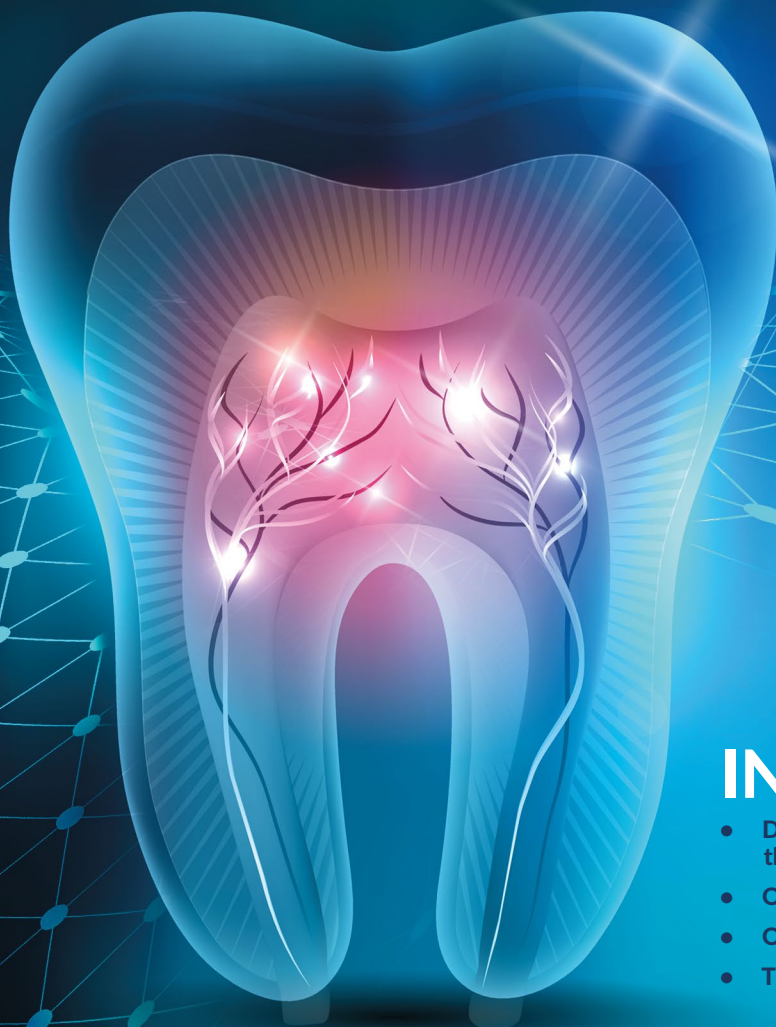


médico

A QUARTERLY PUBLICATION OF GP LIAISON CENTRE, NATIONAL UNIVERSITY HOSPITAL

NATIONAL UNIVERSITY CENTRE FOR ORAL HEALTH, SINGAPORE



IN THIS ISSUE

- Dental DART: A Foldable Tent for Safe Dental Care During the Pandemic
- Oral Cancer: What You Need to Know
- Orthognathic Capabilities in NUOHS
- The Multi-Disciplinary Clinic for Paediatric Dentistry

In This Issue

IN FOCUS

03 National University Centre for Oral Health, Singapore

INSIGHTS

04 Dental DART: A Foldable Tent for Safe Dental Care during the Pandemic

07 Orthognathic capabilities in National University Centre for Oral Health, Singapore

TIPS

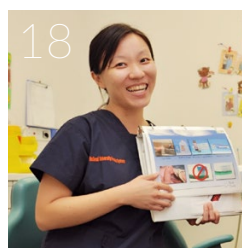
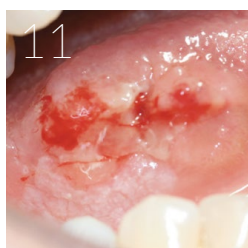
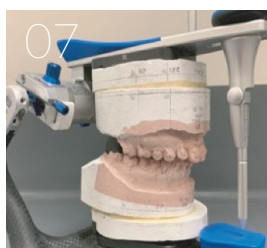
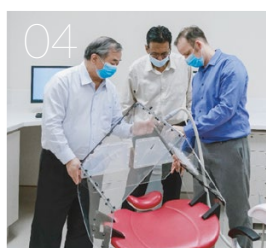
11 Oral Cancer: What You Need to Know

IN ADDITION

16 The Multi-Disciplinary Clinic for Paediatric Dentistry

SPECIALIST IN FOCUS

18 Dr Sim Chien Joo, Consultant



We would love to hear your feedback on **médico**:

Please direct all feedback to:
GP Liaison Centre,
National University Hospital
Tel: +65 6772 2000
Email: gp@nuhs.edu.sg

Co. Reg. No. 198500843R

Members of the National University Health System

- National University Hospital
- Ng Teng Fong General Hospital
- Alexandra Hospital
- Jurong Community Hospital
- National University Polyclinics
- National University Cancer Institute, Singapore
- National University Heart Centre, Singapore
- National University Centre for Oral Health, Singapore
- NUS Yong Loo Lin School of Medicine
- NUS Alice Lee Centre for Nursing Studies
- NUS Faculty of Dentistry
- NUS Saw Swee Hock School of Public Health

A Publication of NUH GP Liaison Centre (GPLC)

Advisor
A/Prof Goh Lee Gan

Editorial Committee
Stella Lee
Ang Hoe Khoon

The information in this publication is meant purely for educational purposes and may not be used as a substitute for medical diagnosis or treatment. You should seek the advice of your doctor or a qualified healthcare provider before starting any treatment or if you have any questions related to your health, physical fitness or medical condition(s). Information is correct at time of printing (July 2021) and subject to revision without prior notice.

Copyright (2021). National University Hospital, Singapore

All rights reserved. No part of this publication may be reproduced without permission in writing from National University Hospital.

National University Centre for Oral Health, Singapore

It has been more than a year since the National University Centre for Oral Health, Singapore (NUCOHS) officially opened on 5 July 2019. Since then, the Centre has seen an increase in referrals from local practices and polyclinics for its wide range of multi-disciplinary specialist oral health services and patient-centred facilities.

