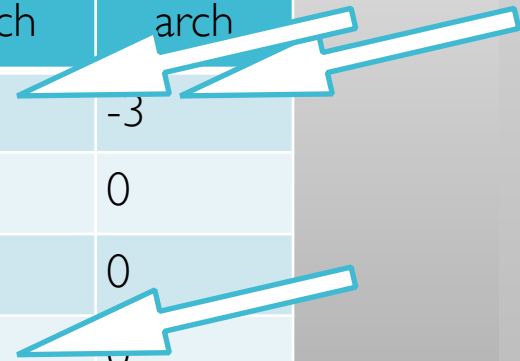
OJ 10mm
Average OB
Mild crowding



Class II Treatment



Space Requirement	Upper arch	Lower arch
Crowding/Spacing	-2	-3
Levelling occlusal curve	0	0
Arch width change	0	0
Incisor AP change	-14	0
Inclination change	+2	0
TOTAL	-14	-3
Space Creation		
Tooth reduction	0	+3
Extraction (4/4)	+14	0
Distal molar movement	0	0
Mesial molar movement	0	0
Residual	0	0



Class II Treatment



Space Requirement	Upper arch	Lower arch
Crowding/Spacing	-2	-3
Levelling occlusal curve	0	0
Arch width change	0	0
Incisor AP change	-14	0
Inclination change	+2	0
TOTAL	-14	-3
Space Creation		
Tooth reduction	0	+3
Extraction (4/4)	+14	0
Distal molar movement	0	0
Mesial molar movement	0	0
Residual	0	0

Class II Treatment

Anchorage
Support:

