Orthodontics with surgery case study

EMMA LAING describes a case where she treated a skeletal class 2 division 1 malocclusion with a small retrusive mandible and chin

INTRODUCTION

The majority of patients I see for treatment have malocclusions that can be treated well within the realms of conventional orthodontics, whether with fixed appliances or aligners. A few patients will however have such a discrepancy in the positions of their skeletal bases that regular orthodontic treatment is insufficient, and a combination of jaw surgery (orthognathic surgery) and orthodontic treatment is required. It is my pleasure to present a case of such nature that is near to completion. Here follows a succinct summary of the case. The surgeon involved was Miss Helen Witherow, a highly experienced consultant in oral and maxillofacial surgery.

PRESENTING COMPLAINT

The patient presented having seen several clinicians over the years finding about various treatment options, so he was fully aware of his malocclusion and was now looking to proceed with treatment for a complete profile and dental correction, for both aesthetic and functional reasons such as being unable to breathe properly through his nose. As an engineering student he felt the university holidays would be an appropriate time for recovery from any surgery. He was medically fit and well and blind in his left eye.

EXAMINATION AND CLINICAL DIAGNOSIS

He presented with a skeletal class 2 division 1 malocclusion with a small retrusive mandible and chin. The vertical dimension and MMPA were increased. The nose deviated to the right. The soft tissue profile was obtuse and the nasio-labial angle was obtuse.

The lips were incompetent with increased incisor display at rest and the tongue was forwards at rest and on speaking and on forming an anterior oral seal. The cheek on the right ramus region was deficient with a narrow and short ramus, with aesthetically a more concave cheek than the left side. Essentially this was Hemifacial Microsomia. Intra-orally the salient features were severe lower arch crowding, proclined upper incisors, a 13mm overjet and 6mm anterior open bite. These findings were supported and confirmed by radiographic examination.

'THE CHEEK ON THE RIGHT RAMUS REGION WAS DEFICIENT WITH A NARROW AND SHORT RAMUS, WITH AESTHETICALLY A MORE CONCAVE CHEEK THAN THE LEFT SIDE'

1.

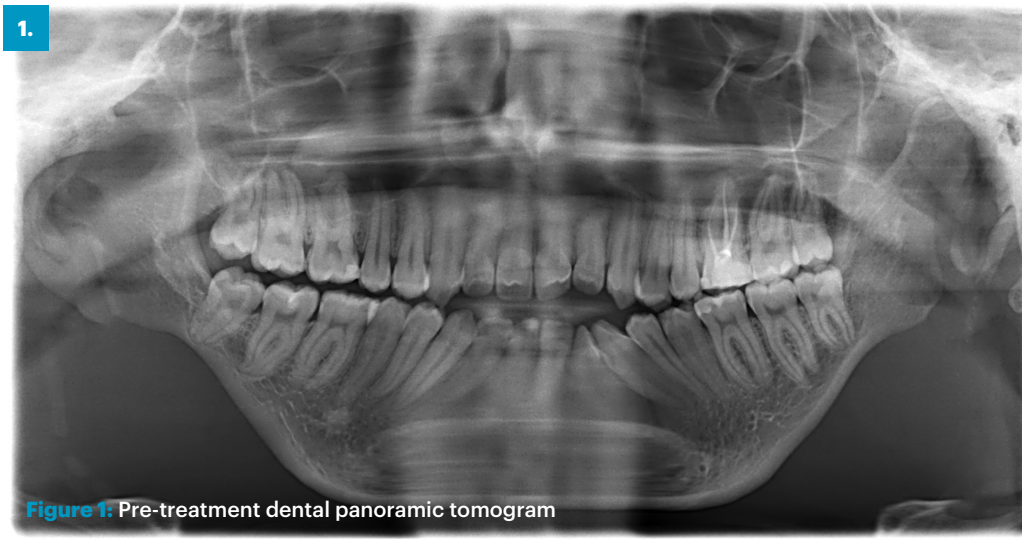

Figure 1: Pre-treatment dental panoramic tomogram

ENHANCED CPD

FACTFILE

Dr Emma Laing is a specialist in orthodontics at the Harley Street Dental Clinic where she has worked for 10 years. She uses all manner of orthodontic fixed appliances both lingually and labially and aligner treatments, bespoke to the individual patient. She treats cases from the simplest corrections through to complex multi-disciplinary cases. She is highly trained with an MSc with distinction from the Eastman, and MOrth from the Royal College of Surgeons. www.emmalaing.com.