TREATMENTS INCLUDE:

- Acrylic partial / full dentures
- Amalgam restoration
- Crooked teeth
- Crowns and bridges
- Dental pulp infection
- Dental trauma in children
- Early childhood caries
- Primary and secondary surgery for cleft lip and palate and other congenital facial deformities
- Gum infection/bleeding/recession
- Gummy smile
- Implant treatment (Surgical and Prosthodontics)
- Orthodontics (Braces)
- Orofacial trauma and infection
- Dental implant surgery
- Temporomandibular joint disorder
- Sleep bruxism and breathing disorder
- Wisdom tooth removal
- Reconstructive surgery, including use of implants to retain facial/dental prostheses

The Centre has the capabilities to provide oral health care for patients of all ages, including those with special needs and patients with multiple co-existing medical conditions. One such specialised equipment used at the Centre is the Wheelchair Tilt - a dental chair that allows wheelchair-bound patients to be easily examined from the comfort of their own wheelchair without having to be transferred. With a maximum tilt of 70 degrees and maximum weight of 370kg, the Wheelchair Tilt has been an invaluable tool for clinicians.

As one of the three national centres, NUCOHS, along with the National University Cancer Institute, Singapore (NCIS), and the National University Heart Centre, Singapore (NUHCS), is an integral part of the National University Health System (NUHS) in meeting the evolving healthcare needs of the population in Singapore. The Centre has also been working closely with the rest of the NUHS medical departments at the National University Hospital (NUH), Ng Teng Fong General Hospital (NTFGH), and National University Polyclinics (NUP) to enhance the patient care pathway, including patient referrals and the management of patients with medical conditions like diabetes, cancer and dementia. In addition, NUCOHS has integrated an oral health system within NUHS, where oral health specialists and professionals from the cluster work closely in multi-disciplinary teams to provide the best care possible for patients.

Dental DART: A Foldable Tent for Safe Dental Care during the Pandemic

The Dental Droplet and Aerosol Reducing Tent (Dental DART).

COVID-19 has challenged health professions and systems around the world. Even as dental associations and government bodies implement measures to stop providing treatment to dental patients with the exception of those who require emergency treatment, the risk of transmission remains.

With more than 100 million cases, and over two million deaths globally, the Center for Disease Control and Prevention (CDC), American Dental Association (ADA), the National Health Service (NHS), as well as other health regulatory bodies have provided advice to dentists to regulate dental services and guidance to protect themselves against possible transmission.¹

The US Bureau of Labour Statistics has categorised dentists within the class of workers with the highest risk of COVID-19 contamination due to high proximities to individuals and exposure to disease. Many routine dental treatments are performed close to the mouths and noses of patients, and the procedures are often related to the generation of aerosols as well as handling of oral fluids and blood. Furthermore, other infectious agents responsible for pneumonitis, influenza, hepatitis, skin and eye infections, may also be transmitted during routine dental procedures.

SOLUTION

With the aim of preventing transmission of infection between patients and dental healthcare personnel or vice versa, researchers at the NUS Faculty of Dentistry and National University of Singapore (NUS) have collaborated to invent a portable tent-like shield to prevent the spread of saliva and aerosols generated during dental procedures.

Named the **Dental Droplet and Aerosol Reducing Tent (Dental DART)**, the device is placed around the patient's head to serve as a barrier to protect dentists, nurses and patients from direct and indirect exposure to infectious diseases such as COVID-19. In addition, the Dental DART limits the spread of aerosols onto environmental surfaces, decreasing pathogen availability and potential cross-contamination.

This device is an adaptation of DART, an earlier NUS innovation that protects healthcare workers when they perform endotracheal intubation and extubation.

“

The Dental DART is a foldable device that can be used to protect dentists and their patients from infectious agents present in the aerosols that are generated during dental procedures. The equipment contains the aerosol and removes it safely via a pump. Thus, there is less environmental contamination during the treatment when clinicians remove their arms, hands, and instruments from the tent.

Associate Professor Vinicius Rosa,
NUS Faculty of Dentistry
Co-inventor of the device

”



The Dental DART was developed by NUS researchers (from left) Professor Freddy Boey, Mr Sudarshan Anantharaman, Associate Professor Vinicius Rosa and their team.

HOW IT WORKS

The Dental DART is a clear adjustable tented shield that can be fitted to dental chairs of different sizes. It comes with three access ports for dentists and nurses to reach in and safely perform dental procedures.

The tent is attached to vacuum pumps that are available on dental chairs. This system safely removes and re-directs contaminated air from within the tent into the scavenging system, decreasing the amount of contaminated materials in contact with the clinician's hands, arms, and instruments. It also provides a safer environment in the dental clinic setting, decreasing the anxiety and psychological distress that the current pandemic is causing.

The Dental DART has been tested in a clinical setting by measuring the bacterial content on the surface of the dental chair light, and the face shield worn by the dentist. The tests were conducted before and after scaling procedures were performed.



The Dental DART in action.

The results showed that there was no increase in the number of viable bacteria on these surfaces after the treatment with the use of the Dental DART. On the other hand, without the use of the tent, there was a significant increase in contamination by 14 times.



The Dental DART has been featured prominently in local media, with interest from international medical journals

Photo credits: National University of Singapore

DEPLOYMENT IN DENTAL CLINICS IN SINGAPORE AND GLOBALLY

The NUS researchers, Associate Professor Vinicius Rosa, Professor Freddy Boey, Mr Sudarshan Anantharaman and Professor Monty Duggal (previously from the NUS Faculty of Dentistry and currently at the University of Qatar), have filed a patent for the design of the Dental DART and are looking to collaborate with other healthcare and industry partners to make this device available to dentists in Singapore and around the world.

