

Faculty of Dentistry Clinical Excellence Day

The Faculty held its annual Clinical Excellence Day on 10 July in the Hutton Theatre of the Otago Museum. Guest speakers included Simon Brown, Mike Brosnan, Vincent Bennani and Simon Guan. Postgraduate presenters winning on the day were-

- 1st Ghassan Idris
 2nd Wei Lin
 3rd Nurulhuda Thiyalhuddin

The meeting was made possible with the kind sponsorship of Ostralos, Nobel Biocare, Kavo Kerr, 3M, SDI, NSK, DentsplySirona and Henry Schein dental.

ABSTRACTS OF STUDENT PRESENTATIONS

15 years of endodontic trauma management

*Lucy Sullivan (DClinDent candidate in Endodontics)
 Supervisor: Professor Nick Chandler*

Introduction: This case illustrates a final attempt to retain the crown of a heavily restored tooth 11 with a history of trauma. The importance of regular review of traumatised teeth and the importance of permanent restoration following root canal treatment are highlighted.

Case Description: A young male patient presented to his dentist in 2004 with a draining sinus associated with teeth 11 and 21. The teeth had been traumatised on multiple occasions and they had unusual morphology, with large, irregular pulp spaces and thin remaining dentine. They were root canal treated but never permanently restored. Fourteen years later, tooth 11 had a recurrent infection. The teeth were retreated and tooth 11 was successfully bleached. The root of tooth 11 then fractured horizontally. The apical segment was surgically removed in an attempt to achieve bony infill and to retain the crown for as long as possible.

Discussion: After the completion of endodontic treatment it is imperative that a definitive restoration is placed as soon as possible. In this case, as a result of the long-term provisionalisation, chronic apical periodontitis of tooth 11 was probably due to leakage and recurrent intra-radicular infection. The presence and quality of both the root canal treatment and the restorative dentistry are significantly associated with the prognosis of endodontically treated teeth.

I do not want braces! Invisibility cloaks for the management of Class II malocclusion

*Dr. Ghassan Idris (DClinDent candidate in Orthodontics)
 Supervisor: Professor Mauro Farella*

Introduction: Due to their reduced visibility, clear aligners are becoming increasingly popular in orthodontics. They are suitable for the management of simple Class I malocclusions, however, a recent modification to their design provides us with the ability to undertake functional treatment. This opens a new window of opportunity for the management of Class II patients. Combining aligners and functional appliances can improve a patient's experience and comfort, and may also reduce treatment time.

Case Description: A 11.6-year-old female patient presented to the orthodontic clinic conscious of her prominent incisors. Clinical examination showed she had a Class II div 1 malocclusion with a 6 mm overjet, an increased overbite, and mild maxillary crowding. The Class II skeletal relationship was confirmed by cephalometric analysis. The treatment objectives aimed to correct the Class II relationship using functional appliances and to align both arches orthodontically. The patient was reluctant to have conventional braces due to their appearance. Clear aligners, combined with a mandibular advancement appliance, were used to achieve the treatment objectives and to address her aesthetic concerns.

Discussion: This new orthodontic treatment modality combines the benefits of an advanced clear aligner system with mandibular advancement features. The combination of appliances may offer a simpler, more efficient, and patient-friendly treatment option than functional appliances followed by traditional metal braces. We will demonstrate that it is possible to successfully manage Class II growing patients, without full fixed orthodontic appliances.



Dental care of a medically complex patient

Hamid Shareef Mohammed (DClinDent candidate in Special Needs Dentistry)
Supervisor: Dr. Graeme Ting

Introduction: Dental caries is a major cause of irreversible pulpitis and odontogenic infection. A combination of poor diet and inadequate plaque control can contribute to rapid development of dental caries. Furthermore, multiple medical co-morbidities can influence a person's ability to maintain oral hygiene and influence the dental treatment.

Case Description: A 25-year-old-female patient was referred to the hospital dental department for treatment of an ongoing dental infection in the left mandible. Her medical history included compromised renal function, a history of chemotherapy for treatment of lymphoma, and insulin-dependent diabetes mellitus. Clinical examination and radiographic imaging revealed multiple carious teeth with periapical pathologies. Improving her oral health and elimination of infection in the oral cavity was the focus of dental treatment plan. Liaison with the renal physician, medical practitioner, dietician and diabetic nurse was required to achieve the best possible dental outcome.