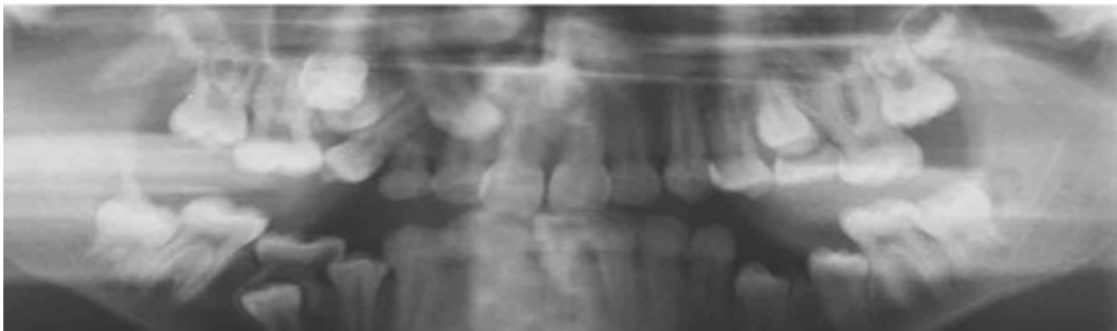
Zero molar
mesial
movement



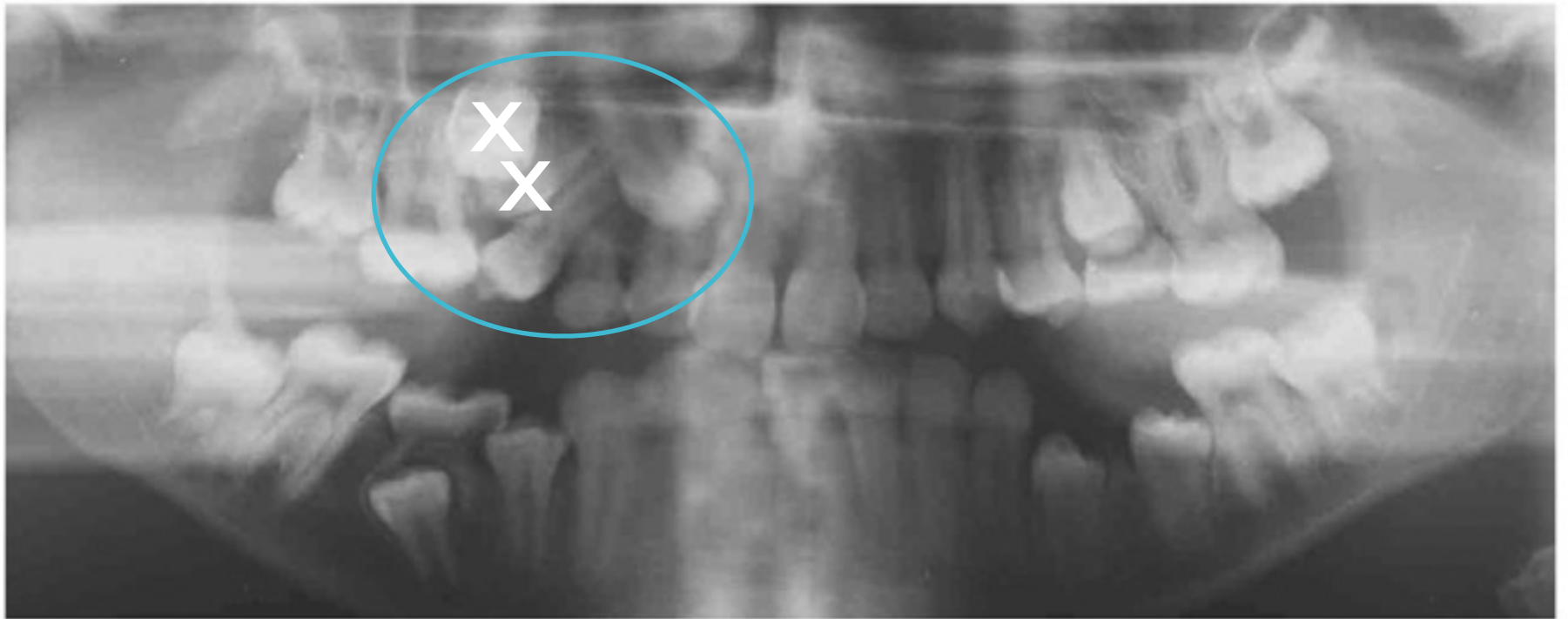
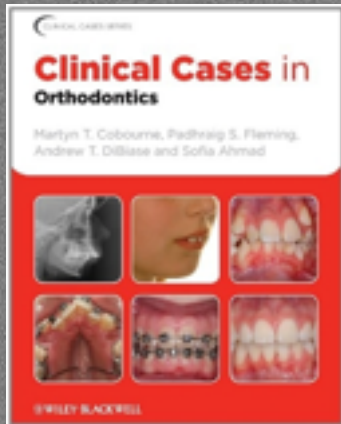
Class II Treatment

Anchorage
Support





13-YEAR-OLD FEMALE



TREATMENT OBJECTIVES: OJ 7MM



Space Requirement	Upper arch	Lower arch
Crowding/Spacing	-6	0
Levelling occlusal curve	0	-1
Arch width change	0	0
Incisor AP change	??	??
Incisor inclination change	0	0
TOTAL	??	??

TREATMENT OBJECTIVES: OJ 7MM



- Health, aesthetics, stability
- Advance lower anteriors



Space Requirement	Upper arch	Lower arch
Crowding/Spacing	-6	0
Levelling occlusal curve	0	-1
Arch width change	0	0
Incisor AP change	0	+6
Incisor inclination change	0	0
TOTAL	-6	+5

A-P CONTROL WITH FIXED APPLIANCES

- Space creation: Extractions/IPR
- Bracket prescription generally
- Local bracket variation: Tip and Torque
- Intra-arch considerations: Wire gauge
- Inter-arch considerations: Elastics and Springs
- Other auxiliaries: TADs and Others