References

1. Odeh, N. D., Babkair, H., Abu-Hammad, S., Borzangy, S., Abu-Hammad, A., & Abu-Hammad, O. (2020). COVID-19: Present and Future Challenges for Dental Practice. *International journal of environmental research and public health*, 17(9), 3151. <https://doi.org/10.3390/ijerph17093151>



Orthognathic Capabilities in National University Centre for Oral Health, Singapore

Orthognathic surgery is a corrective procedure that is performed to treat an extensive range of conditions and diseases. These include craniofacial deformities, dentofacial deformities, temporomandibular joint disorders, obstructive sleep apnea and post-traumatic deformities. The exact nature of the surgery varies from patient to patient. Depending on the condition, either the mandible, maxilla, zygoma or other facial bones may be involved in the surgery. The operated bone can then be repositioned into a more ideal position and fixated using titanium plates and screws. By correcting the facial bones, the surrounding soft tissue will also be brought upon to a more favorable position. The benefit of orthognathic surgery is multi-faceted. These can be improvements in mastication, speech, breathing, pain, psychological health and facial aesthetics.

Approximately 50 to 60 patients undergo orthognathic surgery in the National University Centre for Oral Health, Singapore (NUCOHS) annually. The most common reasons for surgery are dentofacial deformities, where either the maxilla or mandible is too protrusive or retrusive. This results in either malocclusion, lisping, difficulty chewing or a combination of these issues. An advantage of having their treatment in NUCOHS is that it allows easy access and communication between the Oral and Maxillofacial Surgeons (OMS) and the orthodontists. Orthognathic surgery patients often require braces as part of their treatment, as fine-tuning of the teeth positions may be needed before or after their procedure.

Just like any surgery, orthognathic surgery comes with risks. This includes nerve injuries, excessive bleeding, unfavourable fractures or even iatrogenic dental injuries. Complications that may arise from orthognathic surgery include an inadequate repositioning or correction of the operated facial bones. As it is the goal of any clinician to minimise undesirable outcomes, proper planning is crucial for any surgery. Orthognathic surgeries were traditionally planned using stone models mounted on articulators. The mounted models were meant to simulate the position of the patient's jawbones (Figure 1). Using other visual aids, the models allow the surgeon to assess the case in the patient's absence. Other than assessment, the surgeon can also simulate the procedure on the models and evaluate the surgical plan. Using the same stone models, a surgical wafer or splint can be fabricated to translate the surgical plan to the surgery itself. The plans can also be tested using computer-assisted simulation software (Figure 1). However, these traditional methods of planning orthognathic surgery rely significantly on the surgeon's experience and do not allow for a holistic 3-dimensional evaluation. Stone models are also prone to damage from wear, abrasion and fracture, which may affect the accuracy of the surgical splint.

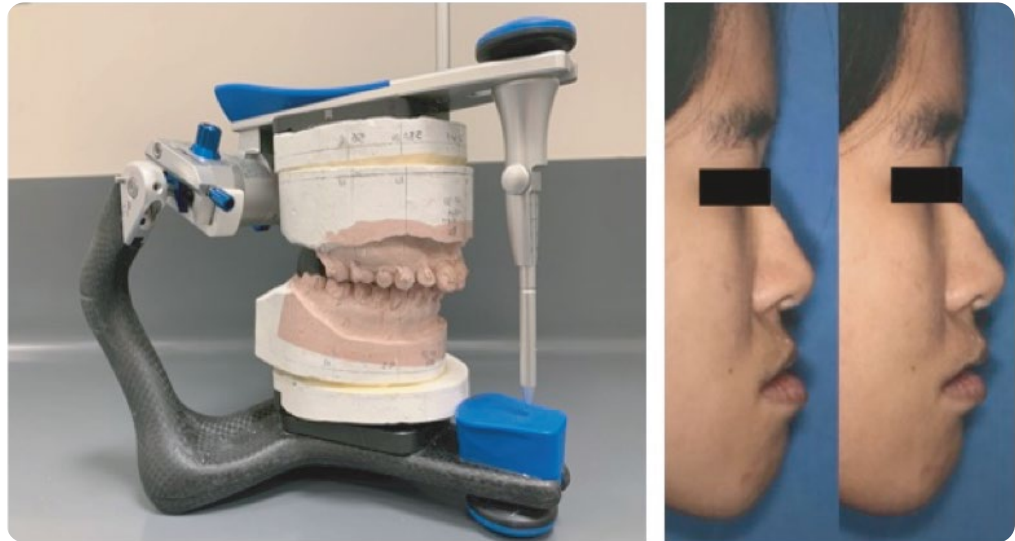


Figure 1:

Traditional stone model planning. The visual outcome was evaluated using 2D simulation software. These two planning modalities were not linked directly; therefore the simulation provided by the software may not truly represent the stone model planning.

With the advent of new technology, NUCOHS has developed a Digital Unit, which has enabled the progression of traditional model planning to 3-Dimensional (3D) Virtual Surgical Planning. This was only possible with the advent of Cone-Beam Computed Tomography (CBCT), Stereophotogrammetry, Model or Intra-oral digital scanner and also, proprietary virtual planning software. Instead of having to rely on stone models and 2D visual aids, surgeons and their technicians can now digitally plan their surgery using 3D images of the patient's soft and hard tissue (facial skin and bone). The 3D images are reconstructed by integrating data from the CBCT, stereophotogrammetry, and digital scanner. The introduction of 3D planning has brought about many improvements for both surgeons and patients.

3D Virtual Surgical Planning allows the operation to be performed virtually and the results of the surgery can be simulated immediately. As the virtual models can be infinitely reset, simulated surgical cuts can be undone as many times as required, allowing the surgeon to have the ability to repeat the surgical cuts until the desirable outcome is achieved. This is especially important for patients who require surgical cuts that deviate from the norm (Figure 2). The ability to simulate results immediately allows the surgeon to have greater confidence that the eventual facial profile would be satisfactory (Figure 3). Another very important feature of 3D planning is that vital anatomical structures such as nerves can be visualised. The risk of damaging adjacent vital structures can be assessed and eliminated by adjusting the planned surgical cuts (Figure 4).