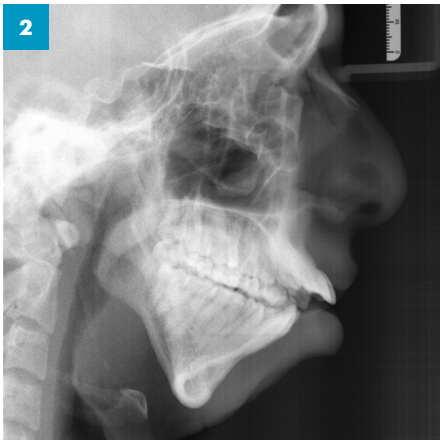

Figure 2: Pre-treatment lateral cephalogram

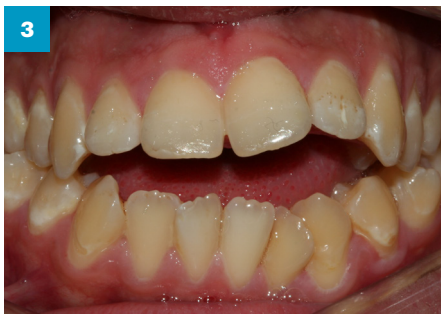

Figure 3: Pre-treatment intra-oral anterior

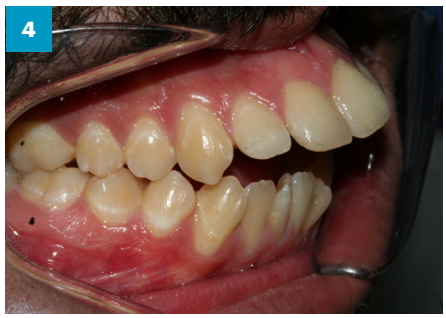

Figure 4: Pre-treatment intra-oral right buccal

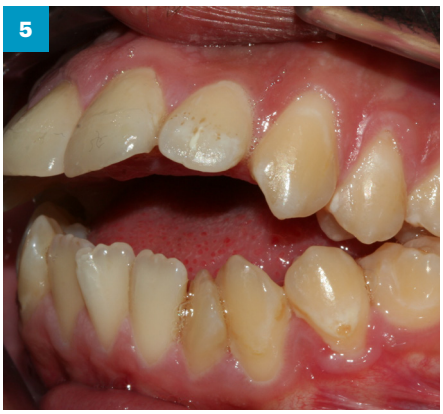

Figure 5: Pre-treatment intra-oral left buccal

Figure 6: Pre-treatment extra-oral anterior smiling

Figure 7: Pre-treatment extra-oral profile smiling

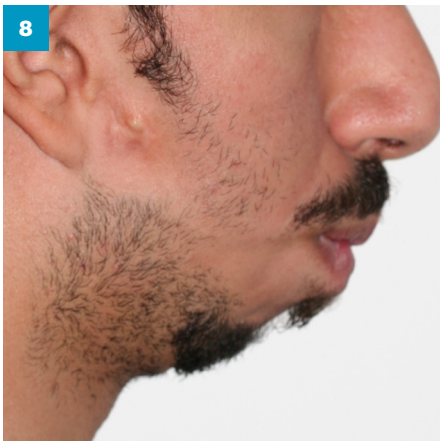

Figure 8: Pre-treatment extra-oral profile photo lips at rest

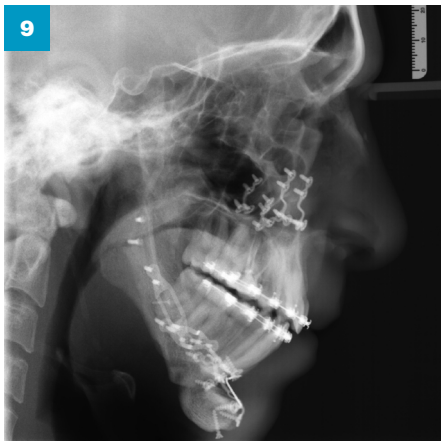

Figure 9: Post-surgery lateral cephalogram

Figure 10: Post-surgery extra-oral anterior photo lips at rest

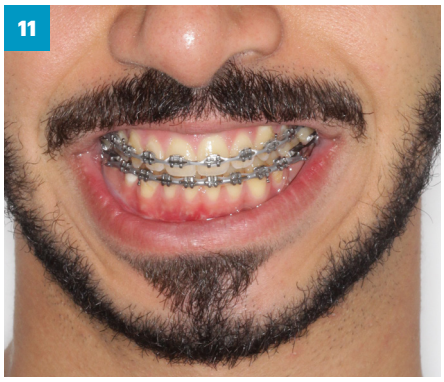

Figure 11: Post-surgery extra-oral anterior smiling

TREATMENT OPTIONS DISCUSSED

1. Accept. Orthodontics is predominantly a treatment of choice and there was a possibility for no active treatment here.
2. Ideal option: Orthodontic treatment plus orthognathic surgery for complete correction.
3. Compromise option: Orthodontic treatment alone. Align the arches and reduce upper spacing, accepting a residual overjet and no change to his profile.

