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Guided Maxillofacial Growth

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Contents

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The Cover Shot

The photo of these three pretty girls was taken in Havana of Cuba while they practised dancing in the street. They remind me that a happy face is beyond mere pleasure. It is a silent declaration of resilience - a conscious choice to illuminate the dark. It serves as a universal solvent, dissolving cultural and linguistic barriers through pure emotional contagion. This expression is not always a reflection of circumstance but often a brave shield against adversity, affirming that joy can exist alongside struggle. It is a catalyst for connection, signalling safety and empathy, prompting mirror neurons to fire and fostering communal bonds. Ultimately, each smile is a quiet act of rebellion against indifference, a hopeful projection into the future, and a profound reminder that our shared humanity thrives not in the absence of pain, but in our collective decision to celebrate life's fleeting, beautiful moments anyway.

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Editorial

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Issue Editor

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Beauty is in the eyes of beholder[1]. The perception of aesthetics differs among various cultures and changes with time. Maxillo-facial features inevitably draw more than a mere sense of pleasantness or recognition - these provoke a subjective judgment on attractiveness, affection, trustworthiness, competence and dominance instantly.

Facial profiles of monarchs[2] or bankers have been used from the date of Roman coins to modern bank notes to signify authority and prosperity. Portraits are displayed in halls of fame for enduring remembrance. Faces of politicians appear every day on mass media for indoctrination. Audition and typecasting are common for actors and actresses. At least when we are watching drama, various facial profiles differentiate the protagonist from the antagonist for the sake of the audience. In the present advent of Artificial Intelligence (A.I.), digitalisation of facial features is employed as one of the personal identifiers more than ever before. Instead of trekking the Don Quixote's pursuit[3] for celestial eternal beauty, it is more pragmatic to optimise the facial harmony by hiking within our worldly clinical boundaries.

Facial features change over ages and with growth. The Greek mythical beauty such as Helen of Troy[4] might not be judged by the same standards nowadays. Growth itself is a unique journey for everyone and is affected by a complex interplay of genetic, congenital, developmental and environmental factors. Whether this is pre-determined by fate is perhaps too philosophical for clinical debates.

With the new treatment thinkings and modalities, the development of the maxillofacial region can now be choreographically guided by systematically planned orthodontic and surgical interventions. The question about when the best of times for management is still stands.

There are several opportune time slots for growth assessment, monitoring and intervention:

1. childhood (6 - 7 years old),
2. pre-teen (8 - 12 years old),
3. adolescence (13 - 18 years old),
4. early adulthood (19 - 21 years old) , and
5. adulthood (over 21 years old).

Parental decision-making for timely treatments would be challenging.

In this issue, our fellow colleagues will share their experiences in the quest of rationalising facial harmony. The goal is to harmonise an individual, amidst other things, to deal with the life challenges lying ahead with a self-confident facial profile.

References

1. English idiom.
2. Matthew 22:21
3. Miguel de Cervantes. Don Quixote of La Mancha (1605 and 1615). Penguin Classics. 2003.
4. Homer. The Iliad (8th-7th Century BCE). Penguin Classics. 1998.

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Orthodontics for Children - Achieving Dento-facial Aesthetics, Skeletal Harmony and Psychosocial Well-being

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This article has been selected by the Editorial Board of the Hong Kong Medical Diary for participants in the CME programme of the Medical Council of Hong Kong (MCHK) to complete the following self-assessment questions in order to be awarded 1 CME credit under the programme upon returning the completed answer sheet to the Federation Secretariat on or before 30 September 2026.

INTRODUCTION

In contemporary society, dental health and aesthetics have become major focuses of modern healthcare and well-being. As parental awareness continues to grow, there is a rising expectation that children receive optimal and timely dental care.

Craniofacial growth is inherently dynamic, involving complex changes in the dentition, jaws, and facial structures that directly impact oral health, function, and aesthetics[1,2].

During this process, children may develop abnormal dental and skeletal patterns. For instance, Class III malocclusion with maxillary hypoplasia and anterior crossbite can compromise gingival health, mastication, and facial appearance[2].

Furthermore, deviations in the eruption timing of permanent teeth or exfoliation of primary teeth, whether early or delayed, may create uncertainty and anxiety for parents. Additional factors, including ectopic eruption and irregular tooth alignment, are commonly observed and may further contribute to parental concern[2,3,4].

Because these growth conditions evolve gradually from subtle deviations, parents often miss them during early stages when intervention is most effective to help control and minimise their progression[1,2].

Therefore, early orthodontic assessment is strongly recommended. Timely evaluation identifies potential concerns early, guiding clinical decisions and giving parents clarity before problems become established.

SKELETAL DEVELOPMENT

Jaw growth follows a staged pattern in which different components of the craniofacial complex mature at distinct points. Overall, the maxilla typically matures earlier than the mandible, whereas mandibular growth persists for a longer period and demonstrates a more pronounced pubertal acceleration. (Fig. 1)[1,2,5]

Following the main adolescent growth spurt, skeletal growth markedly decelerates. However, limited residual mandibular growth may continue into late adolescence, potentially contributing to late lower incisor crowding and the development of late anterior crossbite[2,6].

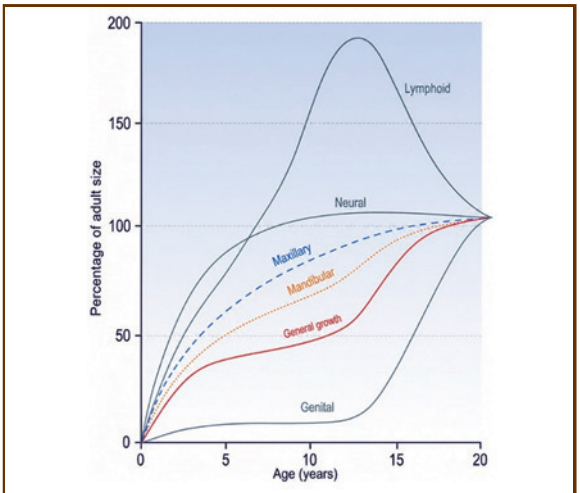

Fig. 1: Scammon's Growth Curve (Adapted from Proffit WR, Fields HW, Larson BE, Sarver DM. Contemporary Orthodontics. 6th ed. Philadelphia (PA): Elsevier; 2018.)

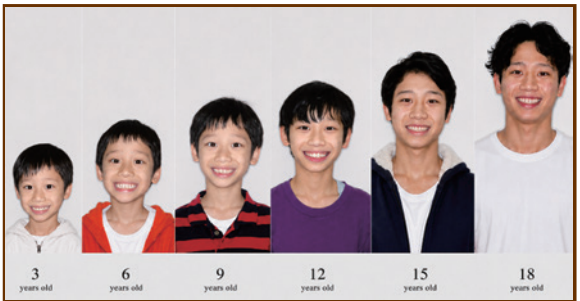

Fig. 2: Normal development of the face (Clinical pictures from personal collection)

DENTAL DEVELOPMENT

Primary Dentition (6 months - 6 years)

The sequential eruption of primary incisors, canines and molars establishes an initial flush terminal plane. The naturally spaced primary dentition serves as a guide for the subsequent eruption of the permanent teeth[2].

Early Mixed Dentition (Approximately 6 - 10 years)

The eruption of the first permanent molars and incisors establishes the early molar relationship and anterior guidance. All tooth positions are maintained by a zone of balance between the surrounding soft tissues, including the cheeks, lips, and tongue. During this stage, an increase in intercanine width and slight incisor proclination are expected. Transient crowding and the ugly duckling stage, characterised by a midline diastema and flared upper incisors, are considered normal developmental findings[2].

Late Mixed Dentition (Approximately 10 - 12 years)

As the canines and premolars erupt, the leeway space is gradually utilised, consolidating the arch form and coordinating the upper and lower arches[2].

Permanent Dentition (Over 12 years)

Once all permanent teeth have erupted, the final occlusion becomes progressively more established. Minor increases in incisor crowding may occur in later years as a result of late developmental changes[2,6].

FACIAL DEVELOPMENT

In early childhood, the facial profile appears convex, dominated by the cranial base and midface, while the mandible remains retrusive, with relatively full lips and underdeveloped nasal and chin features[1,2].

Pre-pubertally, nasal and chin projection increase, gradually reducing relative lip prominence as the lips adapt to erupting permanent incisors[1,2].

During puberty and adolescence, accelerated mandibular growth and nasal development further decrease profile convexity, increasing lower anterior facial height and chin prominence while defining the mentolabial sulcus. Tooth eruption, alveolar growth, and mandibular rotation work together to maintain overbite and facial balance. (Fig. 2)[1,2]

Individual variations in growth patterns, genetics, and environment most strongly impact the lower facial third, creating distinct differences in jawline, chin prominence, and lip fullness[1,2].

NORMAL GROWTH PATTERN

At growth completion, ideal dentofacial development features harmonious, three-dimensional jaw relationships, balanced facial proportions, and functional occlusion. The permanent dentition should show aligned arches, coincident midlines, Class I molar and canine relationships, 2 - 4 mm overjet, and 20 - 40 % overbite - supporting mastication, speech, periodontal health, and long-term stability[2].

In Chinese patients, normative assessment must account for population-specific traits. Compared with other demographics, Chinese individuals often exhibit greater bimaxillary protrusion, a reduced interincisal angle, and a more protrusive soft-tissue profile within normal limits. (Fig. 3)[7,8]

Fig. 3: Chinese craniofacial characteristics (Clinical picture from personal collection)

EARLY ASSESSMENT

Early assessment is important, ideally before the child reaches seven years of age. In fact, both the Hong Kong Society of Orthodontists and the American Association of Orthodontists (AAO) recommend that children undergo an initial orthodontic assessment upon first recognition of a concern, or no later than age 7, as timely evaluation allows the clinician to identify orthodontic problems at an early stage, monitor their progression, and determine the correct timing for treatment when the patient is developmentally ready. This approach is generally better than late identification, as it may prevent worsening of the condition and reduce the need for more complex intervention later on[2,9,10].

TIMING OF TREATMENT

The determination of optimal treatment timing remains a critical and complex aspect of care. It requires sound knowledge of growth and development, extensive diagnostic data, a high level of clinical judgement, and vast case management experience. The ability to execute treatment effectively and manage the growing patient properly is also crucial to achieving predictable and successful outcomes[1,2].

ORTHODONTIC ASSESSMENT

Modern orthodontic assessment begins with the chief complaint, medical and dental history, extraoral/intraoral examinations, and risk assessment to evaluate growth status, diagnosis, and treatment planning[2,11]. Diagnostic records combine static clinical photography and dynamic videography to capture facial proportions, smile lines, lip positions, and soft-tissue function[12,13,14,15].

Radiographic and digital diagnostic tools further refine the evaluation. Cephalometric analysis provides quantitative angular and linear measurements of soft tissue, skeletal, and dental relationships,[2,15] while panoramic radiography screens the dentoalveolar structures and jaws. Cone beam computed tomography (CBCT) provides 3D assessment for complex presentations like tooth impaction or root resorption. (Fig. 4)[16,17,18] Meanwhile, high-precision intraoral scanning generates digital arch models for analysis, simulation, and appliance fabrication[19,20].

Finally, converging CBCT with intraoral scan data allows 3D visualisation of root movement within alveolar bone, significantly enhancing diagnostic precision, clinical monitoring, and treatment planning.

Fig. 4: Cone beam CT showing teeth impaction (Clinical picture from personal collection)

MANAGEMENT OF ORTHODONTIC AND DENTOFACIAL ORTHOPAEDIC PROBLEMS IN GROWING PATIENTS

Following a comprehensive clinical assessment, the clinician can determine the overall status of the child's dental, skeletal, and facial development. This helps guide whether treatment is needed, supports appropriate treatment planning, and provides a baseline for monitoring growth and developmental changes over time[2,13,21].

It is important to bear in mind that orthodontic management in children is not limited to a single evaluation point but requires longitudinal monitoring. Through continuous observation, clinicians can determine whether the child's growth trajectory corresponds to expected developmental patterns[1,2,21].

Prediction of growth changes involves a sound understanding of growth and development, as well as the analysis of growth data. While the prediction of treatment outcome requires full understanding of the treatment effect plus growth changes. Mastering of treatment effect and growth prediction are the keys to success for treating paediatric orthodontic patients[1,2,3].

COMMON ORTHODONTIC CONDITIONS FOUND IN PAEDIATRIC PATIENTS

Malocclusion can impair mastication and speech, compromise growth, increase trauma and periodontal risks, and affect psychosocial development. Early recognition and management reduce complications while optimising long-term facial aesthetics and oral health.

Anterior Crossbite

Anterior crossbite (Fig. 5) is a common malocclusion problem, with a prevalence of 12 % among Hong Kong Chinese preschool children[22]. It causes traumatic bite, increased mobility and gingival recession of the lower incisors and incisal edge chipping.

Fig. 5: An 8- year-old boy with anterior crossbite involving upper central incisors (Clinical picture from personal collection)

Anterior Openbite

Anterior openbite (Fig. 6) is exhibited, together with upper and lower anterior crowding and proclined incisors. It causes lisping and difficulty in biting food such as noodles.

Fig. 6: An 8-year-old girl with anterior openbite (Clinical picture from personal collection)

Severe Overjet

Severe overjet (Fig. 7) is accompanied by a receded chin and markedly proclined maxillary incisors. This relationship may compromise masticatory efficiency and increase the risk of traumatic injury to the upper anterior teeth.

Fig. 7: An 8-year-old boy with increased overjet (Clinical picture from personal collection)

Narrow Maxilla

Narrow maxilla (maxillary deficiency transverse) (Fig. 8) is a developmental or acquired condition where maxillary arch is constricted, leading to reduction of transverse dental and skeletal width. Early diagnosis in growing patients is important.

Fig. 8: A 9-year-old girl with constricted upper arch (Clinical picture from personal collection)

Hypodontia

Hypodontia (Fig. 9) is a common developmental condition characterised by the congenital absence of one or several permanent teeth, resulting from disturbances in tooth development.

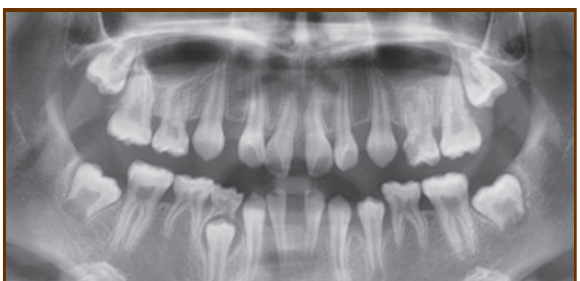

Fig. 9: A 14-year-old girl with multiple congenital missing teeth (Clinical picture from personal collection)

Impaction

Impaction (Fig. 10(a) & (b)) of a maxillary central incisor is a clinically significant eruption disturbance in which the tooth fails to erupt into the dental arch within the expected period. Parents often become aware when the contralateral tooth has been fully erupted for a prolonged period, while the affected tooth remains absent.

Fig. 10(a): An 11-year-old boy with impacted upper right central incisor (Clinical picture from personal collection)

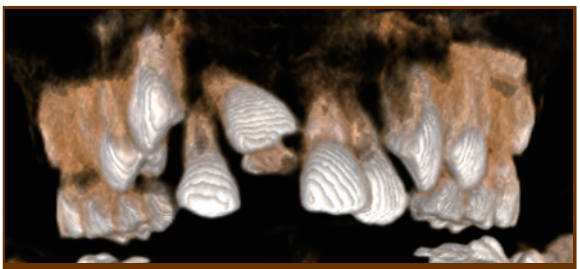

Fig. 10(b): Cone beam CT with supernumerary tooth and impacted upper right central incisor (Clinical picture from personal collection)

MANAGEMENT OF PAEDIATRIC ORTHODONTIC PROBLEMS

Space Maintainer

Severe dental caries caused early bilateral loss of primary second molars. Space maintainers were placed to prevent mesial drift of the first permanent molars, preserving arch length for premolar eruption. (Fig. 11)

Fig. 11: A 7-year-old girl with space maintainer treatment to preserve space for lower second premolars (Clinical pictures from personal collection)

Anterior Crossbite in Mixed Dentition

A 6-year-old girl with anterior crossbite, skeletal Class III relationship and maxillary hypoplasia. Early orthodontic intervention was initiated at age 8 to correct the crossbite condition. (Fig. 12)

Continuous reviews demonstrated favourable jaw and facial growth and normal development of permanent dentition, after which comprehensive orthodontic treatment using clear aligner treatment was undertaken to finalise the outcome.

Fig. 12: Successful correction of anterior crossbite (Clinical pictures from personal collection)

Microdontia

A 12-year-old girl concerned about the appearance of her smile, particularly the 'small, pointed' shape of her lateral incisors. Fixed appliance was used to improve the alignment. Restorative techniques were incorporated to enhance the shapes of the microdontic lateral incisors, creating a more balanced and aesthetically pleasing smile. (Fig. 13)

Fig. 13: A 12-year-old girl with aesthetic improvement for microdontic maxillary lateral incisors (Clinical pictures from personal collection)

Crowding

A 15-year-old girl presented with upper and lower crowding with malalignment, affecting her oral hygiene and smile aesthetics. (Fig. 14(a))

Clear aligner therapy was used to relieve crowding and improve occlusion. (Fig. 14 (b)) A more harmonious and confident smile with improved alignment was achieved.

Fig. 14(a): A 15-year-old girl with dental crowding (Clinical pictures from personal collection)

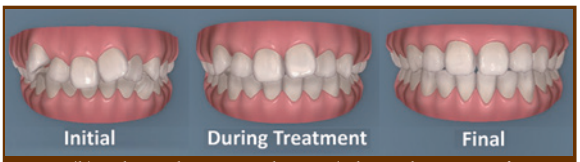

Fig. 14(b): Clear aligner appliance (Clinical pictures from personal collection)

Class II Division 1 Deep Bite Mandibular Hypoplasia Anteroposterior

A 12-year-old girl with Class II division 1 malocclusion on skeletal II base and characterised by a pronounced deep bite. (Fig. 15) Treatment with a functional appliance was performed to encourage mandibular growth, followed by fixed appliance.

Treatment results include increased lower facial height, improved facial proportion and long-term stability.

Fig. 15: A 12-year-old girl with Class II Division 1 Deep Bite Mandibular Hypoplasia Anteroposterior (Clinical pictures from personal collection)

Multiple Impaction and Eruption Problem

A 10-year-old boy having delayed eruption of the maxillary permanent incisors. The primary incisors had exfoliated one year prior, yet no subsequent eruption of the permanent successors had occurred. (Fig. 16(a)) He suffered from impaired articulation, mastication and

lack of confidence. Cone beam CT shows ectopic and impacted of maxillary permanent incisors, attributed to failure of eruption and an aberrant eruption pathway. (Fig. 16(b)) Prolonged impaction may increase the risk of complications such as ankylosis, cyst formation, and root resorption of adjacent teeth.