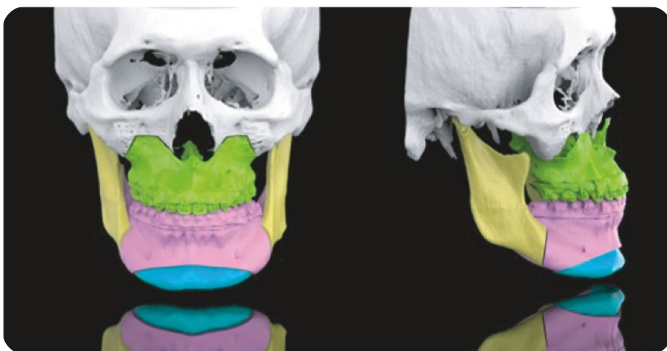


Figure 2:

Quadrangular le Fort 1 Maxillary Osteotomy, Mandibular Bilateral Sagittal Split Osteotomy and sliding genioplasty. The picture on the right shows how the unconventional maxillary cut can bring about greater enhancement of the mid-face region.

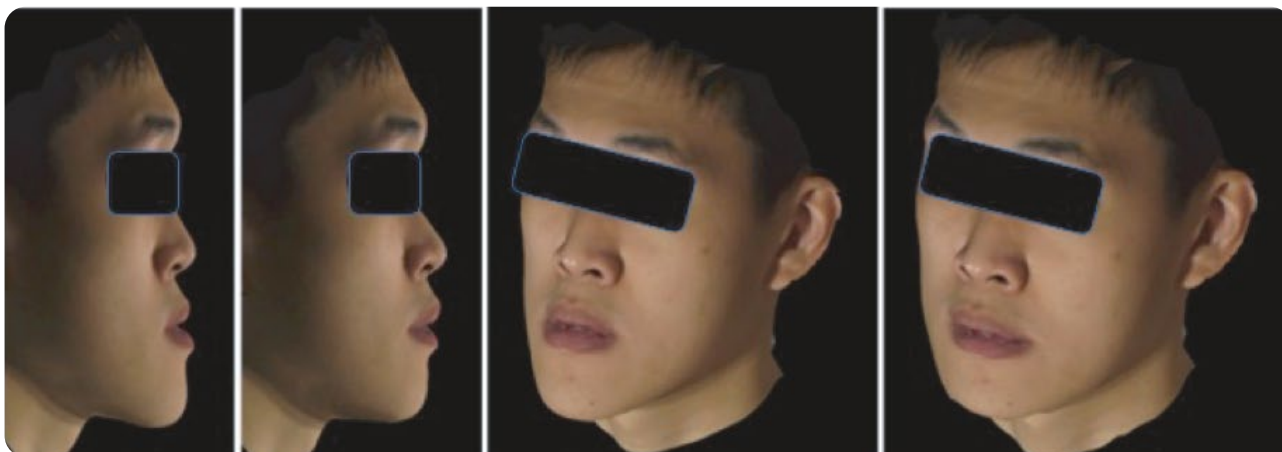


Figure 3:
Simulation of the virtual surgical plan showing the concave facial profile has been corrected.

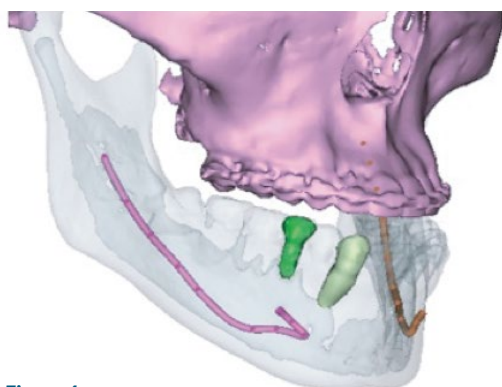


Figure 4:
The bilateral inferior dental nerves were marked out (purple tubular structure running across the lower jaw). The ability to visualise the nerve reduces the likelihood of iatrogenic nerve injury.

Similar to the traditional method, the surgical plan can be translated into the actual surgery with the use of surgical splints. Conventionally, the occlusal splints were fabricated manually using acrylic resin. The quality of “handmade” splints is subjected to inconsistencies and is less amenable to customisation. With the use of new technologies such as Computer Aided Design - Computer Aided Manufacturing (CAD-CAM), the surgical splints can be designed and printed digitally (Figures 5 & 6). The thickness and contour is better controlled and personalised to suit each patient’s needs. Multiple duplicates of the surgical splints can also be fabricated with greater consistency between each splint.

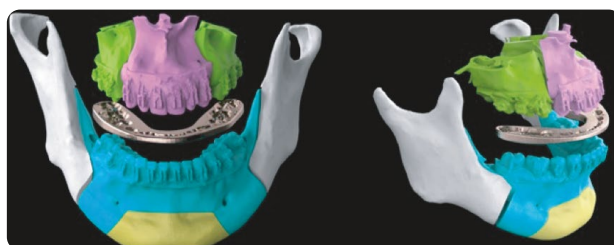


Figure 5:
The planned movements of the operated jawbones can be translated to the surgery using surgical splints (silver colored material in between the teeth).

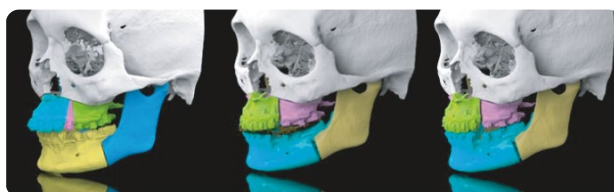


Figure 6:
The left-most picture shows the unoperated upper and lower jawbones with the simulated surgical cuts. The middle picture shows how the surgical splint can help to reposition the operated bone. The right-most picture shows the final position of the jawbones without the surgical splint.

**Credits to Mr. Roland Lim See Keng, Medical Technologist, for the figures provided.*

The latest addition to NUCOHS' orthognathic surgery is the use of digitally designed and printed surgical cutting guides. While the surgical splints are very useful in the repositioning of the operated jawbones, they do not confer assistance in reproducing the planned surgical cuts. In specific conditions, the use of surgical cutting guides may help in reducing iatrogenic injuries to adjacent vital structures. The guides are designed such that a safe surgical cut can be performed with greater ease. This is because the guides can control the direction and angle of the cuts (Figures 7 & 8). This has helped to improve patient safety and also reduced surgical stress and duration of the operation.