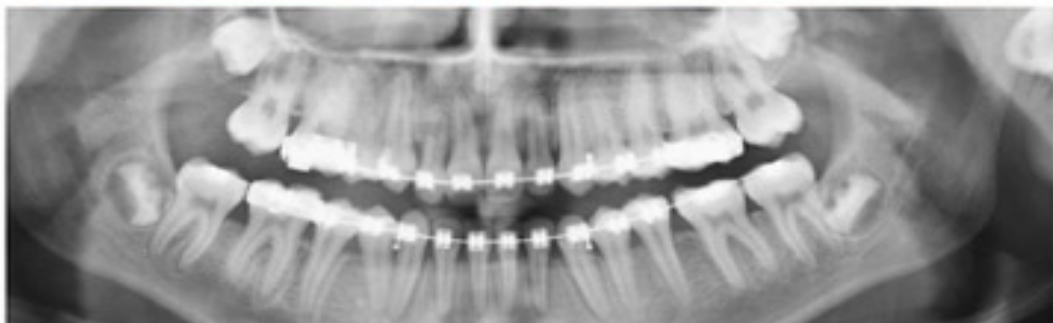
TREATMENT OBJECTIVES: OJ 7MM



- Don't extract lower units
- Roth/inverted MBT prescription
- Class II elastics



Space Requirement	Upper arch	Lower arch
Crowding/Spacing	-6	0
Levelling occlusal curve	0	-1
Arch width change	0	0
Incisor AP change	0	+6
Incisor inclination change	0	0
TOTAL	-6	+5



PRINCIPLES

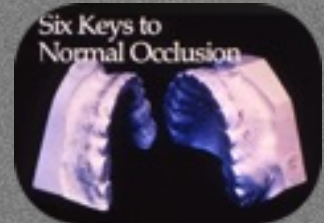


- Clear aims
 - Outcomes
 - Process: Patient-based, burden of care
- Extractions:
 - Frequency
 - Choice
 - Management
- Overbite: Reduce early
- Reduce effective hypodontia
- Retention

ARE WE GOOD AT OUR JOB?



DECISION-MAKING

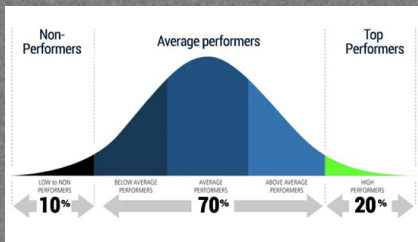
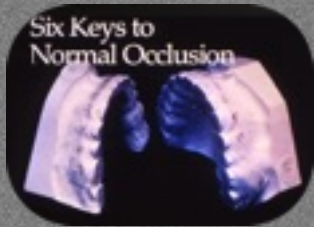


CHILD VS. ADULTS

DECISION-MAKING



OUTCOME VS PROCESS? ADULTS



- Three pillars: Health, Stability and Aesthetics
- Realistic timeframe
- Limit burden and risk:
 - QoL
 - Dental health:
 - Adults: Periodontal
 - All: Root resorption
 - Children: Demineralisation