Discussion: This case illustrates that dental treatment of a medically complex patient often involves a multi-disciplinary approach. Various patient and clinician factors need to be taken into consideration in the treatment planning phase. Quadrant dentistry, anxiety management and stress reduction techniques are particularly important to avoid any medical emergencies during the dental treatment.

Maxillary ameloblastoma: a journey through radiographic uncertainty, histological dilemmas and molecular studies

Izyan Zainuddin (DClinDent candidate in Oral Pathology)
Supervisors: Professor Alison Rich, Dr. Haizal Hussaini and Dr. Benedict Seo

Introduction: Ameloblastoma is a benign but locally aggressive odontogenic neoplasm. Whilst it is the most common odontogenic neoplasm, its presentation in the maxilla is rather rare and is associated with more aggressive behaviour. Accurate clinicopathological and radiographic correlation is essential to reach the definitive diagnosis, yet it may be a diagnostic challenge due to the histological diversity in some of its subtypes.

Case Description: A biopsy specimen from the anterior maxilla of a 73-year-old male was processed at the Oral Pathology Centre, University of Otago. The accompanying periapical radiograph showed a root-filled 22, with the clinician's provisional diagnosis of residual cyst. The histology showed a solid lesion comprising islands of odontogenic epithelium with prominent clear cell change and little peripheral palisading of ameloblast-like

cells. Further investigations were carried out including immunohistochemistry, referral to an international oral pathologist for a second opinion and molecular testing before a definitive diagnosis was reached.

Discussion: Clear cells present in various lesions ranging from odontogenic neoplasms, salivary neoplasms to metastases, hence diagnosing this lesion required extensive investigation. Advances in the field of molecular cytogenetics that can be used on formalin-fixed, paraffin embedded specimens, specifically the development of Fluorescent in situ Hybridization (FISH) to check for gene rearrangements and translocations, has become an important adjunct and a valuable diagnostic tool, thus allowing better management of such lesions.

Endo-perio lesions and root resection

Deepak Chellappa (DClinDent candidate in Endodontics)
Supervisor: Professor Nick Chandler
Acknowledgement: Dr. Eugene Sheftel

Introduction: Posterior teeth with severe endo-perio lesions (>1 wall) affecting a single root are regularly extracted and replaced by fixed or removable prostheses. Retention of these strategically valued teeth by means of root resection can provide a cost-effective and long-term treatment alternative with some high survival rates observed (87.2%—Setzer et al. 2018). Root resection involves removal of the affected root/s at the level of the furcation, but retaining the crown and stable root/s in function. First described in 1884 by Farrar, the procedure has primarily been used to treat class II and III furcation-involved molars, providing a favourable environment for oral hygiene maintenance. Root resection can also be indicated in cases involving a root fracture, perforation, root caries or external root resorption involving one root. The procedure is technique-sensitive, requiring careful case selection and management.

Case Description: A 65-year-old male patient with no medical issues was referred for periodontal examination and treatment. The mesial root of his non-responsive tooth 36 was diagnosed with a grade 3 endo-perio lesion (Papapanou et al. 2018). Root canal treatment was completed for the distal root, with the mesial canal orifices sealed with Fuji IX GIC. The mesial root was resected with the inferior border of the crown polished for easy cleaning. Strict oral hygiene instructions were given. Following 18-months of recalls and well-maintained oral hygiene tooth 36 is stable and retained by the distal root alone.

Discussion: Root resection is a cost-effective treatment option for selected posterior teeth with severe localised periodontal defects. To achieve success, it is recommended that > 50% bone support from the remaining roots is required at the time of surgery. Careful prosthodontic planning and a well-motivated patient are required.

Shrink the risks – Management of a large cystic lesion in the mandible

*Adelyn Ai Lyn Lau (DClinDent candidate Oral Surgery)
Supervisor: Mr Rohana De Silva*

Introduction: Decompression is a conservative treatment that has been used in the treatment of large odontogenic cysts. It reduces the size of the lesion, allows surrounding bone to regenerate and thickens the cyst lining to facilitate enucleation of the lesion at a later date. This treatment is particularly valuable in the management of large cystic lesions that involve vital structures such as the inferior alveolar nerve, maxillary sinus, inferior border of the mandible and/or multiple dentition.