The success of the NUCOHS Digital Unit was built upon the combined efforts of technicians and surgeons. By incorporating digital planning, designing and printing into our surgery, the possibilities are limitless. More innovations and improvements can be expected as we continue to embrace new technologies at our Centre. With patient safety and outcomes at heart, NUCOHS strives to continue to push the boundaries of orthognathic surgery.

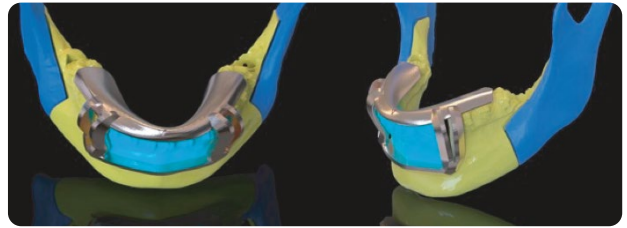


Figure 7:

The surgical cutting guide (gold-coloured material) provides a guide channel that the surgeon can rely on to perform safe surgical cuts. This is particularly crucial for specific surgery such as anterior mandibular surgery as it carries a high risk of damage to the teeth roots and mental nerve. Injury of the latter can result in permanent numbness of the lips.

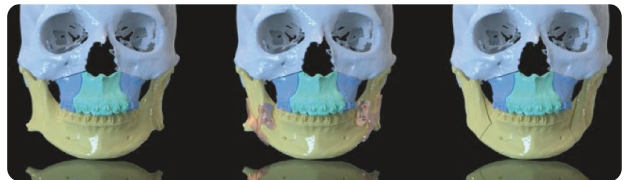


Figure 8:

The picture on the left shows the pronounced angle of the lower jaw. This resulted in the patient having a broad facial appearance. Surgical cutting guides were used for this patient as they eliminated the subjectiveness from the surgical cuts and ensured that an equal amount of bone was removed from each side. This helped to prevent an asymmetrical appearance after the surgery.

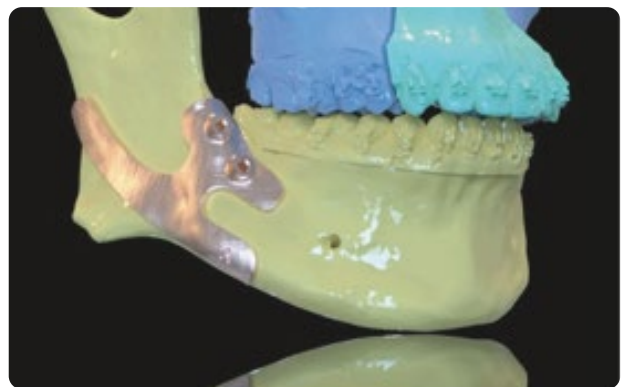


Figure 9:

Close-up picture of the surgical cutting guide

Oral Cancer: What You Need to Know

Oral cancer is one of the most common malignancies causing serious global health problems. According to the GLOBOCAN 2018,¹ the incidence of oral cancer including lip and oral cavity was estimated at 354,864 cases; it also estimated a total of 177,384 deaths associated with oral cancer. This cancer is ranked the 6th most frequent malignancies in the world, and the incidence of oral cancer is high in countries with a culture of chewing quid. India, Sri Lanka, Pakistan and Taiwan have the highest incidence of mouth cancer among the Asian population. In these countries, oral cancer is the most common cancer in men compared to women.

There have been mixed trends in the incidence of oral cancer. Increased alcohol consumption is associated with increased incidence of oral cancer in the English population in the last two decades. In France, the incidence in males fell from 40.2 per 100,000 to 32.2 over 20 years; however, the incidence among females rose from 3.3 per 100,000 in 1980 to 4.7 in 2000. In the Asian population, the incidence is increasing due to a lack of knowledge and awareness.

The global survival rate of cancer of the oral cavity, tongue and oropharynx excluding lip is around 50%. The prognosis decreases with advanced disease. The stage of cancer at the initial presentation affects the overall survival rate.² Oral cancer, if detected early, can often be successfully treated. Unfortunately, almost 70% of patients are diagnosed at a late stage with poor prognosis, despite suffering debilitating surgeries. These cancers often lead to financial burdens not just on patients, but also on the healthcare system.

RISK FACTORS

Smoking, excessive consumption of alcohol and betel quid usage are the main factors of oral cancer. Heavy smokers and drinkers are 38 times at higher risk of getting oral cancer as compared to non-smokers and drinkers.

Betel nut (Paan) and tobacco chewing have been also been associated with a high incidence of oral cancer. There is increasing evidence that links Human Papillomavirus (HPV) to oral cancer. In developed countries like the USA, there is an increasing trend of tongue cancer in young women with no exposure to alcohol and tobacco. Various studies conclude that this trend is due to oral sexual behaviours associated with the development of oral HPV infection.

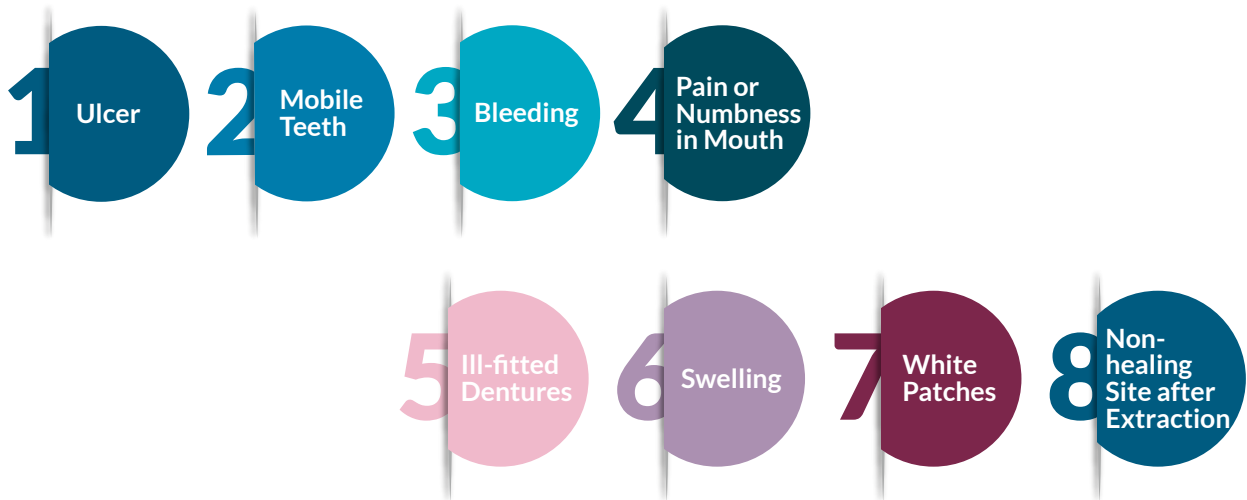
In addition, overexposure to ultraviolet light has been associated with a higher incidence of lip cancers.