SIMPLE ALIGNMENT



6 MONTHS

PRINCIPLES

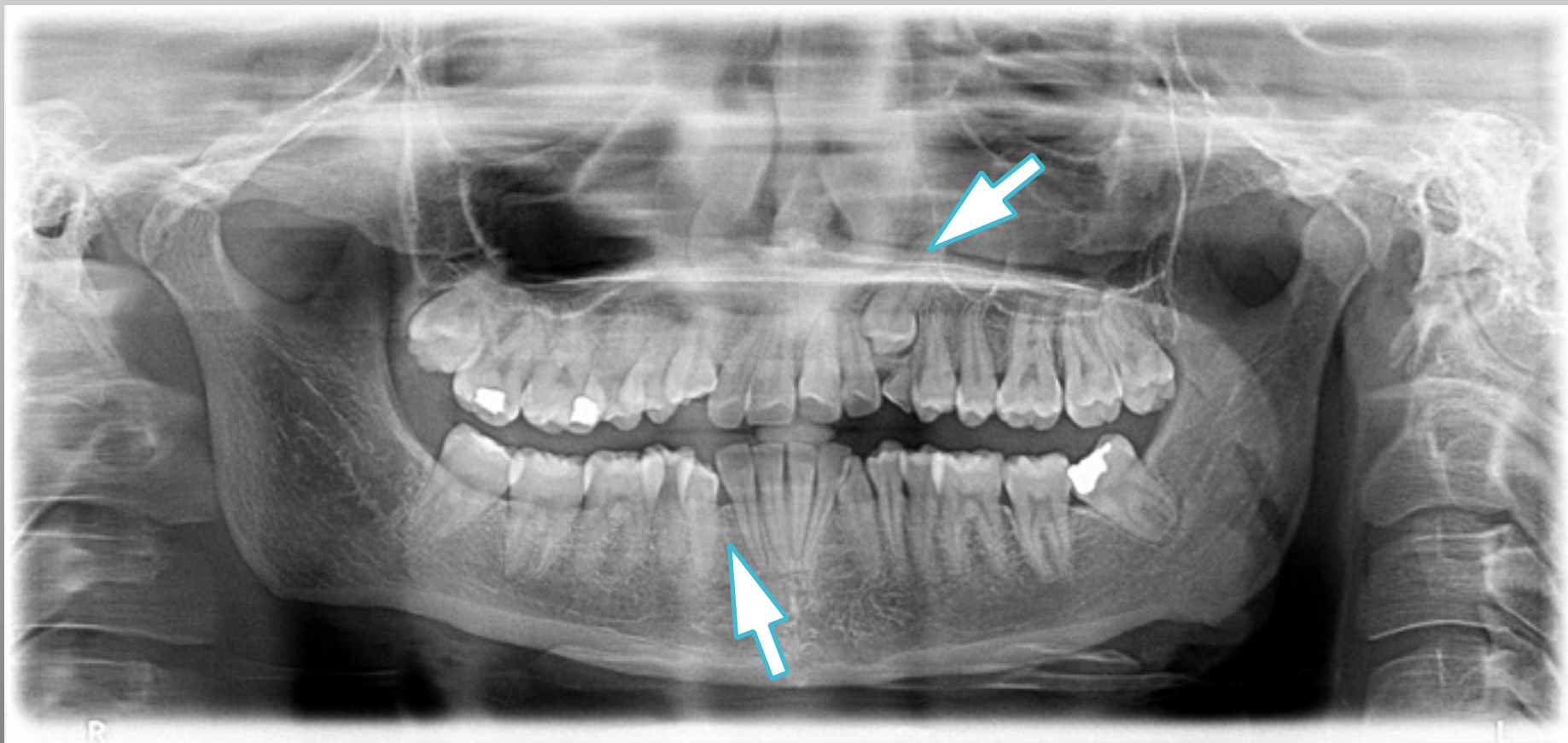


- Clear aims
 - Outcomes
 - Process: Patient-based, burden of care
- Extractions:
 - Frequency
 - Choice
 - Management
- Overbite: Reduce early
- Reduce effective hypodontia
- Retention

26-YEAR-OLD FEMALE



26-YEAR-OLD FEMALE



PRINCIPLES



- Clear aims (Outcomes AND Process):

- Maintain Incisor position
- Efficient: Joining Army



- Extractions:

Choice: Space to address lower crowding,
maintaining midline (Outcome)

Management: Early space closure (Process)

26-YEAR-OLD FEMALE



5TH JUNE 2017: BOND-UP



7TH SEPTEMBER 2017



5TH APRIL 2018



10 MONTHS



- Simple
- Maintained molar relationships
- Extracted LL5
- Fresh extraction site
- Early space closure
- Extracted UL3
- Retention

10 MONTHS



Success rate and duration of orthodontic treatment for adult patients with palatally impacted maxillary canines

Adrian Becker, BDS, LDS, DDO,* and Stella Chaushu, DMD, MSc[†]
Jerusalem, Israel

This study was undertaken to examine the success rate and the length of orthodontic treatment of impacted maxillary canines in adult patients. A sample of 19 adults (mean age, 28.8 ± 8.6 years; range, 20-47 years), who had been treated for a total of 23 impacted maxillary canines, was compared with a younger control group (mean age, 13.7 ± 1.3 years; range, 12-16 years). The control subjects were chosen for a similar degree of impaction difficulty by carefully matching the positions of the impacted canines in the 3 planes of space. **The success rate among the adults was 69.5% compared with 100% among the younger controls.** The lower success rate was due to 5 canines that had failed to erupt and 2 canines that had been partially extruded but could not be aligned in the arch. The duration of treating the overall malocclusion of the adults and young subjects did not materially differ. However, the adults showed significant increases in the duration and number of treatment visits required for resolving the canine impaction, in both the simpler and the more difficult cases. **When further divided by age, all the failed canines were found in the older (over 30) adult subgroup.** It was concluded that the prognosis for successful orthodontic resolution of an impacted canine in an adult is lower than that in a younger patient and that the prognosis worsens with age. Furthermore, when such treatment is undertaken, its successful completion should be expected to take considerably longer. (*Am J Orthod Dentofacial Orthop* 2003;124:509-14)