Fig. 16(a): A 10-year-old boy with missing maxillary incisors (Clinical pictures from personal collection)

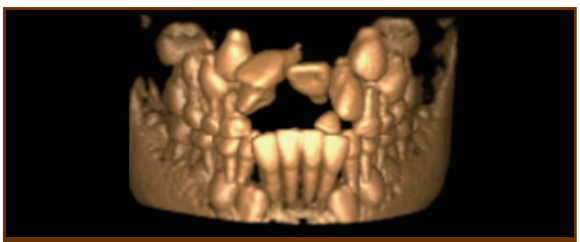

Fig. 16(b): CBCT of the impacted maxillary incisors (Clinical picture from personal collection)

A combined surgicalorthodontic approach was formulated to address the impaction. This involved surgical exposure and bonding of the impacted incisors, followed by orthodontic traction to guide the teeth into the arch. (Fig.16(c) & (d))

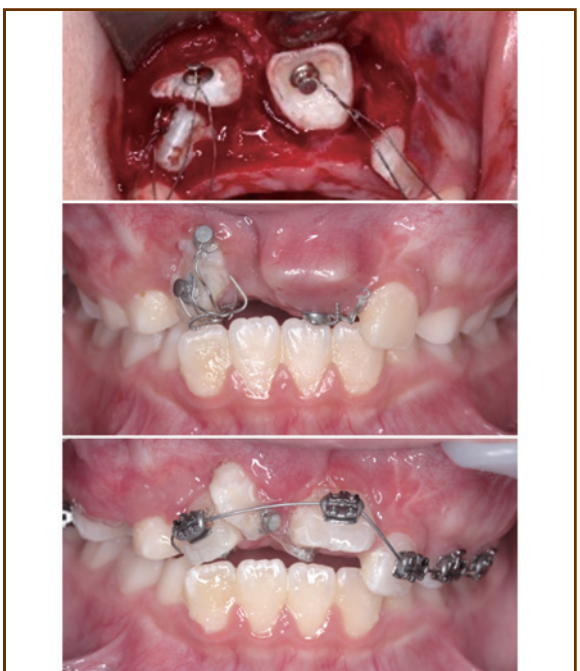

Fig. 16(c): Surgically exposed and guided eruption of impacted maxillary incisors into the dental arch (Clinical pictures from personal collection)

Fig. 16(d): Final outcome with upper incisors aligned into arch (Clinical picture from personal collection)

CONCLUSION

Growth and development of the face, jaw, and dentition are complex processes. They involve intricate biological mechanisms characterised by subtle changes that are often difficult to detect early. For this reason, identifying abnormalities at an early stage can be challenging. A thorough understanding of developmental patterns, combined with regular monitoring throughout childhood, is essential to support timely diagnosis and intervention.

Managing childhood malocclusion remains clinically demanding because treatment outcomes depend on multiple factors. These include the child's cooperation and compliance, as well as parental awareness, understanding of the condition, and acceptance of treatment.

Advances in recent technology, along with the greater availability of information through the internet, have increased parental awareness of malocclusion. This has improved communication between clinicians and families, strengthened treatment acceptance, and enhanced adherence to recommended care.

As a result, orthodontic treatment is becoming more predictable, precise, and efficient. These developments also enable clinicians to manage more complex cases and address a wider range of dental problems effectively.

References

1. Capote R, Preston K, Kapadia H. Craniofacial Growth and Development: A Primer for the Facial Trauma Surgeon. Oral Maxillofac Surg Clin North Am. 2023;35(4):501-13.
2. Proffit WR, Fields HW, Larson BE, Sarver DM. Contemporary orthodontics. Sixth edition. ed. Philadelphia, PA: Elsevier; 2018.
3. Demirjian A, Goldstein H, Tanner JM. A new system of dental age assessment. Hum Biol. 1973;45(2):211-27.
4. AlQahtani SJ, Hector MP, Liversidge HM. Brief communication: The London atlas of human tooth development and eruption. Am J Phys Anthropol. 2010;142(3):481-90.
5. Franchi L, Nieri M, Lomonaco I, McNamara JA, Giuntini V. Predicting the mandibular growth spurt. Angle Orthod. 2021;91(3):307-12.
6. Milos D, Pavlic A, Vandevska Radunovic V, Zigante M, Matthewson A, Spalj S. Craniofacial Growth in Adolescence and its Influence on the Mandibular Incisor Crowding. Acta Stomatol Croat. 2021;55(1):37-44.
7. Cheung LK, Chan YM, Jayaratne YS, Lo J. Three-dimensional cephalometric norms of Chinese adults in Hong Kong with balanced facial profile. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2011;112(2):e56-73.
8. Wu J, Hägg U, Rabie AB. Chinese norms of McNamara's cephalometric analysis. Angle Orthod. 2007;77(1):12-20.
9. American Association of Orthodontists. The Right Time: When Should Your Child See an Orthodontist? 2020 [Available from: https://aaoinfo.org/whats-trending/when-should-your-child-see-an-orthodontist/.
10. American Association of Orthodontists. The Milestone Visit: Why Age 7 is The Best Age For Orthodontic Treatment 2026 [Available from: https://aaoinfo.org/whats-trending/when-should-my-child-see-an-orthodontist-age-7/.

11. Mitchell L, Littlewood SJ, Lewis BRK, Barber SK, Jenkins FR. An introduction to orthodontics. Fifth edition. ed. Oxford, United Kingdom: Oxford University Press; 2019.
12. Sarver DM, Ackerman MB. Dynamic smile visualization and quantification: part 1. Evolution of the concept and dynamic records for smile capture. Am J Orthod Dentofacial Orthop. 2003;124(1):4-12.
13. Sarver DM, Ackerman MB. Dynamic smile visualization and quantification: Part 2. Smile analysis and treatment strategies. Am J Orthod Dentofacial Orthop. 2003;124(2):116-27.
14. Schabel BJ, Baccetti T, Franchi L, McNamara JA. Clinical photography vs digital video clips for the assessment of smile esthetics. Angle Orthod. 2010;80(4):490-6.
15. Broadbent BH. A NEW X-RAY TECHNIQUE and ITS APPLICATION TO ORTHODONTIA. The Angle Orthodontist. 1931;1(2):45-66.
16. Abdelkarim A. Cone-Beam Computed Tomography in Orthodontics. Dent J (Basel). 2019;7(3).
17. Kapila S, Conley RS, Harrell WE, Jr. The current status of cone beam computed tomography imaging in orthodontics. Dentomaxillofac Radiol. 2011;40(1):24-34.
18. Kapila SD, Nervina JM. CBCT in orthodontics: assessment of treatment outcomes and indications for its use. Dentomaxillofac Radiol. 2015;44(1):20140282.
19. Frackiewicz W, Jankowska A, Machoy ME. CBCT and modern intraoral scanners as tools for developing comprehensive, interdisciplinary treatment plans. Adv Clin Exp Med. 2024;33(11):1267-76.
20. Impellizzeri A, Horodynski M, De Stefano A, Palaia G, Polimeni A, Romeo U, et al. CBCT and Intra-Oral Scanner: The Advantages of 3D Technologies in Orthodontic Treatment. Int J Environ Res Public Health. 2020;17(24).
21. Nakhaei Y, Farahmand F, Yazdanpanah MH, Saeidi N, Ghaffarzade SK, Soleimani S, et al. Challenges in Pedicatric Orthodontics and Radiology: Evidence from Recent Studies and Implications for Clinical Practice: A Narrative Review. Galen Med J. 2024;13(S Pt 1):e3733.
22. Zhang S, Lo ECM, Chu CH. Occlusal Features and Caries Experience of Hong Kong Chinese Preschool Children: A Cross-Sectional Study. Int J Environ Res Public Health. 2017;14(6).

MCHK CME Programme Self-assessment Questions

Please read the article entitled "Orthodontics for Children - Achieving Dento-facial Aesthetics, Skeletal Harmony and Psychosocial Well-being" by Dr Paul Yun-wah LAU, Dr Tim King-man TAM and Dr Priscilla Yat-shum YEUNG and complete the following self-assessment questions. Participants in the MCHK CME Programme will be awarded CME credit under the Programme for returning completed answer sheets via fax (2865 0345) or answer link: https://forms.gle/k66Y6p2mPWtHVhM27 or by mail to the Federation Secretariat on or before 30 September 2026. Answers to questions will be provided in the next issue of The Hong Kong Medical Diary. (Address: Duke of Windsor Social Service Bldg., 4/Fl., 15 Hennessy Rd., Wan Chai. Enquiry: 2527 8898)

Questions 1 - 10: Please answer T (true) or F (false)

1. **Early orthodontic assessment is ideally recommended before a child reaches seven years of age.**
2. **The maxilla typically matures later than the mandible during craniofacial growth.**
3. **In early mixed dentition, transient crowding and the "ugly duckling" stage can be normal developmental findings.**
4. **A narrow maxilla is usually unrelated to crowding or posterior crossbite.**
5. **Anterior crossbite can cause traumatic bite, gingival recession, and incisal edge chipping.**
6. **In late mixed dentition, the leeway space is gradually utilised as canines and premolars erupt.**
7. **Hypodontia refers to the congenital absence of one or several permanent teeth.**
8. **The lower third of the face shows the least variation during growth and is therefore the most stable facial region.**
9. **Surgical exposure and orthodontic traction can be used to guide impacted maxillary incisors into the arch.**
10. **Late residual mandibular growth may contribute to late lower incisor crowding and late anterior crossbite.**

ANSWER SHEET FOR SEPTEMBER 2026

Please return the completed answer sheet to the Federation Secretariat on or before 30 September 2026 for documentation. 1 CME point will be awarded for answering the MCHK CME programme (for non-specialists) self-assessment questions.

Orthodontics for Children - Achieving Dento-facial Aesthetics, Skeletal Harmony and Psychosocial Well-being

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Answer Link

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Answers to August 2026 Issue

Antenatal Screening Tests: Routine or Selective?

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Adult Orthodontics: Enhancing Oral Health, Function, and Life-Changing Outcomes

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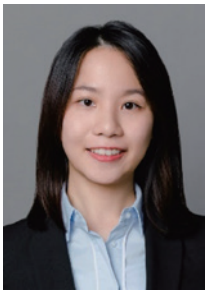

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INTRODUCTION

In recent years, expectations regarding oral health, dental aesthetics, and overall facial appearance have increased substantially, with a corresponding rise in demand for orthodontic treatment, particularly among adults[1,2]. This shift reflects not only evolving social norms but also the growing importance of smile and facial aesthetics in self-perception and daily social interactions.

Contemporary evidence indicates that adult motivation for orthodontic treatment extends beyond correcting malocclusion, with aesthetic concerns, psychosocial factors, and quality of life playing increasingly significant roles[2,4]. The influence of social media has further heightened awareness of facial appearance and smile aesthetics, contributing to rising aesthetic expectations and demand for treatment[3]. In light of these trends, adult orthodontic care should address aesthetic considerations alongside health, function and psychosocial well-being[2,4].

Although orthodontic conditions are ideally managed during growth to prevent progression, many remain untreated until adulthood, often presenting as established or more complex dental and skeletal discrepancies[5,6]. Despite the limitations associated with delayed intervention, increasing numbers of adults now seek treatment when personal, financial, or psychosocial circumstances allow[4]. Advances in digital orthodontics have played a critical role in addressing these challenges. The integration of intraoral scanning, cone beam computed tomography, three-dimensional photography, videography and various digital applications and platforms generating quantitative and visualised data has enhanced diagnostic accuracy and treatment planning. Simulation of treatment outcomes opens possibilities for exploring alternative treatment paths and communicating realistic expectations. These technologies enable more precise and individualised approaches, as well as improvements in the monitoring of treatment progress, allowing clinicians to achieve highly predictable outcomes even in adult patients seeking treatment later in life, without always needing to resort to orthognathic surgery[7,9].

Modern orthodontic practice requires not only an appreciation of cultural and aesthetic diversity but also the ability to meet rising patient expectations while integrating rapidly evolving technologies into evidence-based care[1,5,10]. Effective consultation and treatment planning depend on understanding patients' aesthetic goals and concerns, aligning them with realistic outcomes, and applying clinical expertise to guide decision-making[1,2,4].

Treatment can be grouped into three levels based on the complexity of the condition:

1. Dental malocclusion with or without minor skeletal discrepancy,

2. Dental malocclusion with moderate to severe skeletal discrepancy, and

3. Dental malocclusion with severe skeletal discrepancy (orthognathic surgery required).

The following discussion reviews common concerns among adult orthodontic patients and outlines contemporary clinical approaches, with selected cases illustrating the application of current technologies in practice[5,7-9].

ORTHODONTIC CONSIDERATIONS IN FACIAL AESTHETICS

Facial aesthetics is determined by a complex interaction among dental aesthetics, alignment, skeletal morphology, skin quality and overall facial harmony[10,11]. Therefore, current evidence indicates that diagnosis and treatment planning should include careful assessment of soft-tissue balance, lip support, chin projection, vertical facial proportion, and anticipated age-related change[10-12]. For the orthodontist, these considerations are directly clinically relevant because facial attractiveness cannot be evaluated solely on the basis of dental alignment or cephalometric norms[10,11].

AESTHETICS PREFERENCE IN THE ASIAN POPULATION

In many Asian populations, aesthetic preferences favour a relatively small, delicate face with an oval or

inverted triangular outline, a narrow, pointed chin, and a smooth, less angular mandibular contour[11,13]. Survey and morphometric studies in Chinese subjects report higher attractiveness ratings for faces with greater temporal width, relatively smaller bizygomatic and bigonial widths, and increased chin projection, features that collectively create a slimmer lower face and defined jawline[11]. These preferences differ from traditional Caucasian norms, with Asian raters tending to prefer a less robust lower face and a straighter or slightly retrusive profile[11,14].

SCOPE OF ADULT ORTHODONTIC TREATMENT: FROM DENTAL TO SKELETAL CORRECTION

Dental Malocclusion with or without Mild Skeletal Discrepancy

At this end of the spectrum are adults with mainly dental problems, such as crowding, spacing, or mild malalignment, without significant skeletal disharmony[5,9]. In these cases, orthodontic treatment alone can often produce excellent results, improving dental alignment, smile aesthetics, occlusion, and facial profile. With careful planning, treatment can fulfil the patient's concerns and often exceed expectations[9].

Bimaxillary Protrusion

A young female patient with bimaxillary protrusion, proclined maxillary incisors, gummy smile, and full lips (Fig. 1). The primary challenge in this case was achieving an appropriate amount of anterior segment retraction following extraction of four first premolars.

Fig. 1: Bimaxillary protrusion before and after (Clinical pictures from personal collection)

Post-orthodontic assessment demonstrated profound improvement in smile aesthetics, lip profile, and facial profile, resulting in enhanced facial harmony. Similar reports suggest that extraction-based management of bimaxillary protrusion can produce substantial improvements in soft-tissue profile and smile esthetics when anterior retraction is well controlled[15]. Bimaxillary protrusion with excessive gingival display presents both aesthetic and biomechanical challenges, and precise control of anterior retraction is critical to achieving an optimal outcome.

Malocclusion with Moderate to Severe Skeletal Discrepancy

This group features adults with skeletal problems such as mandibular asymmetry, hypoplasia, hyperplasia, or other moderate-to-severe dentofacial discrepancies[5,9]. Although these patients have underlying skeletal imbalance, the problem remains within the limits of correction by orthodontic treatment alone, but with higher risks. This allows us to address the patient's concerns effectively and achieve a harmonious result without orthognathic surgery in carefully selected cases[5,7,9].

Anterior Crossbite with Mandibular Hyperplasia and Asymmetry

A 20-year-old female patient with anterior crossbite, skeletal Class III relationship, maxillary hypoplasia and mandibular hyperplasia (Fig. 2). The patient sought treatment to improve her smile aesthetics but declined both dental extractions and orthognathic surgery. Orthodontic intervention using clear aligner therapy with mandibular distalisation was therefore initiated to address the malocclusion.

Fig. 2: Anterior crossbite before and after (Clinical pictures from personal collection)

Despite the limitation in achieving significant facial profile changes without surgical correction, treatment resulted in successful alignment of the dentition, correction of the anterior crossbite, and improvement in smile aesthetics and occlusal relationships (Fig. 3). Similar Class III camouflage protocols using distalisation mechanics and clear aligners have been reported to improve overjet, overbite, and intercuspation while maintaining acceptable facial appearance. Anterior crossbite in adult patients with skeletal discrepancies

Fig. 3: Treatment progress (Clinical pictures from personal collection)

presents a clinical challenge, and when surgical options are declined, orthodontic camouflage can still provide functional and aesthetic benefits[9].

Anterior Openbite with Bimaxillary Protrusion

A male patient with anterior openbite, bimaxillary protrusion, and minimal incisor display on smiling (Fig. 4). The patient reported difficulty in eating and speech due to the openbite condition. Orthodontic treatment involving extraction of four premolars and clear aligner therapy was undertaken. (Fig. 5).

Fig. 4: Correction of anterior openbite (Clinical pictures from personal collection)

Anterior openbite cases of this nature have traditionally been challenging to manage with orthodontic treatment alone and often required surgical intervention. Advances in orthodontic mechanics, including skeletal anchorage and optimised clear aligner protocols, now allow for effective dentoalveolar correction in many such cases. Post-treatment assessment demonstrated significant improvement in anterior tooth display, smile line, lower face height, incisal contacts and occlusal relationships, with restoration of functional efficiency, facial aesthetics and self-confidence.

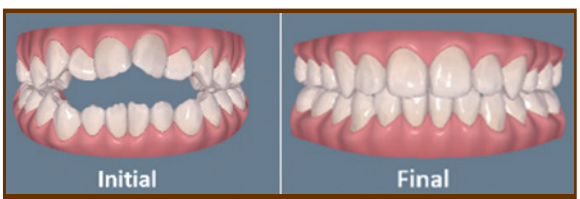

Fig. 5: Anterior openbite corrected with extractions of premolars and clear aligner therapy (Clinical pictures from personal collection)

Malocclusion with Severe Skeletal Discrepancy - Combined Orthodontics and Orthognathic Surgery

At the other end of the spectrum are adults with severe skeletal discrepancies. These cases often involve marked problems in all three dimensions, including jaw disproportions, asymmetry, and occlusal canting. In such patients, orthodontic treatment alone is usually insufficient. Combined orthodontic and orthognathic surgical treatment remains the gold standard for managing cases involving severe skeletal discrepancies[17,18].

Recent advances in digital orthodontics now enable clinicians to virtually design and position teeth prior to initiating active treatment, facilitating ideal alignment and optimal occlusion[7-9]. While this technology has long been used in non-surgical orthodontic cases, it is now increasingly applied in more complex, surgery-based treatments. By using the appropriate treatment approach, we can effectively address the patient's concerns and achieve meaningful improvement in facial form, function, and overall outcome[17-19].