Risk Factors:



CLINICAL PRESENTATION

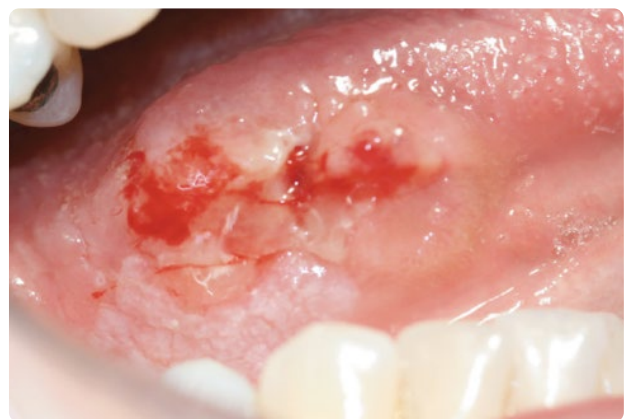
Mouth cancer can have different clinical presentations. The most common presentation is swelling in the oral cavity followed by a presence of ulcers for long periods of time and pain after dental treatment. Any lesion that does not resolve in two to three weeks should raise suspicions and further investigation should be performed. The most common presentations are:



Lesions of right mandibular alveolus and right side of the tongue. Source: Blythe et al 2015.

DIAGNOSIS

Clinical examinations are conducted, including that of the head and neck, as well as the lesion's exact location, measurement, palpation and cervical lymph nodes. Clinical photographs of the lesion in the early stages should be taken for reference later. The diagnosis of oral cancer is confirmed by a biopsy. There are two main types of incisional and excisional biopsies. In an incisional biopsy, a small tissue sample is taken out from the suspect lesion together with normal tissue, whereas in an excisional biopsy, the whole lesion is removed together with margins of normal tissues.



Squamous cell carcinoma of lateral tongue. Source: Jerjes W 2010

STAGING OF CARCINOMA OF LIP AND ORAL CAVITY

DEFINITIONS OF AJCC TNM

DEFINITION OF PRIMARY TUMOR

T CATEGORY	T CRITERIA
TX	Primary tumour cannot be assessed
Tis	Carcinoma in situ
T1	Tumour ≤ 2 cm, ≤ 5 mm depth of invasion (DOI) DOI is depth of invasion and not tumour thickness
T2	Tumour ≤ 2 cm, DOI > 5 mm and ≤ 10 mm or tumour > 2 cm but ≤ 4 cm, and ≤ 10 mm DOI
T3	Tumour > 4 cm or any tumour > 10 mm DOI
T4	Moderately advanced or very advanced local disease
T4a	Moderately advanced local disease Tumour invades adjacent structures only (e.g., through cortical bone of the mandible or maxilla, or involves the maxillary sinus or skin of the face) Note: Superficial erosion of bone/tooth socket (alone) by a gingival primary is not sufficient to classify a tumour as T4
T4b	Very advanced local disease Tumour invades masticator space, pterygoid plates, or skull base and/or encases the internal carotid artery

American Joint Committee on Cancer [AJCC], Chicago, Illinois. The original source for this material is the AJCC Cancer Staging Manual, 8th ed.

IMAGING

Radiographic imaging is important to assess the extent of the tumour as well as the presence and location of local and distant metastases including lymph node involvement. Selection of appropriate imaging modality is important in the assessment; computed tomography (CT) and magnetic resonance imaging (MRI) are the main imaging modalities used for assessment of oral tumours. CT scans are routinely performed to assess the bony destruction as well the spread of the tumour. MRI is an excellent tool to evaluate involvement of the soft tissue and extent of the tumour as well as perineural involvement.

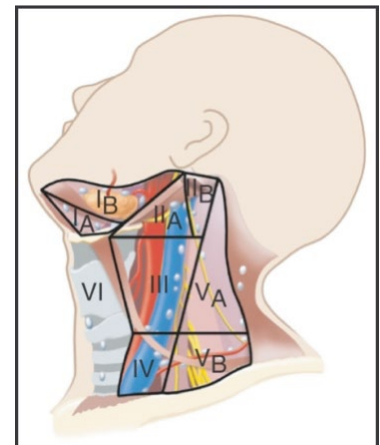
Ultrasounds and PET scans are also performed together with other imaging modalities specially for the assessment of metastatic disease.

MANAGEMENT

The selection of the initial definitive treatment is dependent on histologic diagnosis and the stage of the primary tumour.

Surgery has been the primary modality of therapy for head and neck tumours for more than a century. It is divided into two parts: 1) resection and 2) reconstruction. Surgical resection is the removal of the primary tumour and cervical nodes, if required. It also helps to get proper staging of the lesion, extent of the margin, and histopathological characteristics. The process of removing cervical lymph nodes is called neck dissection and there are various types described depending on the levels of cervical nodes involved and removed.

Classification of neck dissection:



The American Academy of Otolaryngology-Head and Neck Surgery modification of the system of assigning levels for cervical lymph nodes. (Courtesy of Memorial Sloan Kettering Cancer Center)

Early stage tumours are managed by a single modality of treatment like surgery or radiotherapy, whereas advanced stage tumours require a multi-disciplinary approach in combination with surgery and adjuvant radiotherapy or chemoradiotherapy.