● Extracted UL3


EXTRACTION MANAGEMENT

JOURNAL OF ORTHODONTICS
<https://doi.org/10.1080/14653125.2018.1517470>

 Taylor & Francis
Taylor & Francis Group

 Check for updates

Extraction of premolars for orthodontic reasons on the decline? A cross-sectional survey of BOS members

Padhraig S. Fleming^a, Susan J. Cunningham^b, Philip E. Benson ^c, Preeti Jauhar^a and Declan Millett^d

Results: Two hundred and eight responses were obtained with 95.6% ($n = 199$) reporting reduced extraction prescription over the last 5–10 years. Overall, 29.9% and 35.5% felt that their threshold for extractions had increased by more than 2 mm in adolescents and adults, respectively. Facial ($n = 145$; 69.7%) and smile ($n = 127$; 61.1%) aesthetics, and increased use of inter-proximal reduction ($n = 102$; 49%) were the factors most frequently reported as having either a moderate or major influence on this trend. Based on ordinal logistical regression analyses, no significant relationship was found between threshold for extractions and work setting ($P = 0.675$; O.R. 0.51; 95% CI: 0.39, 1.85) or level of orthodontic experience ($P = 0.15$; O.R. 1.02; 95% CI: 0.15, 1.05), although a higher threshold for extractions was more likely among users of conventional than self-ligating brackets ($P = 0.001$; O.R. 4.74; 95% CI: 1.95, 11.5).

Conclusions: A reduced tendency to prescribe orthodontic extractions over the past 5–10 years among British Orthodontic Society members was identified. Comparative clinical research exploring the relative merits of extraction and non-extraction approaches could be timely.



EXTRACTIONS: MY TOP 6 RULES

1. Lower first premolar extraction rare
2. Centreline: Upper first premolar
3. Class I crowding: Consider Class II extraction pattern
4. Extract ectopic canine if significant space requirement
5. Upper first premolars rare in adults
6. Close space early: Adults



PLANNING FOR PREDICTABILITY

Upper molars come forward move readily than lowers:

- Root morphology
- Mesial drift



A retrospective study comparing the loss of anchorage following the extraction of maxillary first or second premolars during orthodontic treatment with fixed appliances in adolescent patients

S. Haque^{ab}, P.J. Sandler^c, M.T. Cobourne^b, P. Bassett^d and A. T. DiBiase^a

^aDepartment of Orthodontics, East Kent Hospitals University NHS Foundation Trust, William Harvey Hospital, Ashford, UK; ^bDepartment of Orthodontics, King's College London Dental Institute, London, UK; ^cDepartment of Orthodontics, Chesterfield Royal Hospital, Chesterfield, UK; ^dStatconsultancy Ltd, Amersham, UK

ABSTRACT

Introduction: This retrospective study assessed the difference in anchorage loss using 3D superimposition of study models between cases treated with extraction of maxillary first premolars and maxillary second premolars carried out in orthodontic specialist practice.

Method: Sixty subjects who have undergone extractions of either maxillary first or second premolars as part of their orthodontic treatment were selected. Eligibility criteria included patients with a Class I, mild Class II or III malocclusions, mild-to-moderate crowding with no anchorage reinforcement. Pre- and post-treatment maxillary dental study cases were scanned using a surface laser scanner to produce 3D digital images which were superimposed using areas of stability on the anterior hard palate. Anchorage loss was measured by the mesial movement of the maxillary first permanent molar.

Results: The mean mesial movement for the maxillary first molars, when adjusted for confounding factors was 4.7 mm (SD 1.6) in the maxillary first premolar extraction group and 4.6 mm (SD 1.6) in the maxillary second premolar extraction group.