Facial Asymmetry with Maxillary Canting

A male patient presented with concern regarding facial asymmetry. Clinical and radiographic evaluation demonstrated maxillary canting and mandibular asymmetry. Orthodontic treatment using clear aligner therapy was initiated in conjunction with staged orthodontic simulation and digital surgical planning. (Fig. 6)

Surgical correction was performed using a mandibular bilateral sagittal split osteotomy (BSSO) combined with genioplasty. Intraoperatively, a newly designed bonded archbar was used instead of a conventional archbar to facilitate intermaxillary fixation while minimising soft gingival tissue trauma. Similar customised fixation and splint designs have been reported to enhance intraoperative accuracy and reduce soft-tissue morbidity in orthognathic surgery. Post-surgical orthodontic finishing was subsequently carried out in accordance with the digital treatment plan, enabling achievement of the intended occlusal relationship with improved alignment and final facial esthetics[18].

Fig. 6: Combined orthodontics and orthognathic surgery for the correction of facial asymmetry with maxillary canting (Clinical pictures from personal collection)

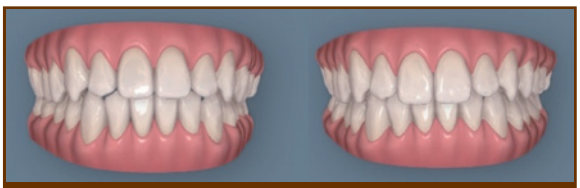

Fig. 7: The simulation and actual postoperative result demonstrate highly comparable outcomes (Clinical pictures from personal collection)

Digital planning played a pivotal role in the management of this case. Final tooth positions were carefully predetermined and used to guide surgical movement of the mandibular segments, thereby optimising the postoperative occlusal relationship. This digital workflow enhanced both the precision of the presurgical orthodontic outcome and the accuracy of surgical execution[7,18].

The final treatment outcome closely corresponded to the preoperative digital plan, highlighting the value of meticulous virtual planning in the management of complex asymmetric cases. (Fig. 7) Achieving such predictable results depends on the integration of advanced digital planning, sound orthodontic expertise, and precise surgical technique[7,17,18].

Class III Skeletal Pattern with Implant Replacement

A female patient presented with concern regarding a protrusive mandible and spacing between the maxillary anterior teeth. Clinical assessment revealed a skeletal discrepancy with associated dental spacing, requiring a multidisciplinary approach. Treatment combining clear aligner therapy, orthognathic surgery, and implant rehabilitation was undertaken to address the dentofacial concerns. (Fig. 8)

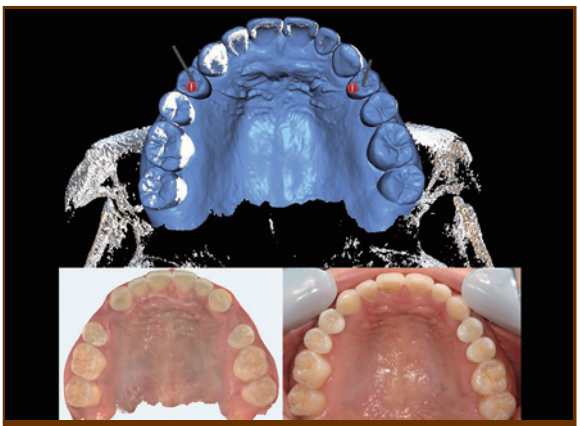

Fig. 8: Combined clear aligner, orthognathic surgery, and implant rehabilitation for severe skeletal Class III and missing teeth (Clinical pictures from personal collection)

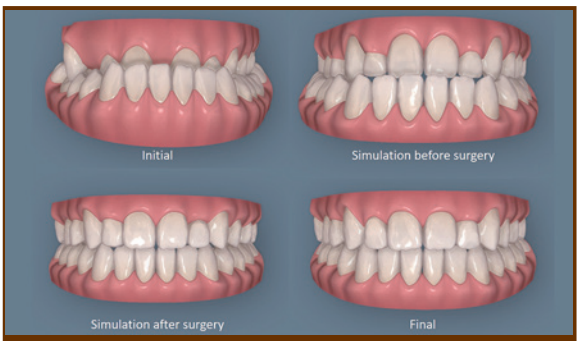

Fig. 9: Comparison of simulation and actual final outcome (Clinical pictures from personal collection)

Given the complexity of the skeletal and dental discrepancies, bimaxillary surgery including Le Fort I osteotomy and BSSO was performed to achieve skeletal correction and improve facial harmony[17-19]. Presurgical orthodontic and surgical simulations were carried out to define the intended treatment outcome and coordinate tooth positions with the planned jaw movements. (Fig. 9) In addition, 3D-printed cutting guides and fixation plates were utilised to facilitate precise intraoperative execution of the surgical plan[20]. (Fig. 10)

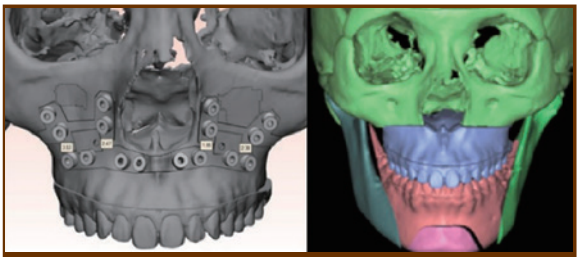

Fig. 10: 3D-printed bone plates and surgical simulation (Clinical pictures from personal collection)

Implant-supported replacement of teeth 12 and 22 was performed using 3D implant planning. Similar workflows combining CBCT, intraoral scanning and guided surgery have been shown to improve implant positioning accuracy and restorative outcomes. For intermaxillary fixation, a customised bonded arch bar was used in place of conventional arch bars, providing an effective method of stabilisation while minimising soft tissue trauma. (Fig. 11)

Fig. 11: Customised bonded arch bar (Clinical picture from personal collection)

With digital planning, clear aligners, and implant-supported restorative rehabilitation, the patient achieved improved smile aesthetics, restored masticatory function, and regained self-esteem[18,19,21].

CONCLUSION

Orthodontic problems that are not treated in childhood may become more severe in adulthood[5,6,15]. These problems can affect facial appearance, speech, chewing, and occlusion. Adult orthodontic treatment not only corrects these problems but also improves patients' psychosocial well-being and quality of life[2,4,17]. Over the past 30 years, orthodontics has changed greatly because of advances in digital technology, material science, and treatment systems such as digital braces and clear aligner treatment. These developments have improved treatment precision, efficiency, and patient comfort[7-9,18].

However, combined orthodontic and orthognathic surgical treatment remains the gold standard for patients with severe skeletal discrepancies including facial asymmetry[18,19]. In complex cases, careful pre-treatment planning with digital tools, including digital simulation, can enhance treatment predictability. These tools also support more accurate surgical planning, leading to improved aesthetic and functional outcomes. In addition, digital workflows facilitate communication with oral and maxillofacial surgeons and strengthen patient understanding, thereby supporting informed consent and shared decision-making[7,18]. Collectively, this approach helps build rapport with patients[19,21].

As digital orthodontics continues to develop, it will further expand treatment options and support more personalised and effective care[7-9,18]. Successful orthodontic treatment does more than correct teeth and jaws - it can restore function, improve confidence, and truly transform patients' lives[2,4,21].

References

1. Seehra J, Fleming PS, Newton T, DiBiase AT. Bullying in orthodontic patients and its relationship to malocclusion,self-esteem and oral health-related quality of life. J Orthod. 2011;38(4):247-56; quiz 94.
2. de Couto Nascimento V, de Castro Ferreira Conti AC, de Almeida Cardoso M, Valarelli DP, de Almeida-Pedrin RR. Impact of orthodontic treatment on self-esteem and quality of life of adult patients requiring oral rehabilitation. Angle Orthod. 2016;86(5):839-45.
3. Sayers MS, Newton JT. Patients' expectations of orthodontic treatment: part 1 - development of a questionnaire. J Orthod. 2006;33(4):258-69; discussion 6.
4. Alhammad K, Alfaqeeh M, Alhazmi H, Alqahtani A. Psychosocial benefits of dental corrections in adolescents and adults. International Journal Of Community Medicine And Public Health. 2024;11:3683-6.
5. Proffit WR, Fields HW, Larson BE, Sarver DM. Contemporary orthodontics. Sixth edition. ed. Philadelphia, PA: Elsevier; 2018.
6. Alexander AE, McNamara JA, Jr., Franchi L, Baccetti T. Semilongitudinal cephalometric study of craniofacial growth in untreated Class III malocclusion. Am J Orthod Dentofacial Orthop. 2009;135(6):700 e1-14; discussion -1.
7. Li M, Shen S, Zhao Z, Wang B, Yu H. The application of a fully digital approach in the treatment of skeletal class III malocclusion: a preliminary study. BMC Oral Health. 2023;23(1):237.
8. Barbo BN, Azeredo F, Rizzatto SMD, Fritscher GG, Andriola F, Menezes LM. Digital planning of orthognathic surgery with aligners: ortho-facial-driven, a viable protocol for surgery-first treatment. Dental Press J Orthod. 2026;30(4):e25spe5.
9. Sabouni W, Gandedkar N, Vaiid N. Clinical Application of Clear Aligner Treatment (CAT) in the Surgery-First Orthognathic approach (SFOA). Seminars in Orthodontics. 2022;28.
10. Soh J, Chew MT, Chan YH. Perceptions of dental esthetics of Asian orthodontists and laypersons. Am J Orthod Dentofacial Orthop. 2006;130(2):170-6.
11. Chan EK, Soh J, Petocz P, Darendeliler MA. Esthetic evaluation of Asian-Chinese profiles from a white perspective. Am J Orthod Dentofacial Orthop. 2008;133(4):532-8.
12. Sarver DM. Interactions of hard tissues, soft tissues, and growth over time, and their impact on orthodontic diagnosis and treatment planning. Am J Orthod Dentofacial Orthop. 2015;148(3):380-6.
13. Naini FB, Donaldson AN, McDonald F, Cobourne MT. Assessing the influence of chin prominence on perceived attractiveness in the orthognathic patient, clinician and layperson. Int J Oral Maxillofac Surg. 2012;41(7):839-46.
14. Soh J, Chew MT, Wong HB. A comparative assessment of the perception of Chinese facial profile esthetics. Am J Orthod Dentofacial Orthop. 2005;127(6):692-9.
15. Lau PYW, Wong RWK. Risks and complications in orthodontic treatment. Hong Kong Dental Journal. 2006;3(1):15.
16. Greenlee GM, Huang GJ, Chen SS, Chen J, Koepsell T, Hujoel P. Stability of treatment for anterior open-bite malocclusion: a meta-analysis. Am J Orthod Dentofacial Orthop. 2011;139(2):154-69.
17. Bailey LJ, Haltiwanger LH, Blakey GH, Proffit WR. Who seeks surgical-orthodontic treatment: a current review. Int J Adult Orthodon Orthognath Surg. 2001;16(4):280-92.
18. Kong L, Liu X, Zhang J. Combining a digital design-mediated surgery-first approach and clear aligners to treat a skeletal Class III defect for aesthetic purposes: a case report. J Int Med Res. 2022;50(4):3000605221094524.
19. Dowling PA, Espeland L, Krogstad O, Stenvik A, Kelly A. Duration of orthodontic treatment involving orthognathic surgery. Int J Adult Orthodon Orthognath Surg. 1999;14(2):146-52.
20. Leung YY, Leung JKC, Li ATC, Teo NEZ, Leung KPY, Au SW, Li DTS, Su YX. Accuracy and safety of in-house surgeon-designed three-dimensional-printed patient-specific implants for wafer-less Le Fort I osteotomy. Clin Oral Investig. 2023 Feb;27(2):705-713.
21. Feu D, de Oliveira BH, de Oliveira Almeida MA, Kiyak HA, Miguel JA. Oral health-related quality of life and orthodontic treatment seeking. Am J Orthod Dentofacial Orthop. 2010;138(2):152-9.


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Technological Advancement in Orthodontics

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INTRODUCTION

Recent technological advancements have completely transformed the orthodontic practice[1], replacing the traditional path of repetitive manual clinical steps with a digital workflow[2]. The rise in artificial intelligence (A.I.) driven technology, advanced hardware and software have empowered orthodontists to deliver a higher standard of care to their patients while advancing their orthodontic practice to a new level[3].

In the current era, technology has seamlessly integrated into our daily lives. A mobile phone device with robust photo-taking and video recording functions can capture high resolution shots from the patients' smiling faces comparable to professional clinical photography[4]. Photo or video editing software can generate believable enhanced versions of these shots making the smiles ideal[5]. However, the technology underlying the complete workflow in orthodontic treatment is much more sophisticated which requires professional expertise, where the orthodontist plays an irreplaceable role[6].

A good framework of technological support is foundational to practising orthodontics and the infrastructure encompasses imaging systems, integrated digital software and in-office fabrication systems[6].

Imaging systems including intra oral scanning (IOS), videos and photography, facial scanning and cone-beam computed tomography (CBCT) capture patients' faces and smiles in static and dynamic views, as well as their dental and skeletal anatomy[7].

Following this, integrated digital software means that these data can be coordinated between different software for various purposes such as treatment simulation and design of treatment options[8].

Finally, in-office fabrication systems allow for Computer-Aided Design and Computer-Aided Manufacturing (CAD/CAM) of various appliances, including clear aligners, orthodontic brackets and surgical plates used in orthognathic surgery cases, with the use of additive and subtractive manufacturing[9].

The scope of orthodontics has now fared beyond dental science and clinical knowledge. It also requires technological expertise and digital intelligence to be able to foresee and execute the whole workflow[10]. This article provides an overview of the technology with examples of its powerful applications.

SMILE PHOTO AND SMILE VIDEO INSTANT SIMULATION

Advanced diagnostic technology has become increasingly accessible, now routinely beginning with ubiquitous smartphone platforms providing instant simulation[11].

Leveraging A.I. algorithms, these applications can instantly generate simulated smile makeovers, providing patients with an immediate visualisation of potential therapeutic outcomes within minutes. This rapid visual feedback serves as a powerful motivational tool[12].

Utilising a short video clip recorded on a mobile device, clinicians can even produce a dynamic smile video with straightened teeth, showing the patient's face in motion-talking, smiling, and expressing natural facial expressions. (Fig. 1)

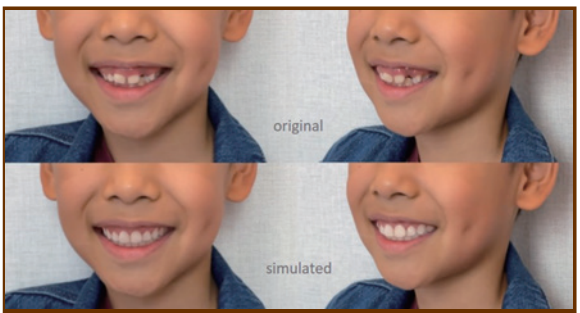

Fig. 1: Smile Video Instant Simulation (Clinical pictures from personal collection)

INTRA-ORAL SCAN AND 3D FACE SCAN

Modern intraoral scanners capture and generate three-dimensional models of dentition and intraoral soft tissues with true-colour photorealism[7]. (Fig. 2)

Fig. 2: Intraoral Scanner (Courtesy of iTero Lumina™ intraoral scanner)

Fig. 3: 3D Face Scan (Courtesy of SHINING 3D DENTAL (MetiSmile-MR))

Complementing this, 3D facial scan provides a highly accurate, photorealistic 3D rendering of the patient's face.(Fig. 3) This enables the orthodontist to evaluate facial symmetry, lip support, and smile line in three dimensions, ensuring that the planned tooth movements will harmonise with the patient's natural facial features[13].

CONE BEAM COMPUTED TOMOGRAPHY

Cone Beam Computed Tomography (CBCT) allows practitioners to visualise the complex 3D relationships between dental structures, alveolar bone, and adjacent soft tissues. In orthodontics, CBCT is paramount for diagnosing impacted teeth, assessing baseline dental conditions, and determining the anatomical limits of orthodontic tooth movement[14].

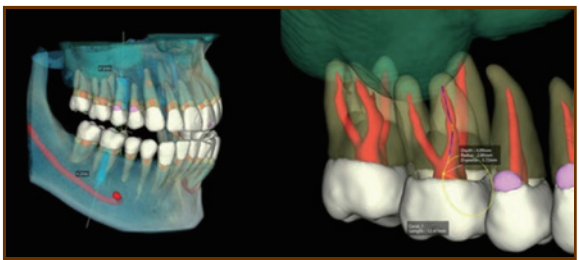

Fig. 4: CBCT Segmentation (Courtesy of Vatech)

Currently, A.I. algorithms enhance CBCT utilisation through auto-segmentation, which allow instantly identification and separation of different biological structures with high precision[15]. (Fig. 4)

Likewise, the CBCT datasets can be combined with intra-oral scan and 3D face scan data to produce a 3-in-1 simulation, allowing in-depth visualisation of treatment outcome from all perspectives[16].

VIRTUAL SIMULATIONS

Smile Architect

Using dental computer-aided design and computer-aided manufacturing (CAD/CAM) software suites - such as Exocad - clinicians can perform detailed smile design that visualises the post-treatment aesthetic outcome of combined orthodontic and restorative work. These platforms allow the user to modify the shape, size, proportion, and contour of individual teeth digitally, thereby optimising the smile to suit each patient's expectations, facial morphology, and personal style.[17] (Fig. 5) The clinician can generate multiple smile design variants, compare them side by side, and refine the virtual result iteratively[17].

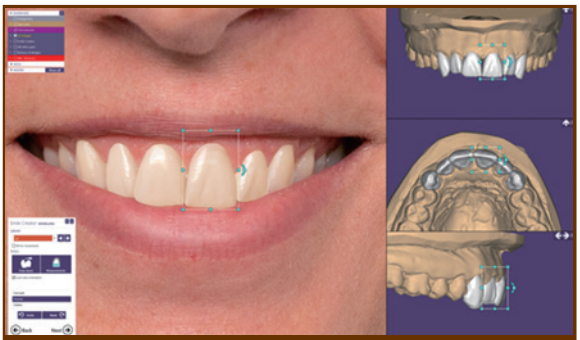

Fig. 5: Exocad Smile Creator (Courtesy of Exocad Smile Creator)

Orthodontic And Restorative Simulation

For treatment planning in cases requiring both orthodontics and restorative dentistry, clinicians can merge facial scans, CBCT data, and intraoral scans to simulate the final treatment goals and the tooth movements required to manufacture final orthodontic appliances.