Reconstruction after surgical resection to restore form and function is as important as removing the tumours. Early stage tumours and smaller defects can be reconstructed with primary closure, whereas larger and more complex defects require microvascular free tissue flaps.

- **Surgical treatment**
- **Radiation therapy**
- **Chemotherapy**
- **Reconstructive surgery**

Since the introduction of ionising radiation in the management of cancer, it has become an important modality either independently or in combination with chemotherapy as the primary treatment, or as an adjuvant to surgery. Chemotherapy was introduced in cancer treatment as a palliative treatment, but it is now used as a partly curative therapy in combination with radiation therapy.

PREVENTION

Oral cancer is one of the few cancers that can be prevented by awareness programmes and education about smoking cessation and reducing alcohol consumption. Early diagnosis and early referral play a critical role in reducing the morbidity and mortality associated with oral cancer. Dentists and dental hygienists can detect early stage lesion/disease and refer patients to specialists for further investigation and management. Any suspicious lesion should be referred to an Oral and Maxillofacial Surgeon.



Dr John Loh

Consultant

Discipline of Oral & Maxillofacial Surgery

National University Centre for Oral Health, Singapore (NUCOHS)

Clinical interests:

Oral and maxillofacial oncology and reconstruction; dental implants; jaw correction surgeries

Research interests:

Oral cancer and reconstructive surgery; microvascular surgery.

References

1. Ferlay J, Soerjomataram I, Ervik M, et al. GLOBOCAN 2012 version 1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11. Lyon, France: International Agency for Research on Cancer; 2013. globocan.iarc.fr. Accessed June 2, 2015
2. Holmes JD, Dierks EJ, Homer LD, Potter BE. Is detection of oral and oropharyngeal squamous cancer by a dental health care provider associated with a lower stage at diagnosis? *J Oral Maxillofac Surg*. 2003 Mar;61(3):285-91. doi: 10.1053/joms.2003.50056. PMID: 12618965.
3. Blythe JN, Brennan PA. Multiple simultaneous primary oral squamous cell carcinomas: a previously unreported presentation. *Br J Oral Maxillofac Surg*. 2015 Sep;53(7):652-4. doi: 10.1016/j.bjoms.2015.04.003. Epub 2015 May 21. PMID: 26003797.
4. Jerjes W, Upile T, Petrie A, Riskalla A, Hamdoon Z, Vourvachis M, Karavidas K, Jay A, Sandison A, Thomas GJ, Kalavrezos N, Hopper C. Clinicopathological parameters, recurrence, locoregional and distant metastasis in 115 T1-T2 oral squamous cell carcinoma patients. *Head Neck Oncol*. 2010 Apr 20;2:9. doi: 10.1186/1758-3284-2-9. PMID: 20406474; PMCID: PMC2882907.

The Multi-Disciplinary Clinic for Paediatric Dentistry

Managing complex dental cases, such as multiple missing or malformed teeth that require input from multiple dental disciplines can be difficult to coordinate. To improve patient experience, the discipline of Paediatric Dentistry started a multi-disciplinary clinic to manage these types of cases in 2016.

The primary objectives of this clinic are patient-centric - to provide a one-stop input and learning with teaching opportunities. Patients are given opportunity to have input from specialists from multiple disciplines present at the same time. This allows them to receive a treatment plan aimed at achieving the best short- and long-term outcomes. At the same time, paediatric dental residents learn from the comprehensive management of patients who require complex dental treatment and are able to hone their skills in inter-disciplinary communication.

In this clinic, paediatric dentistry residents are the primary physicians. They will follow up and coordinate treatment for patients requiring complex dental care. Senior clinicians from the disciplines of orthodontics, prosthodontics, oral maxillofacial surgery and paediatric dentistry are present during scheduled sessions to provide input and formulate treatment plans for each patient. These cases are subsequently presented at a multi-disciplinary seminar in the presence of specialists and residents from the different disciplines, where the treatment plans analysed and debated to arrive at a consensus in providing the patient with the most comprehensive options. This finalised plan is subsequently presented to the patient.

Types of common cases managed include:

- ***Amelogenesis imperfecta - where the enamel is malformed due to genetic causes (Figure 1).***
- ***Dentinogenesis imperfecta, hypodontia - where multiple adult teeth are missing (Figure 2).***
- ***Cleidocranial dysplasia.***

Additionally, ankylosed primary teeth and young permanent teeth affected by trauma (Figure 3) that require long-term and multi-disciplinary follow-up are also seen at this clinic.



Figure 1:
Case of Amelogenesis imperfecta. Note the extensive pitting of the enamel requiring extensive restoration. (Courtesy of Dr Judith Quek)

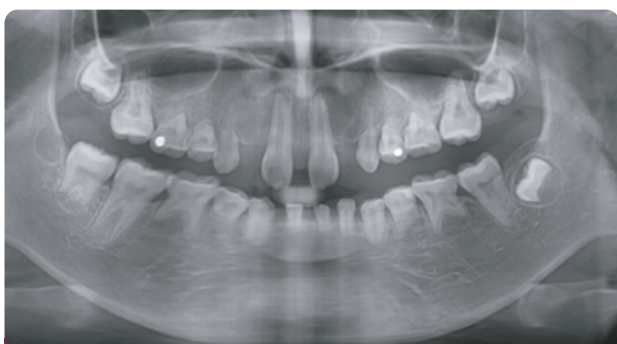


Figure 2:
Case of Hypodontia. Note the multiple missing adult teeth in the X-ray. (Courtesy of Dr Tan Bing Liang)



Figure 3:
Case of dental trauma. The upper right central incisor was re-implanted after avulsion and is non-vital. It was subsequently decoronated to preserve bone height as shown in the X-ray. (Courtesy of Dr Naomi Yang)

Since the start of the clinic, it has managed over 120 patients with complex dental conditions and is currently following up with a large portion of those patients. Many of these cases require long-term follow-up and are seen yearly at the clinic to monitor growth until they are suitable for further treatment options such as dental implants.

The multi-disciplinary clinic is open to referrals from any discipline and institution, and receive referrals coming in from medical colleagues, the school dental service, as well as clinicians in private practice.