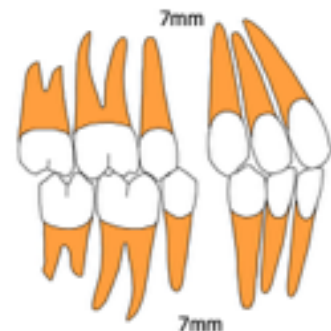
Conclusions: There is no difference in anchorage loss when comparing the extraction of the maxillary first premolars to the extraction maxillary second premolars.

ARTICLE HISTORY

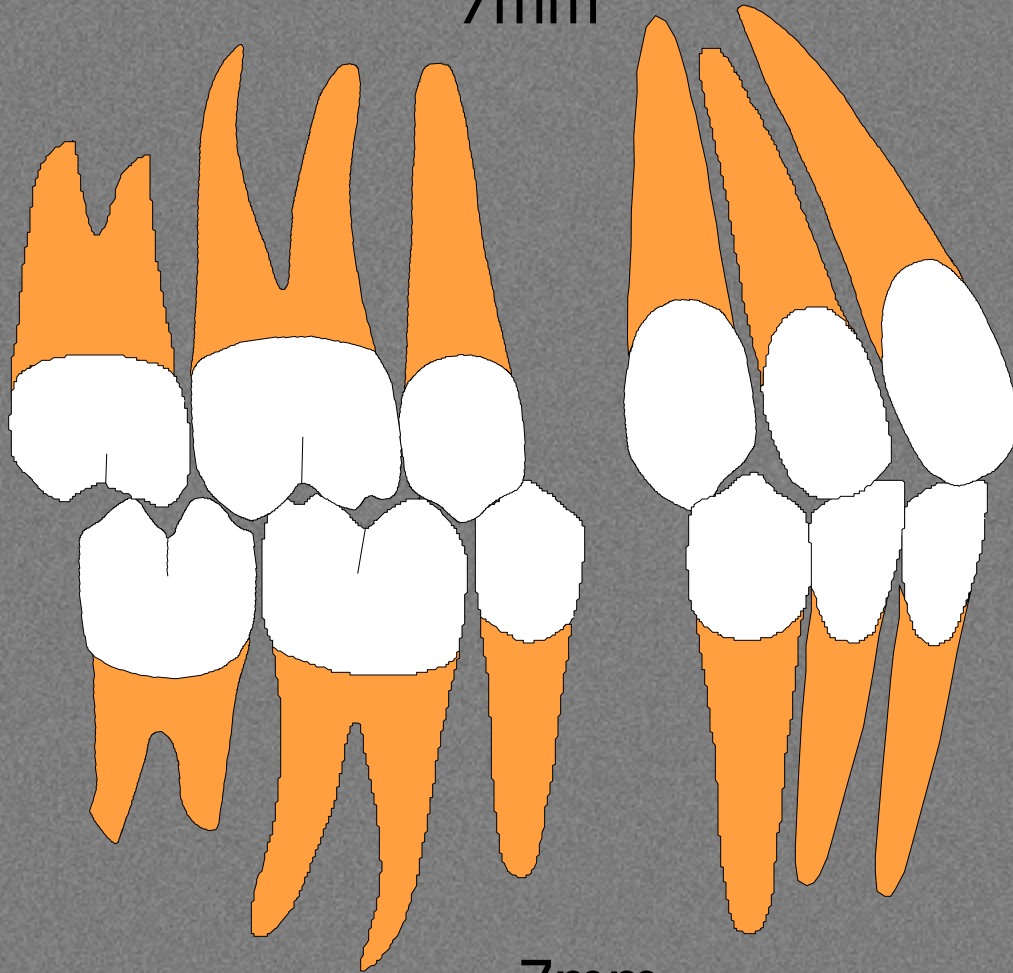
Received 2 March 2017
Accepted 12 May 2017

KEYWORDS

Anchorage; premolar extraction; fixed appliances; 3 dimensional; palatal superimposition