Missing teeth can be digitally restored and the prosthetic replacement subsequently fabricated via CAD/CAM technology. CAD/CAM bridges the digital design with physical reality, ensuring that treatment goals envisioned in the simulation can be achieved[18]. (Fig. 6)

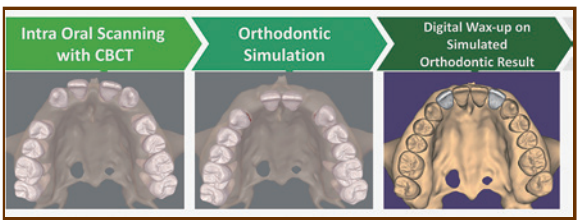

Fig. 6: Digital orthodontic simulation and restorative planning (Clinical photos from personal collection)[27]

Orthodontic And Implant Simulation

For orthodontic cases requiring placement of dental implants for missing teeth, digital implant planning software allows for a combination of CBCT data and intraoral scan data to create a 3D digital model of the patient's teeth and jaw. (Fig. 7) This allows the clinician to evaluate alveolar bone anatomy and identify adjacent vital structures, while visualising the dentition and occlusion, so that they can plan the implant fixture and crown position accurately, improving treatment outcome and predictability[19]. (Fig. 8)

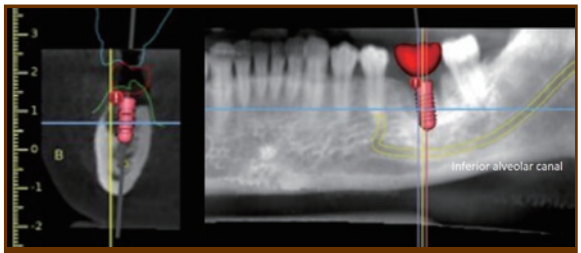

Fig. 7: A 42-year-old male requiring orthodontics and a dental implant for lower left first molar (Clinical picture from personal collection)

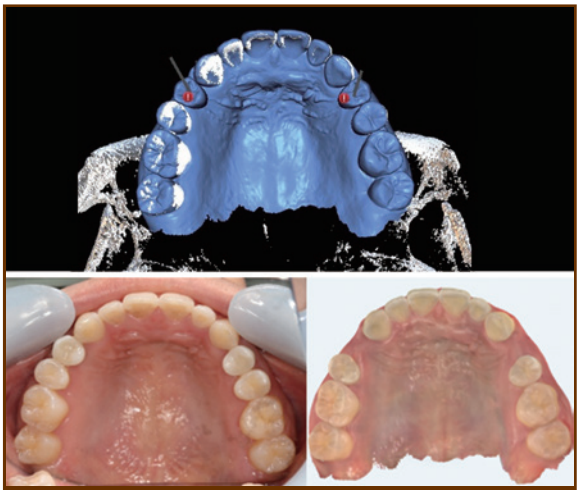

Fig. 8: A 34-year-old female planning for implants of upper left and right first premolars (Clinical pictures from personal collection)

This enables clinicians to plan treatment digitally with greater precision, reduce manual errors, and communicate the plan more clearly with both the laboratory and the patient, ultimately enhancing clinical outcomes[16].

DIGITALLY DESIGNED APPLIANCES

Clear Aligners

The clear aligner treatment uses a series of customised, transparent thermoplastic trays to move teeth following digitally defined tooth movement stages[20]. (Fig. 9)

Fig. 9: Clear aligners (Courtesy of Invisalign®)

Clear aligner systems operate using large databases of tooth morphologies, pretreatment records, and virtual simulations of staged tooth movements. These platforms employ machine learning algorithms trained on clinical data, which generate simulated treatment outcomes with increasing accuracy over time. This represents one application of machine-based artificial intelligence in orthodontics[21].

Direct Printed Aligners

Direct printed aligners (DPA) are clear orthodontic appliances fabricated directly from a digital design using 3D printing, instead of being vacuum-formed over a printed model. (Fig. 10) They serve the same clinical role as conventional aligners but with a workflow that can be shorter, more material-efficient, and more easily integrated into in-office digital production[22].

By eliminating the model-printing and thermoforming steps, DPA can streamline fabrication, reduce material waste, and shorten production time[22].

Fig. 10: Direct printed aligners (Courtesy of Graphy Inc.)

3D-Printed Customised brackets

A limitation of traditional orthodontic therapy has been the reliance on standardised brackets, which do not always accommodate individual variations in tooth morphology[23].

Fig. 11(a): 3D-printed customised brackets (Courtesy of LightForce Orthodontics)

Contemporary customised bracket systems use intraoral scan data to fabricate appliances tailored to the patient's dental anatomy and the clinician's treatment plan. (Fig. 11(a)) The clinician begins with an intraoral scan of the patient's dentition. The software generates a virtual setup of the desired final tooth positions, and brackets are designed to fit each tooth's unique surface morphology. (Fig. 11(b)) These brackets are then milled or printed[24]. Because these custom brackets are designed with the specific biomechanics needed to achieve the intended tooth positions, treatment predictability may be improved.

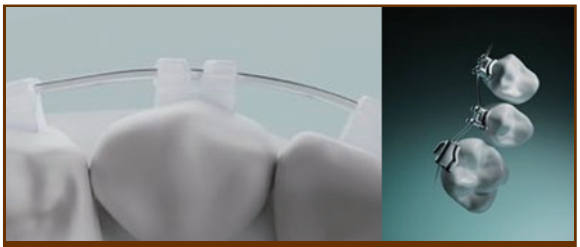

Fig. 11(b): 3D-printed customised ceramic and metal brackets (Courtesy of LightForce Orthodontics)

3D-Printed Bone Plates

The use of three-dimensional printing has extended into combined orthodontics and orthognathic surgery treatment. Patient-specific bone plates produced by 3D printing have changed some aspects of corrective jaw surgery, moving the field from traditional wafer-guided techniques toward digital, waferless approaches[25].

These bone plates are custom-manufactured based on the patient's virtual surgical plan derived from CBCT data. Surgeons perform virtual osteotomies on the maxilla and mandible, repositioning the bone segments in three dimensions with sub-millimetre accuracy[26]. During the procedure, the bone plates guide bone positioning according to the digital simulation. (Fig. 12)

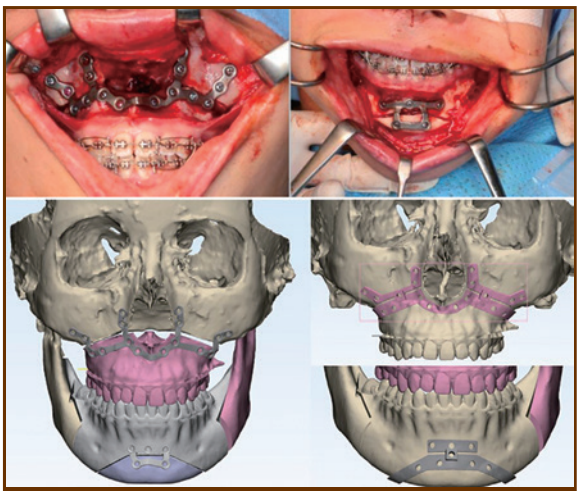

Fig. 12: 3D-printed bone plates for orthognathic surgery (Clinical pictures from personal collection)

CONCLUSION

The technological advancements described above have collectively changed what is possible in orthodontic practice. As we embrace this new era, the scope of orthodontics extends beyond dental science into the realm of digital technology. The future of our profession lies in mastering this synergy between human clinical judgment and machine intelligence, ensuring that every patient enjoys treatment results that are healthy, beautiful and personally meaningful.

References

1. Nordblom NF, Buttner M, Schwendicke F. Artificial Intelligence in Orthodontics: Critical Review. J Dent Res. 2024;103(6):577-84.
2. Sereewisai B, Chintavalakorn R, Santiwong P, Nakornnoi T, Neoh SP, Sipiyaruk K. The accuracy of virtual setup in simulating treatment outcomes in orthodontic practice: a systematic review. BDJ Open. 2023;9(1):41.
3. Strunga M, Urban R, Surovkova J, Thurzo A. Artificial Intelligence Systems Assisting in the Assessment of the Course and Retention of Orthodontic Treatment. Healthcare (Basel). 2023;11(5).
4. Thurzo A, Strunga M, Havlinova R, Rehakova K, Urban R, Surovkova J, et al. Smartphone-Based Facial Scanning as a Viable Tool for Facially Driven Orthodontics? Sensors (Basel). 2022;22(20).
5. Daher R, Ardu S, Vjero O, Krejci I. 3D Digital Smile Design With a Mobile Phone and Intraoral Optical Scanner. Compend Contin Educ Dent. 2018;39(6):e5-e8.
6. Cunha T, Barbosa IDS, Palma KK. Orthodontic digital workflow: devices and clinical applications. Dental Press J Orthod. 2021;26(6):e21spe6.
7. Eggmann F, Blatz MB. Recent Advances in Intraoral Scanners. J Dent Res. 2024;103(13):1349-57.
8. Elnagar MH, Aronovich S, Kusnoto B. Digital Workflow for Combined Orthodontics and Orthognathic Surgery. Oral Maxillofac Surg Clin North Am. 2020;32(1):1-14.
9. Roser CJ, D'Anto V, Lux CJ, Segnini C. A digital CAD/CAM configurator for the production of orthodontic appliances – Going new ways. Seminars in Orthodontics. 2025;31(1):104-9.
10. Camcı H, Soybelli M, Yangın A. Aligners, digital transformation, artificial intelligence, companies and the future of orthodontics: embracing the reality. Australasian Orthodontic Journal. 2025;41:155-9.
11. Al-Rudainy D, Adel Al-Lami H, Yang L. Validity and reliability of three-dimensional modeling of orthodontic dental casts using smartphone-based photogrammetric technology. J World Fed Orthod. 2023;12(1):9-14.
12. Mourgues T, Gonzalez-Olmo MJ, Ghislanzoni LH, Otel A, Romero-Maroto M, Al Hamad K. A Prospective Longitudinal Observational Study on the Emotional Impact of AI-Simulated Smiles on Orthodontic Patient Motivation. Int J Dent. 2026;2026:8425551.
13. Singh P, Bornstein MM, Hsung RT, Ajmera DH, Leung YY, Gu M. Frontiers in Three-Dimensional Surface Imaging Systems for 3D Face Acquisition in Craniofacial Research and Practice: An Updated Literature Review. Diagnostics (Basel). 2024;14(4).
14. Venkatesh E, Elluru SV. Cone beam computed tomography: basics and applications in dentistry. J Istanb Univ Fac Dent. 2017;51(3 Suppl 1):S102-s21.
15. Iacob AM, Verdecchia A, Garcia-Mesa Y, Spinas E, Cobo T. Effectiveness of automated segmentation of maxillofacial structures in cone-beam computed tomography images using artificial intelligence: A systematic review. Int Orthod. 2026;24(1):101081.
16. Park JH, Lee GH, Moon DN, Yun KD, Kim JC, Lee KC. Creation of Digital Virtual Patient by Integrating CBCT, Intraoral Scan, 3D Facial Scan: An Approach to Methodology for Integration Accuracy. J Craniofac Surg. 2022;33(4):e396-e8.
17. Singh AK, Ahuja D, Mallick S, Jose NP, Bhardwaj I, Batra P, et al. Artificial intelligence in digital smile design: a review of technological innovations and clinical integration. Discover Artificial Intelligence. 2026;6(1):101.
18. Ramnarayan BK, Nagral SM, Nanaiah P, Satelur KP, Venkatasubramanian R, Avinash J. Revolutionizing dental restorations: Insights into computer-aided design/computer-aided manufacturing materials - A systematic review. Dent Res J (Isfahan). 2025;22:52.
19. Mangano C, Luongo F, Migliario M, Mortellaro C, Mangano FG. Combining Intraoral Scans, Cone Beam Computed Tomography and Face Scans: The Virtual Patient. J Craniofac Surg. 2018;29(8):2241-6.
20. AlMogbel A. Clear Aligner Therapy: Up to date review article. J Orthod Sci. 2023;12:37.
21. Huang Y, Abdulsalam R. Machine learning algorithms for predicting quality of life improvements after digital orthodontic treatment: a retrospective analysis. Biomed Eng Online. 2026;25(1).
22. Panayi NC. Directly Printed Aligner: Aligning with the Future. Turk J Orthod. 2023;36(1):62-9.
23. Alam L, Meqbel E, Saeed E. Comparing the Efficacy of Conventional and Customized Bracket Systems in Orthodontics. JOURNAL OF HEALTHCARE SCIENCES. 2025;05:454-61.
24. Krey KF, Darkazanly N, Kühnert R, Ruge S. 3D-printed orthodontic brackets - proof of concept. Int J Comput Dent. 2016;19(4):351-62.
25. Kim SH, Lee SM, Park JH, Yang S, Kim JW. Effectiveness of individualized 3D titanium-printed Orthognathic osteotomy guides and custom plates. BMC Oral Health. 2023;23(1):255.
26. Greenberg S, Buchbinder D, Turner MD, Dhillon P, Afshar AA. Three-Dimensional Repositioning of the Maxilla in Orthognathic Surgery Using Patient-Specific Titanium Plates: A Case Series. J Oral Maxillofac Surg. 2021;79(4):902-13.
27. Tsang KD, Ching STP. Digital Integration for Multidisciplinary Treatment of Hypodontia: Clinical Case Series. Poster presented at: 101st Congress of the European Orthodontic Society; 7-11 June 2026; Dublin, Ireland. Poster SP249.

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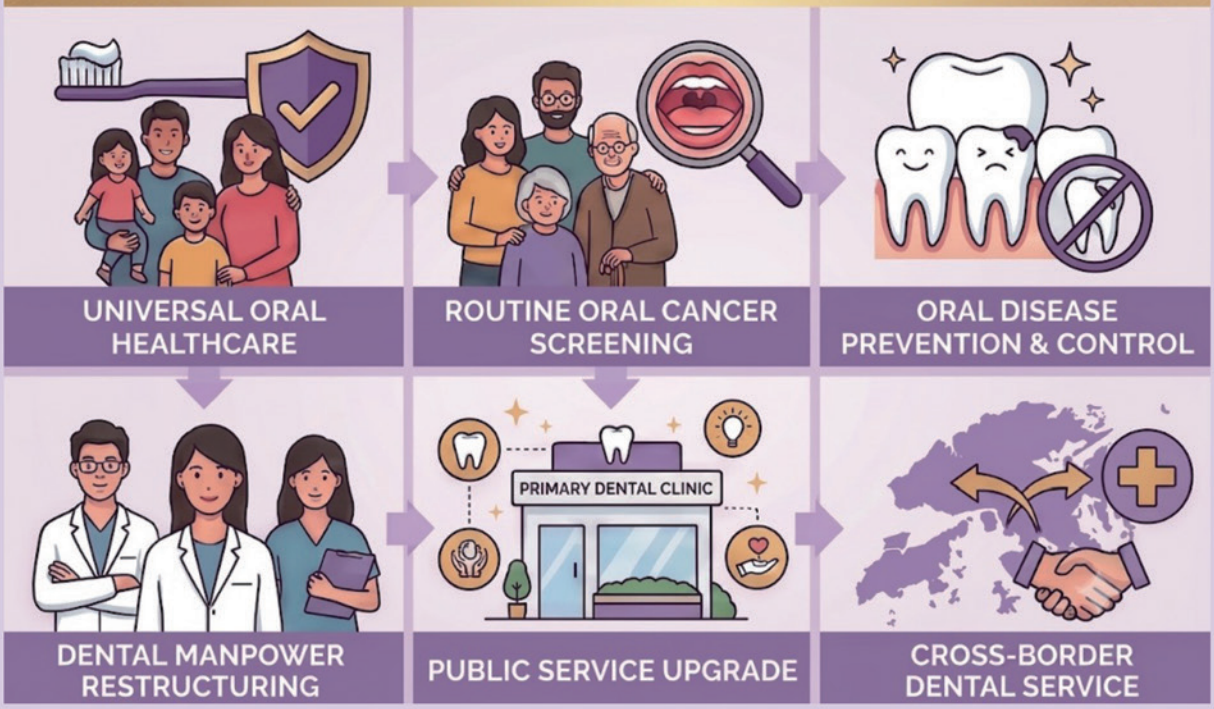

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Common Oral Surgical Problems Encountered During Orthodontic Treatment

Dr Eric Ka-fai SIT

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Specialist in Oral and Maxillofacial Surgery

Dr Eric Ka-fai SIT

Common oral surgical conditions encountered during planning for orthodontic treatment necessitate interventions ranging from routine non-surgical extractions to complex and multi-disciplinary management, which commonly involves both orthodontists and maxillofacial surgeons. In general, these surgical interventions are required to create space for orthodontic alignment, expose impacted or unerupted teeth, or correct skeletal discrepancies in dentofacial deformities that cannot be addressed by orthodontic treatment alone.

Common dental surgical interventions necessary before or during orthodontic treatment include:

1. Routine premolar extraction, and sometimes molar extraction
2. Non-surgical or surgical extraction of wisdom teeth
3. Surgical extraction of supernumerary tooth/teeth
4. Surgical extraction of impacted canine(s)/premolar(s)
5. Surgical exposure of impacted canine(s)/premolar(s)/molar(s)
6. Labial frenectomy

PREMOLAR OR MOLAR EXTRACTION

Premolars are commonly removed before orthodontic treatment to create space for alignment. This is normally necessary when dental crowding is to be relieved, and/or anterior teeth protrusion is to be corrected by retraction or retroclination. Overbites (Angle's class II incisor relationship) as well as underbites with crossbites (Angle's class III incisor relationship) without significant skeletal discrepancy may be corrected by the space generated after premolar extraction.

Molars are occasionally removed if they are associated with extensive dental caries or even severe dental infection which makes the prognosis of that particular tooth poor.

EXTRACTION OF WISDOM TEETH

Wisdom teeth are sometimes removed to create space distal to the dental arches for arch distalisation (posterior orthodontic movement) as indicated. Occasionally wisdom tooth extraction has to be performed to allow some room for eruption of an impacted second molar just in front.

EXTRACTION OF SUPERNUMERARY TOOTH/TEETH

Supernumerary tooth/teeth is not a rare finding in the population. From an orthodontic point of view, the occurrence of an extra tooth is often an interference to teeth alignment because they are often found close to tooth roots. A worse scenario would be interference with normal tooth eruption, more commonly in the anterior maxillary region and sometimes in the mandibular premolar region.

EXTRACTION OF IMPACTED CANINES/PREMOLARS

There are times when canines and premolars are so impacted that an orthodontist has to make the decision to have them eradicated. In these scenarios, the impacted teeth are often lying very deep inside the basal bone of the maxilla (close to the nasal floor or maxillary sinus floor) or mandible (close to the inferior border or lingual cortex).

SURGICAL EXPOSURE OF IMPACTED CANINES/PREMOLARS/MOLARS

There are, however, situations where the orthodontist desires to keep an impacted tooth by introducing it into the dental arch by orthodontic traction. This often necessitates pre-orthodontic surgical exposure of the tooth with or without bonding of an orthodontic appliance over the tooth surface. The appliance will then be activated along the path of intended movement by the orthodontist.