Case description: A 66-year-old gentleman presented with sudden onset of facial swelling, trismus, cervical lymphadenopathy and fever. An orthopantomogram revealed a large multi-locular radiolucency in the right posterior mandible with well-defined, scalloped margins associated with a deeply impacted 48. The provisional histopathological diagnosis was of a dentigerous cyst. The cystic lesion was decompressed using a silicone tube secured with a stainless steel wire. Over time, there was evidence of reduction in size of the cyst and bony infill. Surgical extraction of the 48 and full enucleation of the cystic lesion was completed without complication. He proceeded to have an uneventful recovery and showed no signs of recurrence at the 10-month recall.

Discussion: This technique allows preservation of oral tissues, maintenance of pulp vitality and avoidance of pathological fractures and/or surgical damage to important anatomical structures. Close review during the decompression phase is needed to monitor changes in the radiographic and clinical features. Careful case selection is paramount. Factors to consider include patient age, type of lesion and time of evolution, and patient cooperation.

Combined orthodontic and surgical treatment of a severe Class II hypodivergent facial pattern

*Simon Olliver (DClinDent candidate in Orthodontics)
Supervisor: Dr. Winifred Harding*

Introduction: Sometimes patients present with orthodontic problems so severe that neither growth modification nor orthodontic camouflage will offer an appropriate solution. Repositioning of jaw structures through surgery may address major skeletal discrepancies and improve the facial appearance, but surgery is not a lone-standing solution. Careful orthodontic treatment planning and cross-speciality teamwork is essential to achieving good care.

Case Description: A 43-year-old male was referred to the Discipline of Orthodontics prior to prosthodontic rehabilitation. His current restorative options were limited due to multiple skeletal and dental problems. A severe

Class II hypodivergent facial pattern was obvious, resulting in a decreased lower anterior facial height and mandibular over-closure. Other problems included multiple tooth extractions in the upper right quadrant, increased overjet/overbite values and mild crowding of the upper anterior teeth. Initial orthodontics was performed prior to mandibular advancement surgery.

Discussion: The combined orthodontic/surgical approach used here enabled improvement of dental relationships and vertical discrepancy correction. Previously missing teeth caused challenges for the surgical preparation of the dentition. Temporary anchorage devices were used to facilitate tooth movement and create stable occlusal contacts during mandibular advancement. The treatment resulted in correction of dental and skeletal relationships and produced favourable changes to facial appearance, whilst also increasing the restorative options available post-treatment.

Stabilisation of the compromised dentition

*Huda Mohammed (DClinDent candidate in Prosthodontics)
Supervisor: Dr. Sergio Salis*

Introduction: Oral rehabilitation is a common treatment modality used for restoring tooth function, correcting occlusal discrepancies and improving aesthetics. However, the rehabilitation of a worn dentition can be challenging when the space available for restoration is inadequate. A commonly adopted solution for providing space to restore tooth wear involves increasing the occlusal vertical dimension (OVD). A careful comprehensive assessment, including assessment of the OVD, is an integral part in the treatment planning for the worn dentition.

Case description: A 66-year-old female patient was referred for full mouth assessment and rehabilitation. Clinical examination revealed a CI II malocclusion and heavily restored dentition with moderate tooth wear which led to loss of OVD. A stabilisation stage was carried out by replacing all the old existing restorations and increasing the OVD using composite resin material. A period of several months was allowed for follow-up and maintenance before starting with the rehabilitation stage of the treatment.

Discussion: Restoring the mandibular anterior teeth and reconstructing the posterior teeth with composite resin to the optimal anatomy and function allowed for the regaining of the OVD. The increase in the OVD can be trialled for a period of time to allow monitoring the patient for any signs or symptoms of muscle pain or temporomandibular joint discomfort and continued wear before completing definitive restorations. Alternative options, including maxillofacial surgery or orthodontic treatment, can be time consuming and more expensive.

You're never too old

*Wei Lin (DClinDent candidate in Orthodontics)
Supervisor: Dr. Winifred Harding*

Introduction: The majority of orthodontic patients are adolescents; however, recent trends have shown an increase in adult patients seeking orthodontic treatment. Much like their adolescent counterparts, adults mainly seek orthodontic treatment for aesthetic purposes. However, in some instances, patients are referred for orthodontic treatment to enable better prosthodontic solutions.