7mm



7mm

4mm

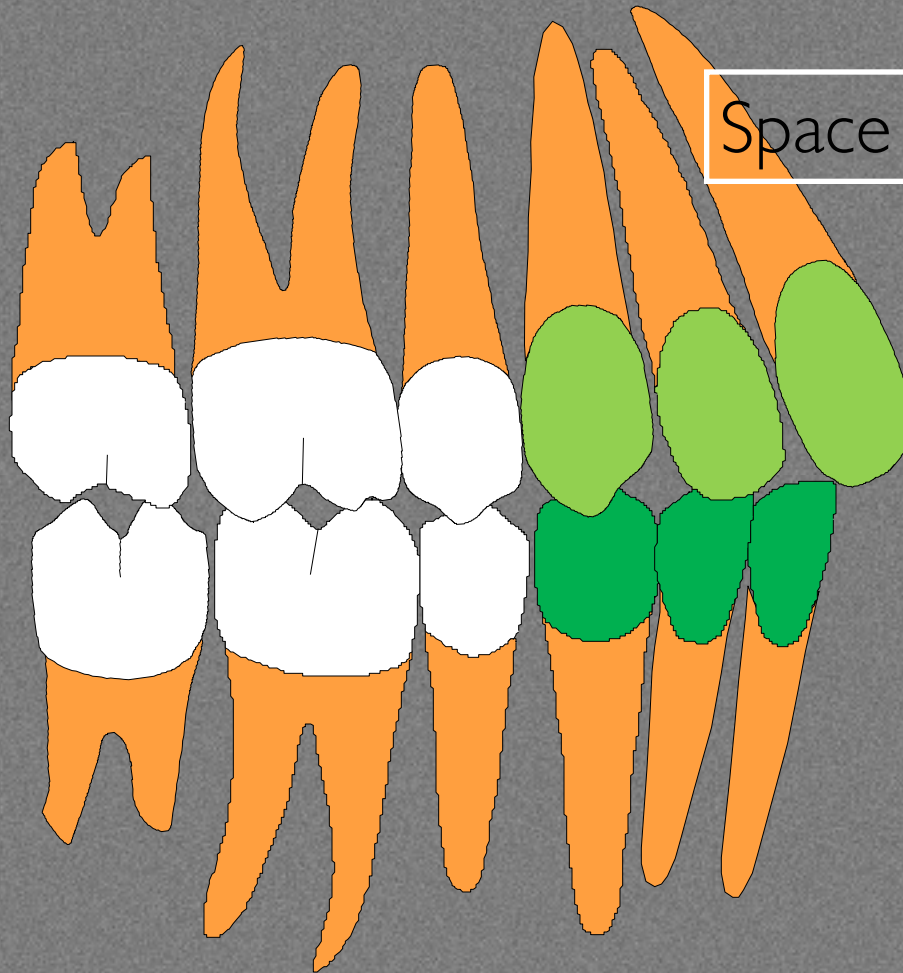
3mm

Space loss in upper arch

First premolars

3mm

4mm



4mm

3mm

IMPLICATIONS

Space loss in upper arch

- Consider Class II extraction patterns
- Upper midline correction
- Lower 4 extractions

13-YEAR-OLD FEMALE

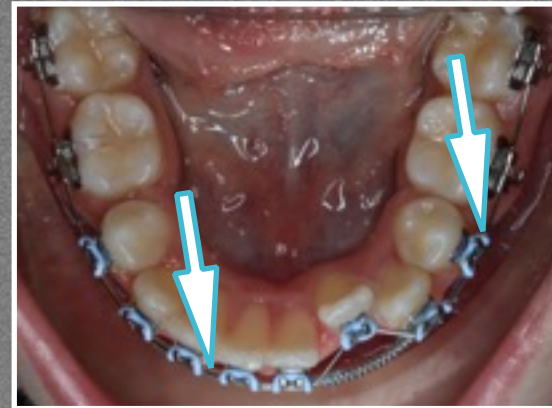
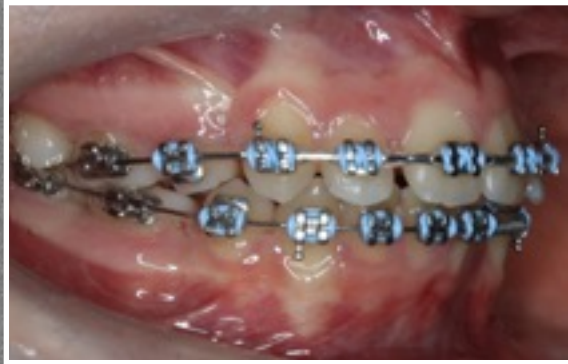