LABIAL FRENECTOMY

This is sometimes performed when the upper labial frenum is so prominent that a gap between the two upper central incisors persists and cannot be effectively corrected by orthodontic treatment alone.

SURGICAL REMOVAL OF A SUPERNUMERARY TOOTH IN ANTERIOR MAXILLA

Pre-operative radiographic condition:
One supernumerary tooth was identified in the anterior maxillary region [known as a mesiodens (plural: mesiodentes)] in the radiographic screening before commencement of orthodontic treatment. Surgical removal of the mesiodens was planned to eradicate its resistance against orthodontic tooth movement.
(Orthodontic case courtesy of Specialist in Orthodontics Dr Charles Yat-cheong YEUNG;
surgery performed by Specialist in Oral and Maxillofacial surgery Dr Eric Ka-fai SIT)

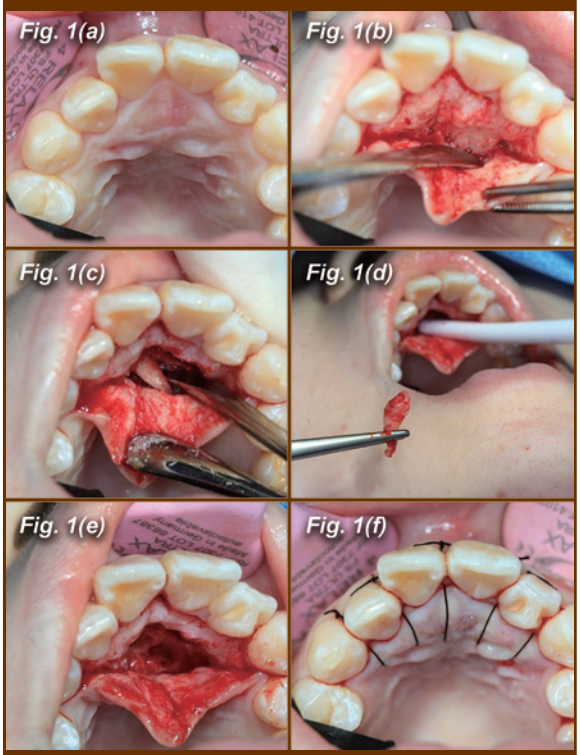
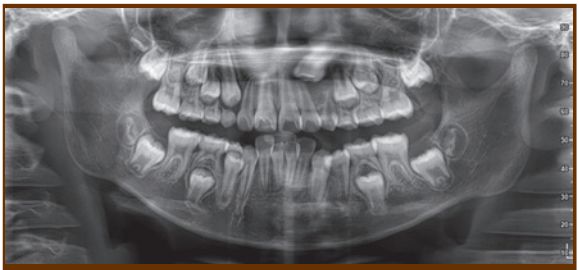


Fig. 1(a). Pre-operative clinical condition.
Fig. 1(b). Palatal mucoperiosteal flap was raised for surgical access to the bony palate, where the mesiodens situated.
Fig. 1(c). The supernumerary tooth was being elevated after removal of overlying bone.
Fig. 1(d). The tooth was elevated.
Fig. 1(e). The wound bed.
Fig. 1(f). Wound closure.
(Clinical photos from personal collection)

SURGICAL REMOVAL OF AN IMPACTED CANINE TOOTH IN ANTERIOR MAXILLA



Pre-operative radiographic condition:
The upper left canine tooth was found impacted in the anterior maxilla in the radiographic screening before commencement of orthodontic treatment. The orthodontic specialist decided to have the tooth removed because successful salvage and correction of the impacted tooth was not likely.
(Orthodontic case courtesy of Specialist in Orthodontics Dr Hillings Hill-ying YIP;
surgery performed by Specialist in Oral and Maxillofacial surgery Dr Eric Ka-fai SIT)

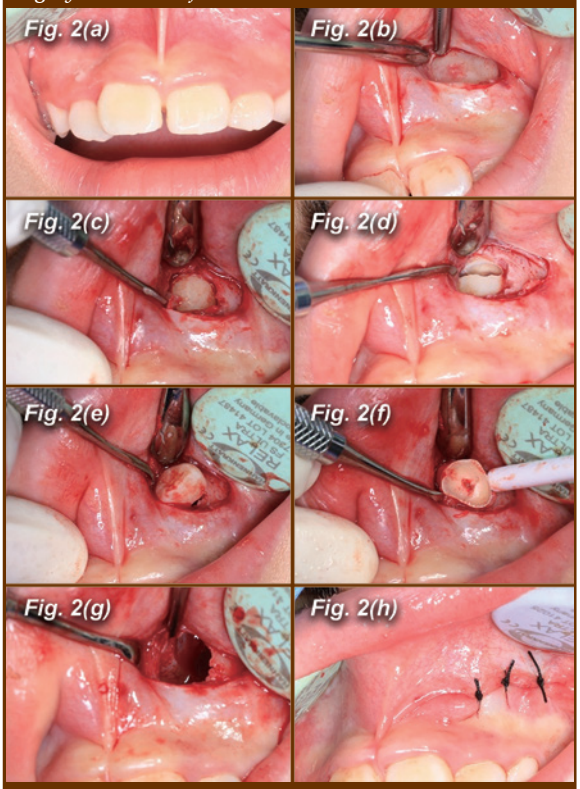
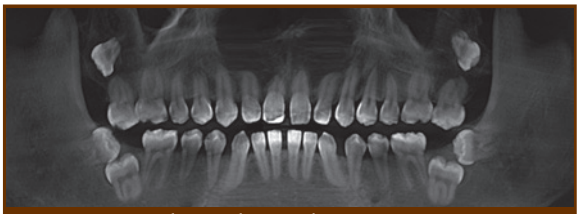


Fig. 2(a). Pre-operative clinical condition.
Fig. 2(b). A small buccal vestibule incision was made for surgical access to the impacted tooth.
Fig. 2(c). Overlying maxillary bone was removed to allow access to the crown of the tooth.
Fig. 2(d). Surgical sectioning was performed to divide the tooth into the crown and root parts to make the extraction easier.
Fig. 2(e). The crown of the tooth was elevated.
Fig. 2(f). The root was then elevated.
Fig. 2(g). The wound bed.
Fig. 2(h). Wound closure.
(Clinical photos from personal collection)

SURGICAL EXPOSURE AND ORTHODONTIC TRACTION FOR IMPACTED MOLAR TEETH



Pre-operative radiographic condition:
Second molars and third molars (wisdom teeth) on both sides of the posterior mandible were all impacted. The orthodontist decided to have both wisdom teeth removed and both second molars exposed and brought up to meet the dental occlusion.
(Orthodontic case courtesy of Specialist in Orthodontics Dr Charles Yat-cheong YEUNG;
surgery performed by Specialist in Oral and Maxillofacial Surgery Dr Eric Ka-fai SIT)

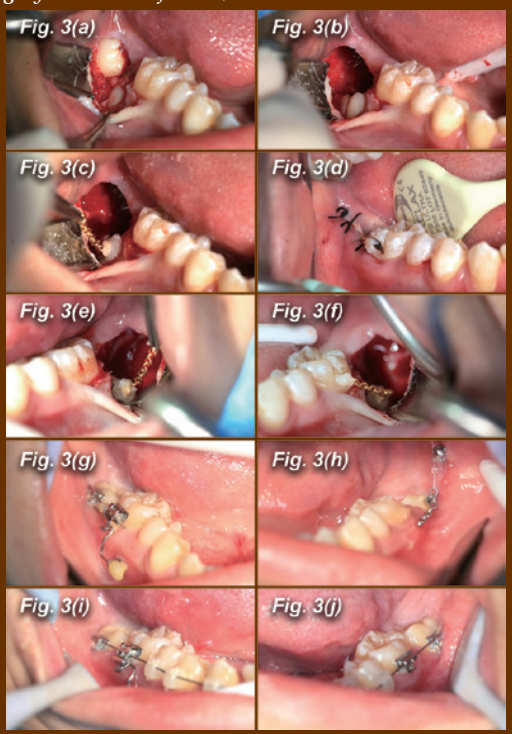


Fig. 3(a) Surgical exposure of both the lower right impacted second molar and wisdom tooth.
Fig. 3(b). The impacted wisdom tooth was just extracted, with the impacted second molar further exposed.
Fig. 3(c). An orthodontic chain was bonded over the surface of the crown to be orthodontically corrected.
Fig. 3(d). Wound closure.
Fig. 3(e). Similar procedure performed on the left side.
Fig. 3(f). The orthodontic chain was temporarily attached to another molar awaiting future activation.
Fig. 3(g). The lower right second molar was being brought out slowly by orthodontic traction (five months after surgery).
Fig. 3(h). Similar procedure on the left side to bring out the lower second molar (five months after surgery).
Fig. 3(i). The emerged tooth was then put into fixed appliance orthodontic treatment (12 months after surgery).
Fig. 3(j). Similar condition on the other side (12 months after surgery).
(Clinical photos from personal collection)

UPPER LABIAL FRENECTOMY

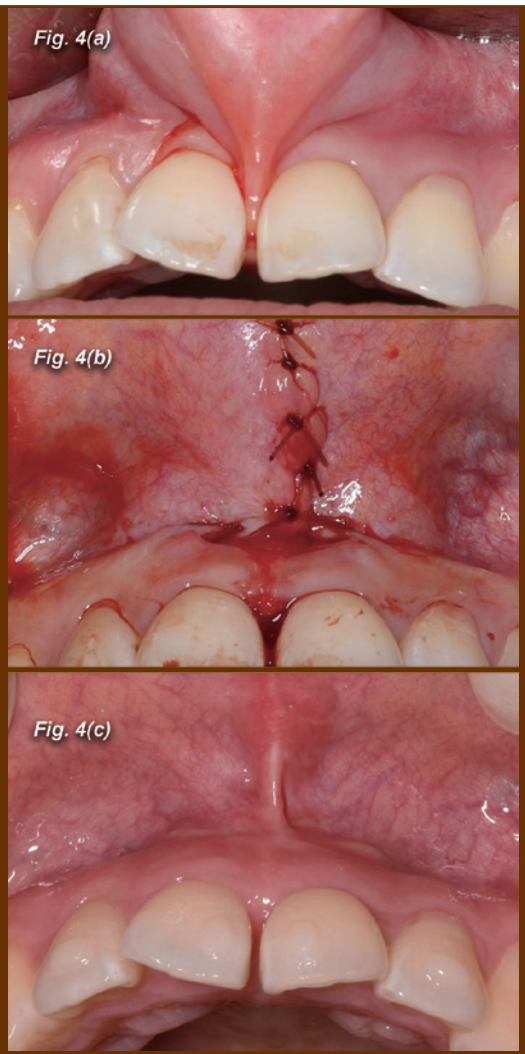


Fig. 4(a) Pre-operative clinical condition: very prominent upper labial frenum which likely contributed to the development of the median diastema (the gap between the two upper central incisors)
(Orthodontic case courtesy of Specialist in Orthodontics Dr Ronny Ket-phoei LIE KEN JIE; surgery performed by specialist in Oral and Maxillofacial surgery Dr Eric Ka-fai SIT)
Fig. 4(b) Upper labial frenectomy was performed and horizontal closure was achieved.
Fig. 4(c) Post-operative condition 14 days later.
(Clinical photos from personal collection)

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Understanding Dentofacial Deformities: From Sagittal to Asymmetry Presentation

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Dentofacial deformities are defined as significant deviations from the normal proportions of the maxillomandibular complex that adversely affect teeth alignment and occlusion, potentially compromising head and neck functions such as breathing, swallowing, and speech[1]. The coordination and functions of the system around the head and neck region are compromised due to the discrepancies in size, form, or position between the dental arches and the facial bones. Dentofacial deformities are largely visible with profound influence on the aesthetic outlook of individuals resulting in diminishing psychosocial well-being as well as quality of life of the patients significantly[2]. The deformities comprise a spectrum of defects affecting the maxilla, mandible or both. Common types of dentofacial deformities include facial asymmetry, vertical discrepancies and jaw size mismatch. These deformities require a team approach in management, mainly involving a combined orthodontic and surgical approach. Orthognathic surgery serves as the cornerstone of treatment for more severe deformities. This article will cover the common types of facial deformities and their clinical presentations.

FACIAL ASYMMETRY

Facial asymmetry refers to a visible or measurable difference between the left and right sides of the face. While perfect symmetry is rare and mild asymmetry is common and often unnoticeable, significant asymmetry may result from developmental, traumatic, or pathological causes. There are different aetiologies including congenital conditions, acquired factors, or progressive diseases. Clinically, asymmetry may involve the bony skeleton, soft tissues, or both, affecting the eyes, ears, cheeks, jaw, or mouth. There are functional and psychological impacts of facial asymmetry. Assessment typically involves clinical examination, photography, and imaging (e.g. 3D photogrammetry, CT). Management ranges from observation and orthodontics to growth modification and surgical intervention (e.g. orthognathic surgery, fat grafting, fillers), often requiring a multidisciplinary approach.

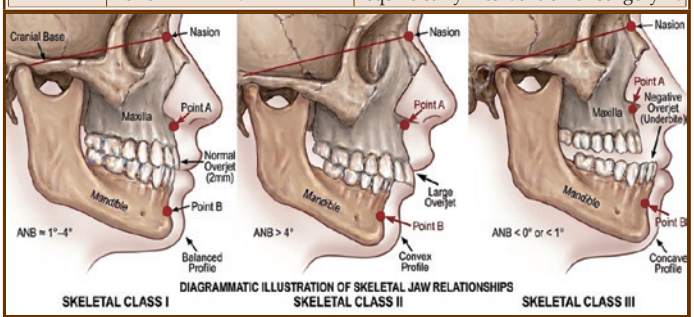
Nomenclature (Skeletal Class I, II, and III conditions)

Facial and skeletal deformities are classified using a foundational framework originally adapted from **Edward Angle's** 1899 classification of malocclusion[3] (the alignment of teeth).

While **Angle** focused strictly on how the first molars fit together, maxillofacial surgery translates this nomenclature to the skeletal base - measuring the spatial, three-dimensional relationship between the maxilla (upper jaw) and the mandible (lower jaw) relative to the skull base.

Table 1: Key Skeletal Characteristics (Summarised by the authors)

Skeletal Class	Typical Cephalometric Core Jaw Relationship Indicators	Notable Features / Findings
Class I	Normal AP maxilla–mandible relationship ≈ 1°- 4° [4] ANB	Balanced facial profile; used as baseline reference in most studies.
Class II	Maxilla forward OR mandible retruded[7] > 4° [4] ANB	Often associated with mandibular retrusion, convex profile, increased overjet.
Class III	Mandible forward OR maxilla retruded < 0° or < 1° [5] ANB	Frequently involves maxillary hypoplasia; challenging to treat; may require early intervention or surgery[5,6].



(AI-generated image)

Lower Jaw Asymmetry Hemimandibular Elongation (HE) and Hemimandibular Hyperplasia (HH)

- HH and HE are the two classic phenotypes described by **Obwegeser and Makek (1986)** to subdivide

unilateral condylar hyperplasia (UCH) into vertical vs horizontal overgrowth patterns **with possible hybrid forms**[7,8].

- Recent imaging studies confirm that the distinction remains clinically useful, although the real-world growth vectors are often **diagonal** rather than purely vertical or horizontal[9].
- In assessing the presence of active or inactive condylar growth, SPECT/CT is the gold standard in both HH and HE groups[10].

Fig. 1: Frontal view of a patient with lower jaw asymmetry (Clinical picture by Dr Gary Cheuk-hang SO)

Table 2: The key differences between HH and HE (Summarised by the authors)

Features	HH	HE
Primary Overgrowth Direction[7,9]	Vertical	horizontal
Condylar morphology[11,12,14,15]	Enlarged condylar head with thickened cartilage	Normal or slightly enlarged condyle
Mandibular ramus height[7,11]	Increased	No change
Mandibular body length[9]	No change	Increased on the affected side
Chin deviation[11]	Nil or minimal	Deviation to the contralateral side
Occlusal plane[12,13,15]	Canted (tilted) down on the affected side	Less canting

MANDIBULAR PROGNATHISM

Mandibular prognathism is a skeletal Class III condition characterised by excessive mandibular growth, insufficient maxillary growth, or a combination of both, resulting in a protrusive lower jaw and a concave facial profile.

Fig. 2: Lateral profile views showing mandible prognathism (Clinical pictures by Dr Eric Ka-fai SIT)

Clinical Features

Common manifestations include:

- Concave facial profile, prominent chin
- Anterior crossbite and negative overjet
- Lower lip protrusion, indistinct labiomental fold
- Reduced masticatory efficiency and speech difficulty

MANDIBULAR RETROGNATHISM

Mandibular retrognathism is defined as a posteriorly positioned or underdeveloped mandible, contributing to Class II skeletal malocclusion and functional, aesthetic, and airway consequences.

Fig. 3: Lateral profile views showing mandible retrognathism (Clinical picture by Dr Gary Cheuk-hang SO)

Aetiology

Mandibular retrognathism has a multifactorial aetiology, including genetic, syndromic, environmental, and post-traumatic causes. Chronic mouth breathing, hypotonic perioral muscles, weakened chewing forces, and soft diets alter tongue posture and reduce mechanical loading, shifting mandibular growth posteriorly and producing a hyperdivergent retruded phenotype. In children, upper airway obstruction (e.g. adenotonsillar hypertrophy) and condylar trauma further exacerbate this by promoting downward/backward mandibular rotation or directly damaging the growth centre and restricting normal development.

Clinical Features

Common manifestations include:

- Convex profile with retruded chin
- Vertical excess and hyperdivergence often accompany retrognathia
- Potential for airway obstruction and sleep-disordered breathing

VERTICAL MAXILLARY EXCESS (VME)

Vertical maxillary excess is defined as excessive vertical growth of the maxilla, producing an increased lower anterior facial height and, often, excessive incisor

and gingival display at rest or smiling. It represents a skeletal deformity involving maxillary overgrowth that may affect the anterior, posterior, or entire maxillary complex[16, 17].

Aetiology

VME is a multifactorial condition driven by genetic/developmental predispositions, muscular hypotonia, and chronic mouth breathing that promote excessive vertical alveolar growth[18,19,20], with environmental factors[20] (e.g. aberrant tongue posture) and syndromic associations[19] (e.g. velocardiofacial syndrome) further exacerbating the vertical pattern and increased lower facial height.

