

Division of Graduate Dental Studies



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ORAL &  
MAXILLOFACIAL SURGERY  
*Residency Training Programme  
leading to the degree of  
Master of Dental Surgery (MDS)*

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# **1. TEACHING STAFF**

## **ORAL & MAXILLOFACIAL SURGERY RESIDENCY TRAINING PROGRAMME**

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## **2. INTRODUCTION**

The Masters of Dental Surgery - Oral & Maxillofacial Surgery Residency Programme of the National University of Singapore (NUS) is a 3-year programme, incorporating an applied basic science component to be taken in the first year. Students with a Primary MDS or its equivalent are exempted from the Basic Science course and Examination.

### **OBJECTIVES**

The residency programme will enable the resident to:

- 1 acquire the widest theoretical knowledge to be competent in the foundation for the practice of Oral & Maxillofacial Surgery;
- 2 acquire the foundation and practical experience in Oral and Maxillofacial Surgery to be competent to enter into higher specialty training.
- 3 effectively interface with other specialties and disciplines in patients requiring interdisciplinary management, especially in head and neck conditions, orthognathic surgery, cleft lip and palate management;
- 4 acquire the experience to carry out research projects, to critically evaluate scientific publications and to communicate clinical and research papers in journals and conferences.

### **3. SCOPE OF TRAINING**

This is covered in a three-year training programme in institutions accredited by the National University of Singapore, designed to give knowledge and experience in clinical diagnosis, oral and maxillofacial surgical procedures as well as general medical and surgical exposure related to the discipline. The resident must work under supervisors appointed by the Director/ Co-Director of the Programme.

#### **A. VENUES FOR TRAINING**

During the three-year training programme, candidates will be trained at the following institutions:

- 1 Faculty of Dentistry, National University of Singapore (NUS)
- 2 National Dental Centre, Singapore
- 3 National University Hospital
- 4 Singapore General Hospital
- 5 Other Hospitals accredited by the NUS

#### **B. BASIC MEDICAL SCIENCE COURSE**

The Basic Medical Science Course is conducted in the first year of the Residency programme. This course will cover the areas of applied basic medical sciences including applied anatomy of the head and neck, detailed knowledge of the oral and dental structures, applied physiology, biochemistry, cell and molecular biology as well as an understanding of pathology (including oral pathology), immunology and microbiology.

#### **C. CLINICAL REQUIREMENT / TRAINING**

The resident is expected to keep detailed record in a logbook of cases treated or assisted, under local or general anaesthesia. During the clinical years in Oral and Maxillofacial Surgery postings, residents are rostered for outpatient clinics; operations under local anaesthesia and general anaesthesia; emergency calls and the routines of admitting and preparing patients for surgical procedures.

The residents are rotated to the clinical departments of Oral and Maxillofacial Surgery, General Surgery, Plastic and Reconstructive Surgery and Anaesthesiology and Intensive Care Unit for supervised training and exposure.

Residents also have the opportunity of an optional posting to an overseas Oral and Maxillofacial Surgery Centre for exposure to the international practice of the specialty.

**D. DIDACTIC COURSE**

Regular didactic sessions, research meetings, combined clinics and Journal Clubs are provided and the residents are expected to participate actively.

The topics include the management of dento-alveolar conditions, maxillofacial trauma, facial deformity and orthognathic surgery, oral and jaw pathologies, benign and malignant neoplasms of the mouth and jaws; disorders of salivary glands and temporomandibular joints.

**E. MAXILLOFACIAL TECHNOLOGY**

Residents would participate in the preparation and set-up of model surgery, fabrication of maxillofacial prostheses and appliances including obturators, splints, arch-bars and surgical stents. Residents would familiarise themselves with laboratory procedures for orthognathic surgery, cleft lip and palate surgery, fractures and maxillofacial prosthodontics.

**F. RESEARCH**

The resident would be required to undertake a research project and to present the result for examination in the form of a thesis. They would be encouraged to present and publish the result of the project in refereed journals.

**G. CONFERENCE / PUBLICATION**

It is desirable for the resident to make a presentation in at least one conference and / or publication in a journal.

**H. BASIC MEDICAL SCIENCE COURSE**

The Basic medical Science Course is conducted in the first year.