13-YEAR-OLD FEMALE



- Aims: Maintain profile
- Reduce overjet: Retract uppers and allow 1mm advancement of lower incisors
- Extract UR4, UL4, LR5, LL5
- Permanent bonded retention

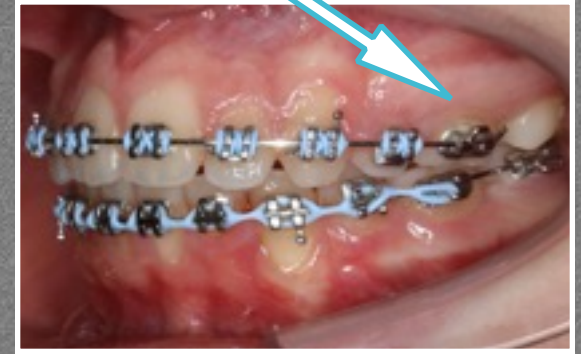
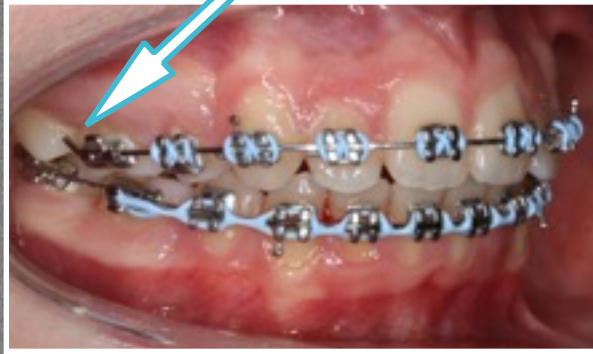
- Torque upper incisors: Ligation



- Piggy back LL2: Two teeth either side and free to slide



- Cinch back: Torque expression



16 MONTHS



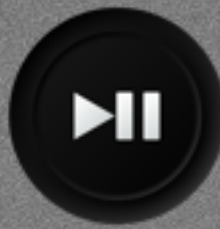


- Implications:
- Severe crowding: 4s
- Mild Crowding: Consequence of 4s extraction?
 - Space closure ???
 - Treatment duration ???
 - Class II elastics
 - Torque upper anteriors ???
 - Root resorption



If in doubt ... don't extract and don't extract too far forward?

PRINCIPLES



- Clear aims
 - Outcomes AND Process: Patient-based
- Extractions:
 - Frequency
 - Choice
 - Management
- Overbite: Reduce early
- Reduce effective hypodontia
- Retention

13-YEAR-OLD FEMALE





13-YEAR-OLD FEMALE



13-YEAR-OLD FEMALE

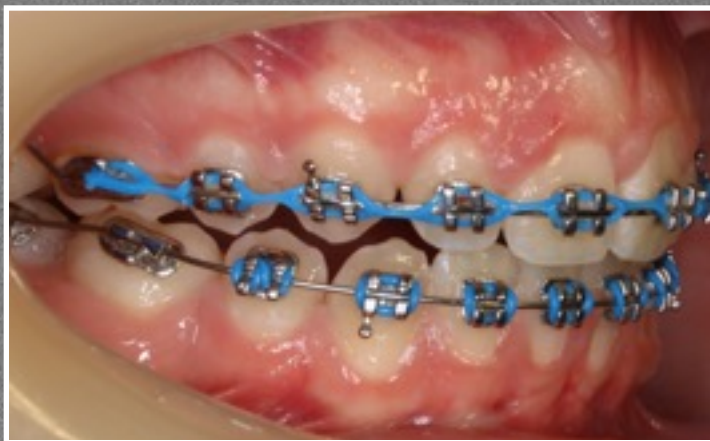


• PROBLEMS:

1. INCREASED OVERBITE
2. MISSING LOWER 5S
3. 7S UNAVAILABLE
4. 8S PRESENT









15 MONTHS

CONCLUSIONS

- Principles: Health, Aesthetics and Stability
- Clear objectives: Outcome and PROCESS



ORTHODONTIC TREATMENT PLANNING: MY PHILOSOPHY



PADHRAIG FLEMING