Case Description: A 66-year-old female patient was referred to the postgraduate orthodontic clinic from the prosthodontic clinic. The patient had an anterior functional shift resulting in an anterior cross-bite, and a lack of vertical dimension for the replacement of her missing lower molars and premolars. Through treatment with fixed orthodontic appliances, we were able to correct the anterior cross-bite, eliminate the functional shift and increase the patient's vertical dimension such that there is now enough vertical height for prosthodontic replacement.

Discussion: This case demonstrates that multidisciplinary approaches to cases can work in unison to achieve a better outcome for the patient. Adult patients often provide an extra layer of challenge to orthodontic treatment as they have a higher burden of oral health conditions due to the accumulation of disease over their lifetime. This could include large or multiple restorations, caries and periodontal disease. Despite the difficulties with this case we were still able to achieve a good result from both an aesthetic and restorative prospective showing that you are truly never too old to have braces!

Home Sweet Home

*Nurul Thiyahuddin (DClinDent candidate in
Special Needs Dentistry)
Supervisor: Dr. Graeme Ting*

Introduction: A Domiciliary Service is a service that reaches out with care to those who cannot attend a service themselves. Domiciliary dental care takes some services to patients who reside in their own home or in an institution like a rest home, hospital, hostel for the homeless, or residential facilities for people with psychiatric or intellectual disabilities. Groups of people accessing this service are usually those with very severe physical or learning disabilities, extreme agoraphobia, extreme dental anxiety, mental health issues, severe dementia and people with grave medical conditions.

Case Description: A 39-year-old patient requires a full dental clearance. She suffers from obesity, juvenile arthritis, diabetes mellitus, depression and anxiety. She is confined to bed, dependent on her caregivers for activities of daily living and lives in a rest home. A thorough risk assessment and treatment planning was carried out in conference with the patient, GP, rheumatologist, anaesthesiologist, Day Surgery Unit manager, and Rest Home manager. Treatment was carried out under general anaesthesia in the Main Operating Theatres, Dunedin Public Hospital.

Discussion: This presentation will review domiciliary dental services and show how these can be an integral part of personalised patient care. In particular, patients with complex treatment needs may require novel approaches in planning, preparation and organisation to ensure that their needs are met in the best possible way. The actual dental treatment may, in the end, be the simplest part of the whole process.

Importance of Recognizing and Managing/ Referring Pathological Swellings

*Oripa Adicoka Waqa (DClinDent candidate in Oral Surgery)
Supervisor: Associate Professor Rohana K De Silva*

Introduction: It is important for clinicians to be able to recognize that not all intra-oral swellings are of odontogenic nature. In case referrals, it is good practice to make decisions based on first-hand information and not second-hand information. A good prognosis is what every good clinician aspires for.

Case Description: An 82-year-old male presented to UCU for an asymptomatic swelling adjacent to his upper right molar tooth. Apart from the swelling the presence of sinusitis like symptoms, night sweats, weight loss without the intention of doing so and the general feeling of fatigue were other symptoms. The patient was verbally referred in with the description that a tooth with a buccal abscess and degree II mobility needed to be extracted with likelihood of oral antral communication (OAC) closure. A verbal referral without the assessment of the patient led to the preparation of consent documents, for the extraction and OAC closure, only to be backpedalled to change the consent when assessment of the clinical problem revealed a swelling well beyond the odontogenic margins of pathology. A biopsy revealed the diagnosis of Diffuse Large B Cell Lymphoma- Activated Large B Cell Type. Staging pointed towards Stage 2 and with the patient's age, comorbidities and investigation findings, only time would be able to unveil the bleakness in prognosis.

Discussion: It has been over 10 months now since the diagnosis, with rigorous protocols in both chemotherapy and radiotherapy treatment. There is something positive to look forward to.

Dental implants: Friend or Foe?