The patient's preference was the second option.

SUMMARY OF TREATMENT CARRIED OUT

1. Completion of immediate restorative and hygiene treatment. Hygiene maintenance continued throughout orthodontic treatment.
2. Full consultation with Miss Witherow, consultant surgeon.
3. Treatment planning, initial record taking and discussion of case with Miss Witherow. Treatment plan letter and consent discussion with patient.

Figure 12: Post-surgery extra-oral profile photo lips at rest

Figure 13: Post-surgery extra-oral profile smiling

'RETENTION WILL BE ESSENTIAL, PARTICULARLY WITH THE AETIOLOGY OF HIS HIGH ANGLE MALOCCLUSION BEING PARTLY RELATED TO TONGUE PRESSURES'

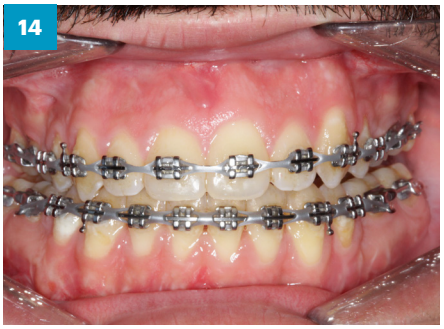

Figure 14: Post-surgery intra-oral anterior

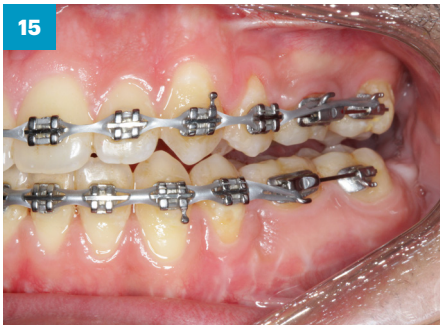

Figure 15: Post-surgery intra-oral left buccal

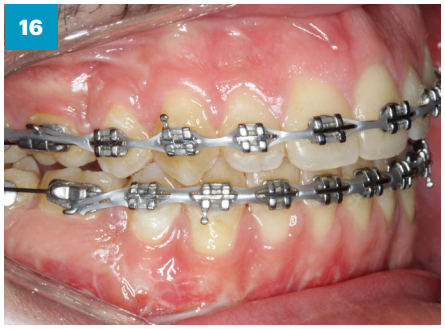

Figure 16: Post-surgery intra-oral right buccal

4. Extractions by Miss Witherow of UL5 UR5 LL5 LR5 (lower 5s not 4s in terms of morphology) for overcrowding and decompensation of incisal positions. Plus UL8 UR8 LL8 LR8.
5. Pre-surgical orthodontic phase. Upper and lower metal fixed appliances to align, decompensate and close extraction spaces. 15 months total.
6. Surgical planning and bimaxillary surgery plus genioplasty. Posterior maxillary impaction, mandibular advancement to class 1 (9mm). Very difficult advancement due to diminutive condyle. Rhinoplasty. All successfully carried out by Miss Witherow.
7. Post-surgical orthodontic phase 10.5 months. Settling of buccal segments and reduction of lateral open bites via elastics and several brackets repositioning. Maintenance of class II correction with elastics wear full-time.
8. During post-surgical orthodontic phase, second surgery for cheek tissue deficiency in R ramus region. Implant placement to augment R ramus and give more defined jawline together with fat injection, and revision genioplasty. All successfully carried out by Miss Witherow.
9. To accept some residual overjet of approximately 4mm given the starting malocclusion. Plan of debond of fixed appliances and retention phase (to be completed in December 2018, this will be at 25.5 months total orthodontic treatment).

MAINTENANCE

He will need to wear retainers long-term and custom-made fixed retainers with overlay Essix retainers are planned. Retention will be essential, particularly with the aetiology of his high-angle malocclusion being partly related to tongue pressures.

CONCLUSION

Overall the patient was delighted with the outcome. This was undoubtedly a life-changing process and it was truly a pleasure to see the patient's confidence grow as the treatment progress and the reaction shown by his parents.

This case highlights the strength of collaboration with colleagues, to treatment plan carefully together and communicate well throughout the process to ensure the plan is executed as intended. I would like to express my personal thanks to Miss Witherow for her excellent work here leading to an impressive result. OP

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CPD

AIMS AND OBJECTIVES

This article demonstrates a case where orthodontic treatment was insufficient and also required the addition of jaw surgery

EXPECTED OUTCOMES

Correctly answering the CPD questions on page 45 shows the reader can understand how jaw surgery was used in conjunction with orthodontic treatment to treat a skeletal class 2 division 1 malocclusion with a small retrusive mandible and chin.

VERIFIABLE CPD HOURS: 1
TOPIC: Orthodontics
GDC DEVELOPMENT OUTCOME: C

FOR MORE INFORMATION

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