Fig. 4: Frontal view of a patient with VME (Clinical picture by Dr Hercules Tsz-hin CHAN, Specialist in Orthodontics)

Clinical Features

Common manifestations are the consistent set of skeletal, dental, and soft tissue characteristics:

- *Skeletal and Facial Signs*
- Increased lower anterior facial height and vertically long face appearance
- Hyperdivergent skeletal pattern with steep mandibular plane and downward-backward mandibular rotation
- Retruded mandible/retrognathic appearance due to mandibular rotation
- Flat or inferiorly displaced occlusal plane in some cases
- *Dental Features*
- Excessive incisal show at both resting (> 2 mm) and smiling (> 4 mm, gingival exposure-gummy smile)
- Anterior open bite commonly present, though VME may occur with or without open bite
  High-arched palate and transverse maxillary **constriction** frequently accompany the vertical pattern
- *Soft Tissue Features*
- Lip incompetence with increased interlabial distance
- Mentalis strain on attempted lip closure due to shortened or incompetent upper lip
- Narrow alar base and deficient paranasal/malar projection in some individuals

MAXILLARY HYPOPLASIA AND HYPERPLASIA

Maxillary hypoplasia is underdevelopment of the maxilla, which may occur in the anteroposterior, transverse, and/or vertical dimensions. It is frequently described as part of a midface deficiency or regressed midface presentation.

Maxillary hyperplasia corresponds clinically to sagittal maxillary excess (maxillary prognathism) or midface hyperplasia. It represents excessive forward growth of the maxilla relative to the cranial base or mandible[21].

Table 3: Key clinical features of Maxillary Hypoplasia and Maxillary Hyperplasia (Summarised by the authors)

	Maxillary Hypoplasia	Maxillary Hyperplasia
Facial Features	- Midface retrusion/ regressed midface appearance - Shallow orbits and exophthalmos in severe cases	- Gummy smile due to excessive gingival exposure - Facial lower third elongation as seen in cases of severe premaxillary vertical excess - Convex facial profile due to anteriorly prominent maxilla
Occlusion Features	- Class III malocclusion (skeletal), often with reverse overjet	- Class II malocclusion, in sagittal excess patterns - Anterior open bite or deep bite may accompany vertical or mixed hyperplasia depending on dentoalveolar compensation
Dental Features	- Collapsed maxillary arch and transverse constriction, including posterior crossbite - Dental crowding and arch collapse especially in cleft-related hypoplasia	- Protrusive maxillary incisors, often with severe overjet
Functional Features	-Velopharyngeal insufficiency affecting speech in CLP patients - Nasal airway compromise and breathing difficulties in syndromic cases (e.g. Crouzon) - Hearing loss in several syndromic conditions with midfacial hypoplasia	- Chewing, swallowing, and speech difficulties reported in maxillary overgrowth cases due to anatomical imbalance

CONCLUSION

Dentofacial deformities present with considerable variability across patients, and normative facial features differ significantly among ethnic and racial groups. What looks normal or acceptable can differ across culture and time. Therefore, there is no single "ideal" face that fits everyone and no single aesthetic standard can be universally applied. Effective management requires a coordinated, multidisciplinary approach involving orthodontists, oral and maxillofacial surgeons, and other specialists. By working collaboratively and respecting individual anatomical and ethnic diversity, the team approach can achieve functional and aesthetic outcomes that are both predictable and appropriate for each patient.

References

1. Jeffrey C. Posnick, "Definition and Prevalence of Dentofacial Deformities, Orthognathic Surgery " W.B. Saunders, 2014, pp 61-68, ISBN 9781455726981
2 Palomares, N. B., Celeste, R. K., & Miguel, J. A. M. (2016). Impact of orthosurgical treatment phases on oral health-related quality of life. American Journal of Orthodontics and Dentofacial Orthopedics. Vol149, Issue 2, 2016, pp 171-181, ISSN 0889-5406
3. Angle, E. H. (1899). Classification of malocclusion. Dental Cosmos, 41(3), 248–264.
4. Selvaraj, A., George, A. M., & Varghese, R. M. (2020). Prevalence of skeletal malocclusions and the associated contributing factors. International Journal of Pharmaceutical Research.
5. Zhou, X., Chen, S., Zhou, C., Jin, Z., He, H., Bai, Y., Li, W., Wang, J., Hu, M., Cao, Y., Liu, Y., Yan, B., Shi, J., Guo, J., Li, Z., Ma, W., Liu, Y., Li, H., Lu, Y., & Ren, L. (2025). Expert consensus on early orthodontic treatment of class III malocclusion. In International Journal of Oral Science.
6. Lamani, E., Alkadri, S. A., Christou, T., Holmes, J. D., & Kau, C. H. (2022). Esthetic considerations in an orthodontic-orthognathic patient with Class III skeletal malocclusion. American Journal of Orthodontics and Dentofacial Orthopedics.
7. Obwegeser, H. L., & Makek, M. S. (1986). Hemimandibular hyperplasia - Hemimandibular elongation. Journal of Maxillofacial Surgery. Vol 14, Issue 4, P183–208
8. Kün-Darbois, J. D., Bertin, H., Mouallem, G., Delabarde, T., & Chappard, D. (2023). Bone characteristics in condylar hyperplasia of the temporomandibular joint: a microcomputed tomography, histology, and Raman microspectrometry study. International Journal of Oral and Maxillofacial Surgery.
9. Ouyang, N., Zhang, C., Xu, F., Chen, T., Shen, G., Si, J., & Yu, H. (2023). Evaluation of optimal single-photon emission computed tomography reference value and three-dimensional mandibular growth pattern in 54 Chinese unilateral condylar hyperplasia patients. In Head and Face Medicine.
10. Guennouni, A., Aallah, W. H., Abourak, C., Oukassem, S., Ech-Cherif El Kettani, N., Fikri, M., Touarsa, F., Jiddane, M., Zekri, M., bellakhdar, M., & Guerrouj, H. (2025). A facial asymmetry revealed: Active mandibular condylar hyperplasia. In Radiology Case Reports.
11. Singhania, S., Parihar, P., Kashikar, S., Thakere, N., Jajoo, U., & Rathod, K. (2025). Unilateral mandibular condylar hyperplasia with ipsilateral masticator muscle and parotid gland hypertrophy: a rare incidental finding on brain MRI. In BMC Musculoskeletal Disorders.
12. Abotaleb, B., Bi, R., Telha, W. A., Li, Y., & Zhu, S. (2021). Treatment measures of hemimandibular hyperplasia and associated facial deformities. Journal of Cranio-Maxillofacial Surgery.
13. Chen, Y. R., Bendor-Samuel, R. L., & Huang, C. (1996). Hemimandibular hyperplasia. Plastic and Reconstructive Surgery.
14. López, D. F., Giraldo, N. G., Borrás, V. R., Muñoz, J. M., & Flores-Mir, C. (2024). Volumetric differences in temporomandibular joint components in patients with facial asymmetry: A 3D tomographic segmentation study. Seminars in Orthodontics.
15. Li, Y., Zheng, Y., Cai, H., Long, X., & Chen, G. (2022). Standard orthodontic treatment after condylectomy for patients with active unilateral condylar hyperplasia. American Journal of Orthodontics and Dentofacial Orthopedics.
16. Wolford, L. M., Karras, S. C., & Mehra, P. (2001). Considerations for orthognathic surgery during growth, Part 2: Maxillary deformities. American Journal of Orthodontics and Dentofacial Orthopedics.
17. Chen, T., Liu, Z., Xue, C., Bai, D., & Chen, Y. (2020). Association of Dysplastic Coronoid Process with Long-Face Morphology. Journal of Dental Research.
18. Shprintzen, R. J. (2000). Velocardiofacial syndrome. Otolaryngologic Clinics of North America.
19. Ding, Y., Xu, Y., Han, S., Guo, T., & Bai, H. (2025). Clinical features, pathophysiological mechanisms, and multidisciplinary management strategies for rhinitis-induced adenoid facies in children and adolescents: a review. Frontiers in Allergy.
20. Miller, J. R. (2020). Treatment of a twice-relapsed anterior open bite using temporary anchorage devices, myofunctional therapy, and fixed passive self-ligating appliances. American Journal of Orthodontics and Dentofacial Orthopedics.
21. Kessler, P. A. W. H., Lie, S. A. N., & Timmer, V. C. M. L. (2025). In Illustrated Manual of Orthognathic Surgery: Combined Bimaxillary Osteotomies in the Facial Skeleton.

Aligning Form and Function: The Modern Era of Orthognathic Surgery

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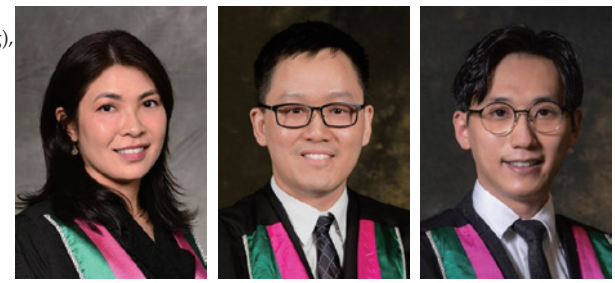

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Orthognathic surgery is the standard treatment for significant dentofacial deformities with impaired function (chewing, swallowing, speech, TMJ pain, sleep apnoea) and aesthetics (disproportion, asymmetry, lip incompetence)[1,2,3]. Over the past century, the field has evolved from high-risk mandibular osteotomies to refined procedures like the BSSO[4,5] (**Trauner and Obwegeser**, 1955), and from limited Le Fort I down-fractures to versatile multi-segmental maxillary osteotomies (**Wunderer, Schuchardt**)[6-9]. Rigid internal fixation, virtual surgical planning, patient-specific implants, and minimally invasive techniques (endoscopic, piezoelectric) have further enhanced accuracy, stability, and predictability[10-14]. Today's orthognathic surgery offers tailored approaches that prioritise function, stability, neurosensory preservation, and aesthetics, ultimately improving quality of life when combined orthodontic-surgical treatment is indicated.

BILATERAL SAGITTAL SPLIT OSTEOTOMIES (BSSO)

The BSSO osteotomies is one of the foundational procedures in modern orthognathic surgery.

The sagittal split ramus osteotomy (SSRO) was first introduced by **Trauner and Obwegeser**[4,5] in 1955-1957, with subsequent refinements by **Dal Pont** (1958-1960) improving bony contact, **Hunsuck** (1968) shortening the medial cut for better predictability, and **Epker** (1977) completing the inferior cortical osteotomy to reduce bad splits. In 1977, **Bell and Schendel** further established the biological basis of the technique, solidifying SSRO as a reliable procedure for mandibular repositioning.

BSSO is defined as the bilateral sagittal splitting of the mandibular ramus to allow a 3-D repositioning of the mandible. With a large bony contact supported by the rigid internal fixation, it provides good post-surgical stability.

It involves:

- a horizontal (medial) osteotomy above the mandibular foramen,
- a lateral buccal cortex osteotomy along the mandibular body, and
- a vertical connecting osteotomy at the ramus, after which the mandible is split into proximal and distal segments and repositioned as planned

BSSO is a versatile mandibular procedure allowing advancement, setback and correction of asymmetries with good stability due to a large bony contact supported by a rigid internal fixation.

Fig. 1(a): Pre-treatment (Clinical image by the authors)

Fig. 1(b): Post-treatment (Clinical image by the authors)

(Orthodontic treatment by Dr Hercules Tsz-hin CHAN, Specialist in Orthodontics; BSSO surgery by Dr Eric Ka-fai SIT & Dr Gary Cheuk-hang SO, Specialists in Oral and Maxillofacial Surgery for the management of mandibular prognathism)

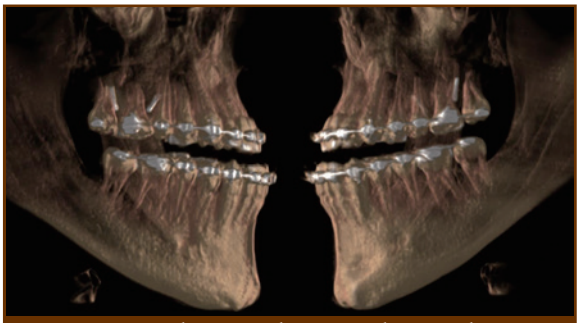

Fig. 2: Pre-surgical computed tomography scan showing the underbite before surgery (Clinical images from personal collection)

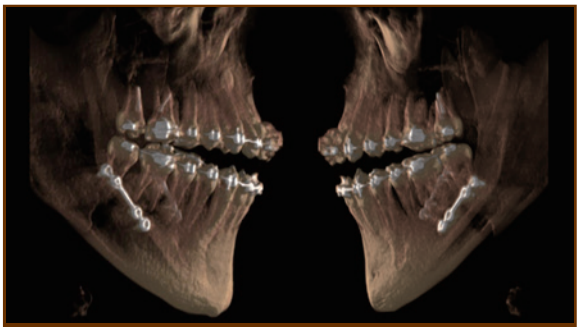

Fig. 3: After BSSO, the underbite is corrected and the segments are stabilised by fixation plates (Clinical images from personal collection)

GENIOPLASTY AND HOFER OSTEOTOMY

The evolution of genioplasty began with **Otter Hofer's** extraoral sliding osteotomy in 1942 for chin advancement[9], was clinically applied by **Gillies and Millard** in 1957, and was revolutionised later that same year by **Trauner and Obwegeser's** introduction of the intraoral approach, which became the foundation for modern genioplasty and subapical osteotomies.

Genioplasty involves surgical osteotomy of the anterior mandible for 3-D chin repositioning (advancement/retrusion, vertical changes, asymmetry correction, and shape modification). The sliding genioplasty by Trauner and Obwegeser remains the standard approach, while the Hofer osteotomy is a subapical procedure that combines a horizontal cut below the anterior tooth apices with two vertical interdental osteotomies-often with premolar extractions-to reposition the anterior dentoalveolar segment.

LE FORT I OSTEOTOMY

The modern Lefort I osteotomy evolved from both trauma-based fracture classifications (**Rene Le Fort**) and early midface surgical access procedures[6,7].

The LeFort I osteotomy evolved from early maxillary surgeries by **Von Langenbeck** and **Cheever** (1859-1864) and **Wassmund's** (1927) pterygomaxillary-sparing technique, until Hugo Obwegeser revolutionised it in the 1960s with complete mobilisation including pterygomaxillary dysjunction[10,11]. Subsequent advances - rigid fixation (1970s), piezoelectric instruments, minimally invasive approaches, and patient-tailored systems-have since refined and matured the procedure into its modern form.

LeFort I was defined as a horizontal maxillary osteotomy performed above the tooth apices and below the zygomaticomaxillary buttress, replicating the anatomical trajectory of a Le Fort I fracture, with the aim to detach and mobilise the entire dentoalveolar maxilla. It can be further modified into a 2-piece, 3-piece or 4-piece segmentalisation to divide the maxilla into different distinct, movable segments to correct a specific deformity.

It is a versatile workhorse operation of the midface orthognathic surgery due to its predictable outcomes which allows a 3-D repositioning of the maxilla: advancement, setback, impaction, elongation, rotation, and transverse widening (supplemented with segmentalisation)

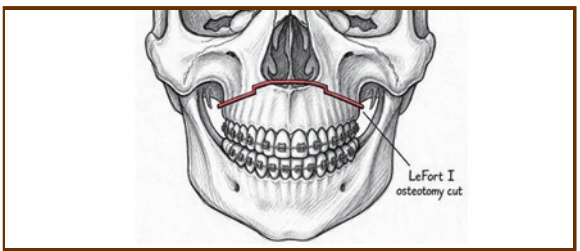

Fig. 4: Diagram showing the LeFort I osteotomy site (AI-generated image)

WUNDERER OSTEOTOMY

Wunderer osteotomy is one of the three classical anterior maxillary osteotomy procedures, alongside the **Wassmund** and **Cupar** approaches with different designs on pedicle and bony cuts[12]. Wunderer osteotomy provides anterior-posterior repositioning and also limited vertical repositioning of the anterior segment of the maxilla.

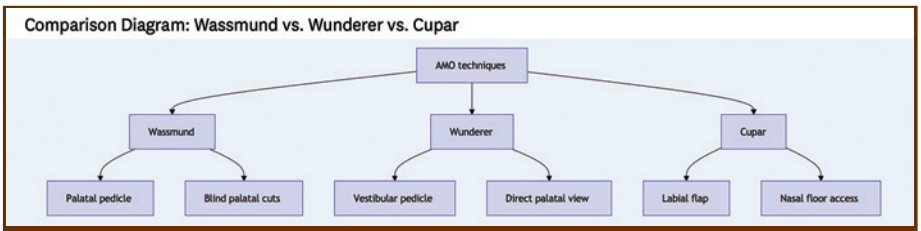

Table 1: Comparion Diagram: Wassmund vs. Wunderer vs. Cupar

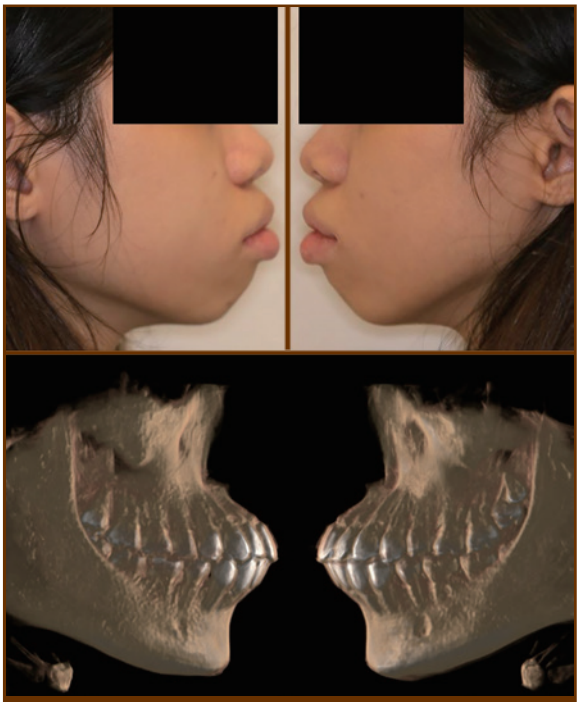

Fig. 5(a) & Fig. 5(b): Pre-surgery photos and CT scan shows excessive anterior jaw protrusion(Clinical images by the authors)

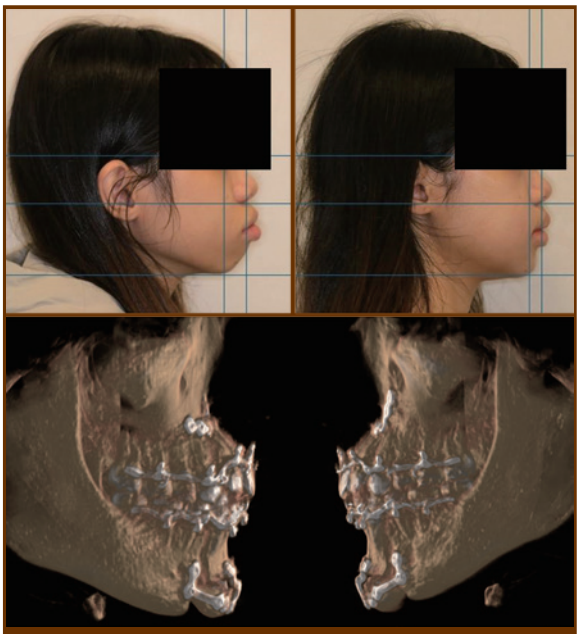

Fig. 6(a) & Fig. 6(b): Post-surgical photos and CT scan showing the protruded jaws have been partially managed by combined surgery of Cupar osteotomy, Hofer osteotomy and advancement genioplasty. Further orthodontic treatment is required to correct the bite (Surgery-first approach). (Clinical images from personal collection) (Orthodontic treatment by Dr Andrew Fu-shan NG, Specialist in Orthodontics; surgery by Dr Eric Ka-fai SIT, Specialist in Oral and Maxillofacial Surgery for the management of a bimaxillary protrusion with anterior dentoalveolar hyperplasia by double-jaw osteotomies)

SCHUCHARDT OSTEOTOMY

Karl Schuchardt developed a posterior maxillary osteotomy technique featuring a minimally raised labial flap (tunnelling) for bone cuts and a broadly raised palatal flap for clear visualisation, thereby preserving the labial microvascular network while ensuring precise palatal osteotomies[8]. This surgical approach allows anteroposterior, vertical and transverse positioning of the posterior maxilla. It works well on the high palatal vault where the hyperplasia is predominantly at the dentoalveolar level.