*Emma Morelli (DClinDent candidate in Periodontology)
Supervisor: Associate Professor Andrew Tawse-Smith*

Introduction: Over the past 50 years, dental implants have developed from an experimental invention to a predictable treatment modality for the replacement of missing teeth. Dental implants placed by experienced, trained clinicians, in carefully selected patients with good maintenance can prove to be an extremely successful treatment. Numerous studies have documented 10-year success and survival rates exceeding 95%. In recent years, there has been a dramatic increase in patient acceptance of implant therapy, with this treatment now provided by a wider range of clinicians with various skills and experience.

Implant treatment now extends to patients with compromised alveolar ridge dimensions, medical or systemic conditions, or smokers. In addition, implant patients are becoming increasingly older. It is therefore anticipated that the prevalence of biological complications such as peri-implantitis will also increase.

Case description: This case presentation reflects patient and site factors that have contributed the development of peri-implantitis, and highlights complex issues in attempting to manage this condition. Adequate patient oral self-care, regular professional monitoring and maintenance are crucial to reduce the risk for progressive bone loss around dental implants.

Discussion: Management of peri-implantitis presents a real clinical challenge. Treatment success rates range from 40-60% and outcomes can be unpredictable. Treatment is associated with invasive procedures with increased patient morbidity, time and expense.

Special Care – Maze

Arunadevi Ramasamy (DClinDent candidate in Special Needs Dentistry)
Supervisor: Dr. Graeme Ting

Introduction: We will explore oral health treatment challenges in the care of a patient with a complex medical history who is non-verbal and non-cooperative, lacks movement control and is wheelchair bound. This patient required comprehensive dental care in a hospital setting under general anaesthesia (GA).

Case Description: A 27-year-old-male, quadriplegic, diagnosed with Down syndrome, Klinefelter's syndrome and seizure disorder, presented to the Special Needs Clinic for dental review. A combination of medical and patient factors, alongside the need for comprehensive dental care, indicated this patient would be best cared for under GA.

Discussion: A patient with multiple co-morbidities and special social and personal needs can present unique challenges to the dental provider. Rationale for treatment, limitations on care options under GA, dietary and homecare considerations, practicality of follow-up, considerations over acute presentations and especially

doctor-patient communication and issues surrounding health literacy of caregivers, create a complex scenario requiring careful management to ensure the best outcomes for the patient.

Full mouth rehabilitation – What was I thinking?

Siddharth Kothari, (DClinDent candidate in Prosthodontics)
Supervisor: Dr. Sergio Salis

Introduction: The specialist approach to the complex case is to consider the desired result with the help of a diagnostic wax-up before beginning any clinical work, and to identify the evidence-based steps that will predictably achieve patient-centred long-term outcomes.

Case Description: A 69-year-old-male patient who had sustained severe head injuries and an amputated left arm in a motor cycle accident was referred for treatment. Clinical examination revealed significant anterior tooth surface loss with multifactorial aetiology (bruxism and erosion), localised chronic gingivitis, periodontitis, and multiple missing teeth. All of this coupled with unsatisfactory aesthetics, was affecting his sense of well-being and quality of life.

Following a stabilisation phase, composite resin restorations were placed to increase the occlusal vertical dimension, and the maxillary teeth were restored with monolithic zirconia crowns (12,11,21), milled PFM crowns (14,25,26), and a Co-Cr partial denture to restore the edentulous spaces. In the mandible, the anterior teeth were restored with composite resin build-ups and the posterior edentulous spaces are to be restored with an removable implant Co-Cr partial denture (implants in 45,55 region).

Discussion: The aesthetic and functional rehabilitation of the severely worn dentition and partial edentulism is a technically demanding task faced by the prosthodontist. The presence of missing and worn teeth has multiple implications in relation to loss of anterior guidance, reduction of vertical dimension and derangement of the occlusal plane, and hence, restoring the vertical dimension without compromising occlusal, functional and aesthetic requirements is essential for the long-term success of treatment.

News and Comment

News from the School

Recent appointments in the Faculty

Professor Mike Morgan Dean, Faculty of Dentistry commencing early 2020

Professor Richard Cannon Deputy Dean for the Faculty

Professor Darryl Tong Head of the Department of Oral Diagnostic and Surgical Sciences

Dr Peter Cathro Acting Head of the Department of Oral Rehabilitation

Dr Sunyoung Ma Deputy Associate Dean (Postgraduate Studies)

Dr Angela Clarke Lecturer (Forensics)