For more information, please contact:

Coordinator: Dr Hu Shijia

Tel: 6772 4921

Email: Shijia_hu@nuhs.edu.sg



Dr Hu Shijia

Consultant

Discipline of Orthodontics & Paediatric Dentistry

National University Centre for Oral Health, Singapore (NUCOHS)

Clinical Interests: Paediatric dentistry

Research Interests: Oral microbiome; early dental preventive care



Dr Sim Chien Joo
Consultant

Department of Orthodontics & Paediatric Dentistry
National University Centre for Oral Health, Singapore

Dr Sim & her patient

1 WHAT ARE SOME OF THE CHALLENGES THAT YOU FACE IN PATIENT CARE?

While working in a hospital, I often receive medically compromised cases needing dental care. Some cases can be complicated and require collaboration with different teams in the hospital to ensure the treatment planned is in the best interest of the patient.

In general patient care, paediatric patients have less predictable behaviours, which is one challenge we face. For example, some patients can get upset when they come for appointments just because they had a bad day at school or missed a nap. I try my best to lighten the mood so that their experience with the dentist is more pleasant and bearable.

There are times when the patients' parents have expectations that are hard to agree with. For example, the parents might want to restore and keep their child's tooth that has poor prognosis, but extraction is the recommended treatment. I would then explain the recommendation in detail so that the parents are more assured. As a clinical lead in paediatric dentistry, I also manage the patients' referral and waiting time to ensure that they do not wait too long for their appointments. Therefore, working well with my colleagues from the call centre, and dental assistants is important in ensuring that the clinic flow is not interrupted.

2 IS THERE A HIGH ORAL HEALTH AWARENESS AMONG SINGAPOREAN PARENTS?

Oral health awareness among Singaporean parents is not high. The data published by the Health Promotion Board reported that the proportion of children with dental caries at the age of seven had gone up from 47.5% in 2003 to 50.6% in 2013. NUCOHS has been seeing a lot of children younger than five years old with severe early childhood caries. Some of them might even need general anaesthesia for dental treatment as they are too young to cope with the extensive treatment needs.



3 WHY DO YOU THINK PAEDIATRIC DENTAL CARE IS IMPORTANT, AND HOW CAN PRIMARY CARE PHYSICIANS AND GENERAL DENTISTS WORK WITH NUCOHS TO IMPROVE OVERALL PAEDIATRIC ORAL HEALTH IN SINGAPORE?

Paediatric dental care is important because prevention is always better than cure. If awareness is raised among parents to start dental care early for their children, dental caries can be prevented in the young. Preventive dental care is cheaper than restorative dental treatment. Furthermore, dental treatment is not easy for young children to bear with. Exposing children to dental care early can also acclimatise them to the dental environment, hence reducing their fear when they visit a dentist while they are in pain. Primary care physicians and general dentists can serve as ambassadors to increase awareness among parents during their medical or dental visits to start oral care early for their children. In the United States of America, primary care physicians are involved in applying fluoride varnish for children in high-risk populations as part of public health efforts to reduce the rate of dental caries.

4 HOW DO YOU KEEP ON TOP OF THE LATEST DEVELOPMENTS IN YOUR FIELD?

I attend local and international conferences to keep myself updated with the latest developments in paediatric dentistry. As a result of the COVID-19 pandemic, online conferences are now more common, making it more convenient as overseas travel is not needed. My work in educating the undergraduate and postgraduate students also pushes me to ensure that what I share with them is accurate and up to date. To keep abreast of the latest practices and guidelines, I take time out to read the most current journals and attend journal club sessions in the National University of Singapore.

5 DESCRIBE YOUR MOST REWARDING/MEMORABLE EXPERIENCE YOU HAVE HAD WITH A PATIENT OR THAT MADE YOUR DAY.

A four-year-old girl came in with four badly carious upper front teeth. Both she and her mother wanted these teeth to be fixed before her birthday party. As the cavities were quite big, she needed strip crown instead of simple fillings, and this treatment required local anaesthesia. She endured the hour-long session with some crying. At the end of the session, she shared that while it was painful, she bore with it because she wanted her teeth to look pretty again. After she looked in the mirror, she gave me a hug and thanked me for returning her teeth to their original state.

6 HOW DO YOU STRIKE A BALANCE BETWEEN WORK AND MANAGING A YOUNG BABY AT HOME?

It was not easy when I first returned to workforce after having a baby. However, being at work keeps me busy and gives me a little breathing space to be away from her for a while, which helps to reduce the stress from caring for my little one. I enjoy being at work, seeing patients, teaching students and residents, as well as interacting with fellow colleagues. The challenges from work keep me moving forward positively. At the end of a long work day, seeing my baby smiling in my arms is the antidote that melts all the stress away.



Dr Sim & her daughter

GPLC

NUH GP Liaison Centre

At the National University Hospital (NUH), we recognise the pivotal role general practitioners (GPs) and family physicians play in general healthcare provided within the community. As such, we believe that through closer partnerships, we can deliver more personalised, comprehensive, and efficient medical care for our mutual patients.

The General Practitioner Liaison Centre (GPLC) aims to build rapport and facilitate collaboration among GPs, family physicians and our specialists. As a central coordinating point, we provide assistance in areas such as patient referrals, continuing medical education (CME) training, and general enquiries about our hospital's services.

Through building these important platforms of shared care and communication, we hope that our patients will be the greatest beneficiaries.

FOR ASSISTANCE, PLEASE FEEL FREE TO CONTACT US

Tel: +65 6772 2000 / +65 6772 4829
(GP referral appointments and other enquiries)

Fax: +65 6777 8065
Email: gp@nuhs.edu.sg

NUH Continuing Medical Education (CME) Events

At NUH, we strive to advance health by integrating excellent clinical care, education and research. As part of our mission, we are committed to providing regular **CME** events for GPs and family physicians. These events aim to provide the latest and relevant clinical updates practical for your patient care.

Organised jointly by the **GPLC** and the various clinical departments within **NUH**, our specialists will present different topics in their own areas of specialties in these symposiums.

For more information on our **CME** events,
please visit: www.nuh.com.sg/GPLC