COMPUTER-ASSISTED VIRTUAL SURGICAL PLANNING AND PATIENT SPECIFIC IMPLANT (PSI)

Computer-assisted virtual surgical planning has transformed orthognathic surgery by enabling precise three-dimensional assessment, simulation of osteotomies, and prediction of surgical outcomes, resulting in markedly improved accuracy and predictability compared to traditional model surgery[13,14]. Integration of CAD/CAM technology allows surgeons to fabricate patient-specific implants (PSI) and cutting guides that translate the virtual plan to the operating theatre with superior precision, enhancing stability and reducing operative complexity.

PSIs offer highly accurate repositioning and fixation, particularly in complex asymmetry and bimaxillary cases, and have become increasingly common in routine practice due to their reliability and ability to overcome limitations of conventional plate adaptation[15,16].

Despite all the advantages, virtual surgical planning is vulnerable to error propagation from inaccurate data acquisition, head orientation discrepancies, or automerging errors, all of which can translate into intraoperative deviations and reduced surgical precision[17]. Additionally, the workflow demands specialised software, technical expertise, and increased planning time, which may limit accessibility and contribute to variability in outcomes among surgeons with differing experience levels[18]. PSIs, while highly accurate, present drawbacks such as higher cost, longer manufacturing time, and reduced intraoperative adaptability, and have been associated with higher hardware-removal rates and infection risk compared with standard miniplates in some reports[19]. All these limitations highlight the need for careful case selection, surgeon training, and further refinement of digital workflows.

RISKS OF ORTHOGNATHIC SURGERY

Orthognathic surgery offers several major advantages for patients with significant dentofacial deformities, primarily by restoring proper masticatory function through the correction of skeletal malocclusions such as open bites, overbites, and underbites, thereby improving chewing efficiency, digestion, and reducing excessive dental wear. However, these advantages must be carefully weighed against major risks, the most common of which is neurosensory disturbance,

where hypoesthesia or paresthesia of the lower lip, chin, and gingiva occurs transiently in up to 85 % of patients and permanently in 10 - 40%, particularly after bilateral sagittal split osteotomy of the mandible[20,21]. Skeletal relapse represents another significant concern, as a percentage of the correction may be lost over time due to muscle pull or condylar resorption, potentially requiring revision surgery[22,23,24]. More serious but rarer complications include avascular necrosis of the maxilla from disrupted blood supply-especially with multi-segmental Le Fort I osteotomies-as well as infection requiring hardware removal[25,26]. Another possible outcome of the orthognathic surgery is the unfavourable aesthetic outcomes such as over-advancement or asymmetry[27,28]. Ultimately, while most patients with severe functional impairments report high satisfaction rates, careful patient selection and comprehensive informed consent are essential to balance these major advantages against the potential for permanent neurosensory changes, relapse, or need for revision surgery.

CONCLUSION

Orthognathic surgery offers transformative functional and aesthetic benefits for appropriately selected patients with significant dentofacial deformities. However, successful outcomes are contingent upon rigorous preoperative evaluation, meticulous surgical planning with precise intraoperative execution and post-operative management, and long-term follow up. The potential risks should be managed appropriately including permanent neurosensory changes and the possibility of revision surgery. Ultimately, by carefully weighing the major advantages against the established risks, clinicians and patients can collaboratively pursue a treatment plan that prioritises long-term skeletal stability, functional restoration, and meaningful improvement in quality of life.

References

1. Leward C. Fish, Bruce N. Epker, Charles R. Sullivan, Orthognathic surgery: The correction of dentofacial deformities, Journal of Oral and Maxillofacial Surgery, Vol 51, Issue 1, Supplement 1, 1993, Pp 28-41, ISSN 0278-2391
2. Jeffrey C. Posnick "3 - Definition and Prevalence of Dentofacial Deformities, Orthognathic Surgery" W.B. Saunders, 2014, Pp 61-68, ISBN 9781455726981
3. C. Zhu, Y. Guo, Q. Deng, Y. Le, Q. Wan "Oral health-related quality of life of patients with class II and class III dentofacial deformity before and after orthognathic surgery: a prospective cohort study "International Journal of Oral and Maxillofacial Surgery, 2026, ISSN 0901-5027
4. Trauner R, Obwegeser HL. Zur Operationstechnik bei der Progenia und anderen Unterkieferanomalien. Dtsch Zahn Mund Kieferheilkd. 1955;23:11–25
5. Trauner R, Obwegeser H. The surgical correction of mandibular prognathism and retrognathia with consideration of genioplasty. I. Surgical procedures to correct mandibular prognathism and reshaping of the chin. Oral Surg Oral Med Oral Pathol. 1957;10:677–689
6. Le Fort, R. Étude expérimentale sur les fractures de la mâchoire supérieure. Revue de Chirurgie, 23, 208–227, 360–379, 479–507. 1901
7. Tessier, P. The classic reprint: Experimental study of fractures of the upper jaw. I and II. René Le Fort, M.D. Plastic and Reconstructive Surgery, 50(5), 497–506. 1972
8. Schuchardt, K. Formen des offenen Bisses und ihre operativen Behandlungsmöglichkeiten. Fortschritte der Kiefer- und Gesichtschirurgie, 1, 222–230. 1955
9. Hofer, O. Operation der Prognathie und Microgenie. Deutsche Zahn-, Mund-, und Kieferheilkunde, 9, 121–132 1942.
10. Obwegeser, H. L. Surgical correction of small or retrodisplaced maxillae: The "dish-face" deformity. Plastic and Reconstructive Surgery, 43(4), 351–365, 1969
11. Obwegeser, H. L. Maxillary osteotomy for the correction of malpositioned maxillae. Journal of Oral Surgery, 27(4), 259–263, 1969
12. Wunderer, S. Die Prognathieoperation mittels transversal gestieltem Frontfragment. Oesterreichische Zeitschrift fuer Stomatologie, 59, 98–102, 1962
13. Hao Wu, Dongming He, Yong Wu, Lingyong Jiang, Xudong Wang "Surgical Management for Vertical Maxillary Excess" Oral and Maxillofacial Surgery Clinics of North America, Volume 35, Issue 1, 2023, Pp 37-48, ISSN 1042-3699, ISBN 9780323987875
14. Emmerling M.R., Shah B., Ginzburg M. "Virtual Surgical Planning in Orthognathic Surgery" (2024) Current Surgery Reports, 12 (3), pp. 26 - 35
15. Merta M., Kiukkonen A., Leikola J., Stoor P., Suojanen J. "Skeletal stability after mandible bilateral sagittal split osteotomy – comparison of patient-specific implant and mini-plate fixation: A retrospective study" (2024) Journal of Cranio-Maxillofacial Surgery, 52 (1), pp. 93 - 100
16. Ebker T., Korn P., Heiland M., Bumann A. "Comprehensive virtual orthognathic planning concept in surgery-first patients" (2022) British Journal of Oral and Maxillofacial Surgery, 60 (8), pp. 1092 - 1096
17. Grillo R., Andriola F.D.O., Gravalos R., Caixeta Neto L.D.S., Brozoski M.A., Melhem-Elias F. "Mastering precision: Pitfalls in orthognathic surgery 3D virtual planning and strategies for error reduction" (2025) Journal of Cranio-Maxillofacial Surgery, 53 (12), pp. 2183 - 2189
18. YAN J., LI B., WANG X. "Challenges of computer - assisted orthognathic surgery in clinical application" (2024) Journal of Prevention and Treatment for Stomatological Diseases, 32 (5), pp. 395 - 400
19. Wang S.K., Britt M.C., Nussbaum L., Resnick C.M., Padwa B.L., Green M.A. "Is Patient-Specific Hardware for Orthognathic Surgery More Frequently Removed Than Stock Plates?" (2026) Journal of Oral and Maxillofacial Surgery, 84 (2), pp. 174 - 181
20. S. Nesari, K.-E. Kahnberg, L. Rasmusson "Neurosensory function of the inferior alveolar nerve after bilateral sagittal ramus osteotomy: a retrospective study of 68 patients "International Journal of Oral and Maxillofacial Surgery, Vol 34, Issue 5, 2005, Pp 495-498, ISSN 0901-5027
21. J.G. Wijbenga, C.R.A. Verlinden, J. Jansma, A.G. Becking, B. Stegenga, "Long-lasting neurosensory disturbance following advancement of the retrognathic mandible: distraction osteogenesis versus bilateral sagittal split osteotomy" International Journal of Oral and Maxillofacial Surgery, Vol 38, Issue 7, 2009, Pp 719-725, ISSN 0901-5027
22. Liliane Rosas Gomes, Lúcia Helena Soares Cevidanes, Marcelo Regis Gomes, Antônio Carlos de Oliveira Ruellas, Daniel Patrick Obelenis Ryan, Beatriz Paniagua, Larry Miller Wolford, João Roberto Gonçalves "Three-dimensional quantitative assessment of surgical stability and condylar displacement changes after counterclockwise maxillomandibular advancement surgery: Effect of simultaneous articular disc repositioning" American Journal of Orthodontics and Dentofacial Orthopedics, Vol 154, Issue 2,2018,Pp 221-233, ISSN 0889-5406
23. Lauren Ehardt, Antonio Ruellas, Sean Edwards, Erika Benavides, Matthew Ames, Lucia Cevidanes "Long-term stability and condylar remodeling after mandibular advancement: A 5-year follow-up" American Journal of Orthodontics and Dentofacial Orthopedics, Vol 159, Issue 5, 2021, Pp 613-626, ISSN 0889-5406
24. Neeraj, Srinivas Gosla Reddy, Ashutosh Dixit, Padmanidhi Agarwal, Rebecca Chowdhry, Ashi Chug "Relapse and temporomandibular joint dysfunction (TMD) as postoperative complication in skeletal class III patients undergoing bimaxillary orthognathic surgery: A systematic review" Journal of Oral Biology and Craniofacial Research, Vol 11, Issue 4, 2021, Pp 467-475, ISSN 2212-4268
25. Winfried Bernhard Kretschmer, Grigore Baciut, Mihaela Baciut, Werner Zoder, Konrad Wangerin "Changes in bone blood flow in segmental LeFort I osteotomies" Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology, Vol 108, Issue 2, 2009, Pp 178-183, ISSN 1079-2104
26. R. Gómez-Barrachina, J.M. Montiel-Company, V. García-Sanz, J.M. Almerich-Silla, V. Paredes-Gallardo, C. Bellot-Arcís "Titanium plate removal in orthognathic surgery: prevalence, causes and risk factors. A systematic literature review and meta-analysis" International Journal of Oral and Maxillofacial Surgery, Vol 49, Issue 6, 2020, Pp 770-778, ISSN 0901-5027
27. Jonathas Daniel Paggi Claus, Jaime Hidalgo Chávez, Matheus Spinella Almeida, Hugo José Correia Lopes "Optimizing aesthetic outcomes in orthognathic surgery: Key planning strategies for success" Current Problems in Surgery, Vol 61, Issue 10, 2024, 101578, ISSN 0011-3840
28. Morris D.E., Lo L.-J., Margulis A. "Pitfalls in Orthognathic Surgery: Avoidance and Management of Complications" (2007) Clinics in Plastic Surgery, 34 (3), pp. e17-e29

More Than Just a Watch

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Our family has four members. Father (Dr Philip POON) is a Specialist in Paediatric Dentistry and the younger son (Dr Timothy POON) is a newly graduated dentist. Like surgeons, dentists usually won't wear watches at work due to infection control practices. Therefore, watches were not our cup of tea, until getting to know another family in our two sons' soccer sports, who owns a watch business.

Elder son (Titus POON) attended college in Miami Florida. The four years in Miami exposed him to luxury lifestyles, including vintage cars and expensive watches. During summer break, he was offered a summer job in our friend's watch retail shop, where he started to learn the watch industry. Now, Titus is a 26-year-old watch collector and a watch column writer for Sing Tao Headline. He's also the founder of The Second Club, a Gen Z private watch club in Hong Kong. This is his view that we wish to share.

Have you ever paused to wonder why, in an era dominated by smart devices and hyper-connectivity, many still insist on strapping a mechanical watch to their wrists? Is it a fashion trend? An appreciation for horology (the study of time and art)? Or perhaps the ultimate symbol of social status?

Fig. 1: Watches for social status? (Personal collection)

Maybe it's all of them, maybe it's neither. I believe everyone holds a unique answer to this question, and frankly, no one owes the world an explanation. There is indeed, a deeper, more profound reason that has been keeping mechanical watches alive for so long.

Long before smartphones and digital screens dictated the tempo of our lives, the ultimate guardians of time were the precision movements ticking inside mechanical watches. A slight error could disrupt an entire day's rhythm or compromise an important schedule. The relentless pursuit of precision drove countless watchmakers to dedicate their entire lives to designing the most accurate movements possible.

Fast forward to the rise of technology, it totally changes the game of timekeeping. We can all effortlessly glance at our phones or smartwatches to see the absolute correct time, down to the exact second.

It is impressive how mechanical watches still stand undefeated and be so passionately pursued. Let's break it down.

With new tech taking the upper hand, modern mechanical watches have transformed into wearable accessories, works of art, embodying elements that technology simply can never replace.

A watch may look simple on the outside, but beneath the surface lie countless tests and ingenious engineering. Personally, I deeply admire A. Lange & Söhne, a German watch manufacturer. They masterfully combine polishing with over ten different types of finishing techniques to present the absolute most breathtaking side of a movement. What is truly remarkable is their balance cock: each one is hand-engraved by one of just six master engravers. And because every artisan's technique is subtly different, every single balance cock becomes a unique piece of art.

Another brilliant testament to high-end watchmaking is Breguet's Reference 7047, a masterclass in tourbillon design. Fun fact: Breguet actually invented the tourbillon, an incredibly complex mechanism designed to average out the positional errors caused by gravity, thereby improving long-term accuracy. Housing nearly 500 components, the Breguet 7047 is nothing short of a kinetic sculpture made for the wrist. Bringing a movement like this to life requires master watchmakers to hand-tune microscopic parts weighing less than

a gram, showcasing not just the brand's pinnacle craftsmanship, but creating a sheer, mesmerising artistic dance on the dial.

Did you know the most expensive watch in the world is the Jacob & Co. Billionaire, which retails for USD 20 million? In terms of auction records, the Patek Philippe Grandmaster Chime (ref. 6300A) fetched a mind-boggling USD 31 million at the 2019 Only Watch charity auction. To regular people like us, those numbers are astronomical, far more than most people could hope to save in a lifetime.

But what if I told you that I own a watch far more precious than either of them! Hear me out.

Growing up in Hong Kong, Solvil et Titus is a brand almost all of us know by heart. A brand that is heavily advertised. And because my English name happens to be Titus, my dad bought me a Titus watch for my 18th birthday. It was a watch with a full calendar function, worth about HK$4,000. Back then, I wasn't even into watches; to me, it was just another accessory.

A few years later, my collection has grown to over a dozen pieces. Yet, looking at them all, I've realised that not a single one even comes close to that old Titus. It simply means too much to me.

That's the beauty of watches; beyond the brand name and the craftsmanship, they carry deep emotions and memories. When people talk about their watches, they almost always link them to a specific day or a major milestone, using them to anchor those special moments in life. Some buy a watch to celebrate a big promotion; others choose matching couple's watches to mark their wedding day. I have a friend who is absolutely obsessed with the Vacheron Constantin 222. When asked why, he told me he got married on February 22nd. For him, owning that watch is the ultimate symbol of his marriage.

Fig. 2: For the next generation? (Personal collection)

It is this profound connection that a watch captures our personal stories, and it elevates from a watch into a lasting tradition. No matter how advanced the future becomes, my resolve remains unchanged. When the day comes for me to become a father, I will choose to step away from the digital noise. I'd look my child in the eye and hand down a mechanical watch. Because when we pass on a watch, we aren't just passing on an instrument that tells the time; we are passing on the reminder of where we came from, the value of the moments we share, and a legacy that never needs a battery to keep ticking. Just like Patek Philippe's slogan, "You never actually own a Patek Philippe. You merely look after it for the next generation."

The world of watches is a fascinating ecosystem of history, art, and mechanics. For doctors, a profession that relies so heavily on precision and timing, I wanted to share this unique joy of horology with you, because a fine mechanical movement is, in its own way, a masterclass in anatomy.

Dermatology Quiz

Dr Chi-keung KWAN

MBBS(HK), MRCP(UK), FRCP(Lond, Glasg, Edin), Dip Derm(Glasg), PDipID(HK), FHKCP, FHKAM(Medicine)

Specialist in Dermatology and Venereology

Dr Chi-keung KWAN

Fig. 1: Multiple painful vesicular lesions on the left clavicular region

A 68-year-old gentleman complained of left neck and left clavicular pain for 3 days. The pain was sharp in nature. Subsequently, multiple vesicles were developed over the left neck and clavicular region. Clinical examination revealed multiple vesicular rashes over left neck and the left shoulder. (Fig. 1)

Questions

1. What are the differential diagnoses of his skin lesion?
2. What investigation are you going to order?
3. How do you treat this patient?
4. What are the complications?

(See P. 45 for answers)

FMSHK Annual Scientific Meeting 2026 - Empowering Progress: Innovation, Integration, Impact

Dr Alson Wai-ming CHAN

MBChB, DCH (Ireland), Dip Ger Med RCPS (Glasg), PdipCommunityGeriatrics, FRCPCH, FHKCPaed, FHKAM (Paediatrics)

Specialist in Paediatric Immunology, Allergy & Infectious Diseases
Honorary Secretary, the Federation of Medical Societies of Hong Kong

Dr Alson Wai-ming CHAN

On **28th June 2026**, the Federation of Medical Societies of Hong Kong successfully hosted the **Annual Scientific Meeting (ASM) 2026** under the theme "Empowering Progress: Innovation, Integration, Impact."

This year's programme featured **12 distinguished lectures** delivered by leading experts, covering a wide spectrum of medical and scientific advancements. Topics included:

- Use of AI in Medicine
- Managing One Airway: Optimising Treatment across Asthma, COPD and their Overlaps
- Prioritising Renal Risk: Repositioning Kidney Protection as Core Prevention in DKD
- Current Prenatal Genetic Screening and Diagnosis
- Acute Haemorrhoidal Complications: Evidence based Intervention and Update of Non excisional Therapy
- Topical JAKi in the Management of Skin Disease
- Targeting the IL 4/IL 13 Pathway in Dermatology: A Multidisciplinary Approach
- Adult Pneumococcal Disease Prevention in Hong Kong and the Next Generation Pneumococcal Conjugate Vaccine
- Central Nervous System Dysmyelinating Disorders in Children
- The Biology of Obesity: Anti Obesity Medications and the Challenge of Weight Regain
- Transformative Survival in Lung Cancer: The Power of Personalised Medicine, Targeted Drug Discovery and Immunotherapy
- Development of eHealth+

Photos Download

The 12 lectures provided practical updates on AI in medicine, eHealth development, and integrated management of asthma and COPD. Attendees gained knowledge on renal risk prevention in diabetic kidney disease, obesity biology and treatment, and advances in prenatal genetic screening. Evidence-based approaches to haemorrhoidal complications, novel dermatology therapies including JAK inhibitors and IL-4/IL-13 pathway targeting, and updated pneumococcal vaccination strategies were highlighted. Sessions also addressed paediatric CNS dysmyelinating disorders and transformative survival in lung cancer through personalised medicine and immunotherapy. Collectively, the programme equipped participants with forward-looking insights across specialties, reinforcing innovation, multidisciplinary collaboration, and improved patient care.

The Federation was honoured by the presence of our officiating guest **Dr Cecilia Yuen-man FAN, JP**, together with distinguished guests **中聯辦協調部白陽處長**, **潘尚霞副處長**, **Dr the Hon. David Tzit-yuen LAM**, **Dr Yiu-chung WONG**, and **Dr the Hon. Edward Che-hung LEONG, GBM, GBS, OBE, JP**. Their participation added great significance to the event.

Without our participants, the ASM would not have been a successful one. The total number of registrations for onsite participation was 120. The total number of attendees for the ASM was 107 for physical attendance, which was 89 % of the attendance rate for onsite participation.

We would also like to take this opportunity to express our sincere gratitude to our officiating guest, honourable guests, co-chairmen, chairpersons and speakers for their valuable contributions that made the event a great success. Our gratitude also extends to various sponsors for their tremendous support.


FMSHK Annual Scientific Meeting 2026
Empowering Progress Innovation Integration Impact
Session 6 – Panel Discussio
allelic ratio

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		★ In-person / HKMA CME Portal (Online) HKMA-HKSH CME Programme 2026 Topic: Precocious Puberty in Children ★ Certificate Course on Orthopaedic Degenerative Problems 2026 (Video Lectures) **1**	★ HKMA CME Portal (Online) The HKMA CME Online Lecture Topic: Pneumococcal Vaccination in Hong Kong: Aligning Vaccine Choice with Local Serotype Epidemiology ★ Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures) **2**	★ In-person The HKMA CME Lecture in Physical Attendance Mode Topic: Advances in Osteoporosis Management: Safety, Real-World Evidence, the Efficacy of Anabolic Therapies and Diabetes Mellitus Osteoporosis **3**	★ In-person / HKMA CME Portal (Online) The HKMA Adult Immunisation Campaign 2026 CME Hybrid Lecture Topic: New in Adult Pneumococcal Prevention: Clinical and Real-World Evidence of PCV21 **4**	**5**
6	★ HKMA CME Portal (Online) HKMA-KWC CME Online Lecture Series on Common Medical Conditions for GP in 2026 Topic: Chronic Kidney Disease and Microscopic Hematuria **7**	★ In-person / HKMA CME Portal (Online) The HKMA CME Hybrid Lecture Topic: NEW in Adult Pneumococcal Prevention : PCV21 Clinical Evidence Aligned with Local Epidemiology ★ Certificate Course on Orthopaedic Degenerative Problems 2026 (Video Lectures) **8**	★ The Hong Kong Neurosurgical Society Monthly Academic Meeting – To be confirmed ★ In-person The HKMA CME Lecture in Physical Attendance Mode Topic: Personalising Diabetes Care: Patient-oriented Benefits in The Treatment of T2DM with DPP4i ★ Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures) **9**	**10**	★ HKMA CME Portal (Online) The HKMA Adult Immunisation Campaign 2026 CME Online Lecture Topic: RSV in Adults: Protecting Older Adults and At-Risk Patients Through Prevention and Vaccination **11**	**12**
13	**14**	★ HKMA CME Portal (Online) The HKMA CME Online Lecture Topic: Understanding Allergic Rhinitis in Children: Updates on Clinical Management and International Treatment Guidelines **15**	★ HKMA CME Portal (Online) The HKMA CME Online Lecture Topic: Sprinting to an Intensified BP Target: Finding the New Balance ★ Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures) **16**	★ In-person The HKMA CME Lecture in Physical Attendance Mode Topic: Bridging the Gap: Evidence-Based Treatment of Hot Flushes and Night Sweats in Primary Care ★ FMSHK Executive Committee Meeting **17**	**18**	**19**
20	**21**	★ HKMA CME Portal (Online) The HKMA CME Online Lecture Topic: The Evolving Role of Long-Term Clopidogrel Therapy in Secondary Cardiovascular Prevention ★ Certificate Course on Respiratory Medicine 2026 - Update Knowledge for Expert Respiratory Care (Video Lectures) **22**	★ In-person / HKMA CME Portal (Online) The HKMA CME Hybrid Lecture Topic: Rethinking Insulin Resistance and Beta-cell Dysfunction in The Management of Diabetes ★ Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures) **23**	**24**	**25**	**26**
27	★ HKMA CME Portal (Online) HKMA-HKCOG CME Online Lecture Series on "Treatment of Common Conditions in Pregnancy for GPs" Topic: Management of Headaches and Back/Pelvic Pain During Pregnancy **28**	★ Certificate Course on Respiratory Medicine 2026 - Update Knowledge for Expert Respiratory Care (Video Lectures) **29**	★ Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures) **30**			

Date / Time	Function	Enquiry / Remarks
1 TUE 2:00 PM	**In-person / HKMA CME Portal (Online)** **HKMA-HKSH CME Programme 2026** **Topic: Precocious Puberty in Children** Organisers: The Hong Kong Medical Association and Hong Kong Sanatorium & Hospital Speaker: Dr Anita Man-ching TSANG Venue: The HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Orthopaedic Degenerative Problems 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong, Association of Private Orthopaedic Surgeons Limited & The Hong Kong Orthopaedic Association Speaker: Dr Wing-lim TSE	Tel: 2821 3512
2 WED 2:00 PM	**HKMA CME Portal (Online)** **The HKMA CME Online Lecture** **Topic: Pneumococcal Vaccination in Hong Kong: Aligning Vaccine Choice with Local Serotype Epidemiology** Organiser: The Hong Kong Medical Association Speaker: Dr Teresa Kin-fong WANG	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong & Hong Kong Physiotherapy Association Speaker: Dr Alex CHAN	Tel: 2821 3512
3 THU 2:00 PM	**In-person** **The HKMA CME Lecture in Physical Attendance Mode** **Topic: Advances in Osteoporosis Management: Safety, Real-World Evidence, the Efficacy of Anabolic Therapies and Diabetes Mellitus Osteoporosis** Organiser: The Hong Kong Medical Association Speaker: Dr Annette Wai-kwan TSO Venue: The HKMA Wanchai Premises, 5/F., Duke of Windsor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	HKMA CME Dept. Tel: 2527 8452 1 CME Point
4 FRI 2:00 PM	**In-person / HKMA CME Portal (Online)** **The HKMA Adult Immunisation Campaign 2026 CME Hybrid Lecture** **Topic: New in Adult Pneumococcal Prevention: Clinical and Real-World Evidence of PCV21** Organiser: The Hong Kong Medical Association Speaker: Prof Thomas M. FILE Venue: Forum Room I, Basement 2, Regal Hongkong Hotel, 88 Yee Wo Street, Causeway Bay	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7 MON 2:00 PM	**HKMA CME Portal (Online)** **HKMA-KWC CME Online Lecture Series on Common Medical Conditions for GP in 2026** **Topic: Chronic Kidney Disease and Microscopic Hematuria** Organisers: The Hong Kong Medical Association and Kowloon West Cluster of HA Speaker: Dr William LEE	HKMA CME Dept. Tel: 2527 8452 1 CME Point
8 TUE 2:00 PM	**In-person / HKMA CME Portal (Online)** **The HKMA CME Hybrid Lecture** **Topic: NEW in Adult Pneumococcal Prevention : PCV21 Clinical Evidence Aligned with Local Epidemiology** Organiser: The Hong Kong Medical Association Speaker: Dr Siu-pui LAM Venue: Star Room, 42/F, Cordis Hong Kong, 555 Shanghai Street, Mong Kok, Kowloon	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Orthopaedic Degenerative Problems 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong, Association of Private Orthopaedic Surgeons Limited & The Hong Kong Orthopaedic Association Speaker: Dr Paul Aarne KOLJONEN	Tel: 2821 3512
9 WED 7:30 AM	**The Hong Kong Neurosurgical Society Monthly Academic Meeting – To be confirmed** **Organiser: Hong Kong Neurosurgical Society** Speaker(s): Dr Jasmine Wenzhe YE Chairman: Dr Tak Lap POON Venue: Seminar Room, G/F, Block A, Queen Elizabeth Hospital; or via Zoom meeting	CME Accreditation College: 1.5 points College of Surgeons of Hong Kong Dr Jason Chow Tel: 2595 6456 Fax. No.: 2965 4061
2:00 PM	**In-person** **The HKMA CME Lecture in Physical Attendance Mode** **Topic: Personalising Diabetes Care: Patient-oriented Benefits in The Treatment of T2DM with DPP4i** Organiser: The Hong Kong Medical Association Speaker: To-be-confirmed Venue: The HKMA Wanchai Premises, 5/F., Duke of Windsor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong & Hong Kong Physiotherapy Association Speaker: Mr Alex HO	Tel: 2821 3512
11 FRI 2:00 PM	**HKMA CME Portal (Online)** **The HKMA Adult Immunisation Campaign 2026 CME Online Lecture** **Topic: RSV in Adults: Protecting Older Adults and At-Risk Patients Through Prevention and Vaccination** Organiser: The Hong Kong Medical Association Speaker: Dr Jonpaul Sze-tsing ZEE	HKMA CME Dept. Tel: 2527 8452 1 CME Point
15 TUE 2:00 PM	**HKMA CME Portal (Online)** **The HKMA CME Online Lecture** **Topic: Understanding Allergic Rhinitis in Children: Updates on Clinical Management and International Treatment Guidelines** Organiser: The Hong Kong Medical Association Speaker: Dr Philip Chak-on SHAM	HKMA CME Dept. Tel: 2527 8452 1 CME Point
16 WED 2:00 PM	**HKMA CME Portal (Online)** **The HKMA CME Online Lecture** **Topic: Sprinting to an Intensified BP Target: Finding the New Balance** Organiser: The Hong Kong Medical Association Speaker: Dr Andrew Kei-yan NG	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong & Hong Kong Physiotherapy Association Speaker: Dr Anthony KWOK	Tel: 2821 3512

Date / Time	Function	Enquiry / Remarks
17 THU 2:00 PM	**In-person** **The HKMA CME Lecture in Physical Attendance Mode** **Topic: Bridging the Gap: Evidence-Based Treatment of Hot Flushes and Night Sweats in Primary Care** Organiser: The Hong Kong Medical Association Speaker: Dr Helena Hui-ling LEE Venue: Forum Room I, Basement 2, Regal Hongkong Hotel, 88 Yee Wo Street, Causeway Bay	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:30 PM	**FMSHK Executive Committee Meeting** Organiser: The Federation of Medical Societies of Hong Kong Venue: Council Chamber, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms Mabel TSANG Tel: 2527 8898
22 TUE 2:00 PM	**HKMA CME Portal (Online)** **The HKMA CME Online Lecture** **Topic: The Evolving Role of Long-Term Clopidogrel Therapy in Secondary Cardiovascular Prevention** Organiser: The Hong Kong Medical Association Speaker: Dr Jonathan Xing Guo FANG	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Respiratory Medicine 2026 - Update Knowledge for Expert Respiratory Care (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong , Hong Kong Thoracic Society Limited & CHEST Delegation Hong Kong & Macau Limited Speakers: Dr Yu-hong CHAN & Mr Ronny LAM	Tel: 2821 3512
23 WED 2:00 PM	**In-person / HKMA CME Portal (Online)** **The HKMA CME Hybrid Lecture** **Topic: Rethinking Insulin Resistance and Beta-cell Dysfunction in The Management of Diabetes** Organiser: The Hong Kong Medical Association Speaker: Cheuk-lik WONG Venue: Crystal Ballroom A&B, 2/F, The Cityview, 23 Waterloo Road, Kowloon	HKMA CME Dept. Tel: 2527 8452 1 CME Point
7:00 PM	**Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong & Hong Kong Physiotherapy Association Speaker: Ms Mandy LUI	Tel: 2821 3512
28 MON 2:00 PM	**HKMA CME Portal (Online)** **HKMA-HKCOG CME Online Lecture Series on "Treatment of Common Conditions in Pregnancy for GPs"** **Topic: Management of Headaches and Back/Pelvic Pain During Pregnancy** Organisers: The Hong Kong Medical Association and the Hong Kong College of Obstetricians & Gynaecologists Speaker: Dr Teresa Man-kee MA	HKMA CME Dept. Tel: 2527 8452 1 CME Point
29 TUE 7:00 PM	**Certificate Course on Respiratory Medicine 2026 - Update Knowledge for Expert Respiratory Care (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong , Hong Kong Thoracic Society Limited & CHEST Delegation Hong Kong & Macau Limited Speaker: Dr Chin-tong KWOK	Tel: 2821 3512
30 WED 7:00 PM	**Certificate Course on Advanced Physiotherapy Practice and Rehabilitation 2026 (Video Lectures)** Organisers: The Federation of Medical Societies of Hong Kong & Hong Kong Physiotherapy Association Speaker: Mr Leo KWOK	Tel: 2821 3512

Announcements

6 September 2026 (Sun) 08:50 – 17:00	**LI SHU PUI SYMPOSIUM 2026 – Advances in Cancer Management** Organiser: HKSH Medical Group Li Shu Pui Lecture Speaker: Prof Terence T.W. SIO PUMCH Lecture Speaker: Prof XIANG Yang RCSEd Presidential Lecture Speaker: Prof Angus WATSON Speakers: Dr Raymond LIANG, Prof Tony MOK, Dr Daniel CHUA, Dr CHAN Wai Kong, Mr Wyman LI, Dr Benjamin FANG, Dr YAU Chun Chung, Dr Michael KAM, Dr Darren POON, Dr Anselm LEE, Prof Albert CHAN, Dr TAM Kar Fai, Dr Steffi YUEN, Dr LAM Ying Lee, Mr Patrick CHAN, Dr Alex CHOW, Dr HO Chiu Ming	Hong Kong Sanatorium & Hospital Venue: Ballroom, JW Marriott Hotel Hong Kong & via Webinar Website: www.hksh.com/lsp2026
13 September 2026 (Sun) 08:30 - 17:35	**26th Regional Osteoporosis Conference (ROC 2026)** Organiser: The Osteoporosis Society Hong Kong (OSHK) Venue: Hong Kong Convention and Exhibition Centre, Wanchai Conference Theme: Bone Health Reimagined: From Prevention to Precision Management Programme: Please visit the Conference Website https://oshk.org.hk/2026/06/20/26th-regional-osteoporosis-conference-roc-2026/ for details.	ROC 2026 Conference Secretariat c/o International Conference Consultants Ltd. Tel: (852) 2559 9973 Email: roc@icc.com.hk

Answers to Dermatology Quiz

Answers:

1. The differential diagnoses include immunobullous diseases like bullous pemphigoid, pemphigus vulgaris; infectious diseases like herpes simplex, chickenpox, herpes zoster, bullous impetigo, erysipelas; inflammatory dermatosis like contact dermatitis, insect bites and accidental or non-accidental injury like scalded injury.

2. The diagnosis of this gentleman is herpes zoster (shingles) at the left C3/4 dermatome, which was made clinically by characteristic presentation – multiple crops of painful vesicles along the dermatome without crossing the midline. No investigation is required in usual situation. Swab from the base of a vesicle or erosion, not the vesicular fluid, can be sent for viral culture or polymerase chain reaction (PCR) to confirm varicella-zoster virus (VZV). In case herpes zoster happens in multiple dermatomes, severe immunocompromised such as HIV infection, internal malignancy, diabetes should be considered.

3. Anti-viral treatments such as acyclovir, famciclovir or valaciclovir can suppress the virus and reduce the pain and the duration of symptoms. Analgesics for pain relief are commonly required. Systemic antibiotics may be necessary if secondary infection occurs.

4. The most common complication of shingles is post-herpetic neuralgia (PHN) that can last for months or even years. PHN can be very painful that interferes with the patient's daily life. The skin vesicles and erosions of herpes zoster can also be secondarily infected by bacteria. If shingles happen at ophthalmic branch (V1) of trigeminal nerve, it can affect the eye and cause visual impairment. Very rarely, it may also cause hearing impairment, encephalitis and viral pneumonia especially in severe immunocompromised patients. Nowadays, vaccine is available for protecting against herpes zoster.

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Specialist in Dermatology and Venereology

香港特殊牙科治療學會
The Hong Kong
Special Care Dentistry Society

Spring Scientific Meeting 2027

Royal Australasian College of Dental Surgeons
Let knowledge conquer disease

co-organized by
The Hong Kong Special Care Dentistry Society &
The Royal Australasian College of Dental Surgeons
(Hong Kong Regional Committee)

Menopause & Dentistry

Date: 17th January, 2027 (Sun)

Topics:

1. Menopause effects on women
2. Implications of Menopause to Dentistry
3. Management strategies to menopause clients

CME/CPD:

Pending

The Hong Kong Special Care Dentistry Society, established in 2018, aims at promoting the standard and advancement of Special Care Dentistry. Recognizing that dental treatment is an integral part of comprehensive medical care, this scientific meeting seeks to raise awareness in special care dentisry among healthcare professionals through academic collaborations and interdisciplinary partnerships.

Should you have any enquiries, please feel free to contact
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