**I. OTHERS**

As part of their training, opportunity would be available to residents to be involved in the teaching of maxillofacial surgery to the undergraduates. Residents are encouraged to undertake an attachment of up to a period of three months to a recognised overseas OMS unit.

## **4. ASSESSMENT & EXAMINATIONS**

### **REVIEW OF PERFORMANCE & ASSESSMENT**

The resident would be reviewed every six months. Residents who do not make the requisite progress would be informed with advice for improvement. The residency may be terminated if the residents still fail to make progress. Continual assessment takes place over the entire period of the residency programme. After each posting, the supervisors involved will grade their performance.

### **EXAMINATIONS**

#### **ASSESSMENT**

Residents will be assessed annually through:

1. written examination (for Year 1 residents)
2. clinical/oral examination (for Year 2 residents)
3. progress in their clinical performance by their supervisors

A candidate will only be allowed to proceed to the second year subject to favourable performances as assessed by the Committee.

#### **PART I MDS EXAMINATION**

The candidate must pass the Part I MDS examination, which consists of basic medical sciences related to oral & maxillofacial surgery. This examination will be held in January of Year 1. A second examination will be held in April of Year 1. Should the candidate fail at the 2<sup>nd</sup> attempt, he/she will be required to leave the programme.

Candidates who have Part I MDS or its equivalent will be exempted from the above-mentioned examination.

#### **PART II MDS EXAMINATION**

The Part II examination will be conducted in the month of May/June at the end of the 3-year programme. Residents will only be permitted to sit for the examination after having satisfied the requirements and expectations of the supervisors and Director/Co-Director of the Programme.

The examination will comprise of:

- 1 two written examinations (including general surgery)
- 2 two clinical examinations (including general surgery)
- 3 an oral examination

#### **AWARD OF MDS (ORAL & MAXILLOFACIAL SURGERY)**

The Degree of Master of Dental Surgery (Oral & Maxillofacial Surgery) will be awarded to the candidate on:

1. passing of Part I and Part II examinations, and
2. successful defence of thesis

## 5. PROGRAMME OUTLINE

### A. BASIC MEDICAL SCIENCE COMPONENT

This course will cover the areas of applied basic medical sciences including applied anatomy of the head and neck, detailed knowledge of the oral and dental structures, applied physiology, biochemistry, cell and molecular biology as well as an understanding of pathology (including oral pathology), immunology and microbiology.

Greater emphasis will be placed on areas related to oral and maxillofacial surgery. These include the following:

1. Human Embryology
2. Growth & Development
3. Gross anatomy of Head and Neck
4. Function of Orofacial Apparatus
  - a) Speech
  - b) Mastication
  - c) Swallowing
5. Neurophysiology & Neuropathology
  - a) Injury & repair of nerve
  - b) Pain
  - c) Psychiatric aspect of pain
  - d) Neuropathy of related cranial nerves
6. Orofacial Infection
  - a) Viral
  - b) Bacterial
  - c) Fungal
7. Oral Epithelium
  - a) Structure
  - b) Function
  - c) Healing
8. Bone
  - a) Physiology
  - b) Histology
  - c) Injury and Healing
  - d) Remodelling
9. Hemorrhage and Coagulation Pathways
10. Temporomandibular Joint
  - a) Structure and Function
  - b) Physiology

11. Neoplasms – benign and malignant
12. Chromosomal, Genetic and Orofacial Disorders
13. Saliva
  - a) Components
  - b) Secretion
  - c) Function
  - d) Xerostomia
14. Hypersensitivity and Anaphylaxis
15. Endocrine Physiology
16. Cardiovascular Physiology
17. Muscle Function and Facial Development
18. Structure and Function of Dentogingival Junction and Periodontal Ligament

## **B. CLINICAL COMPONENT**

### **1 Admission and discharge of in-patients**

Residents will clerk and work up patients for admission. This will familiarise the residents with patient history taking and examination and ordering of pre-operative investigations. Residents will liaise with the relevant specialties when the patients need multi-disciplinary management.

### **2 Ward round**

Regular ward rounds would be conducted on the Department's inpatients. Hospital and ward routines would be practised. The resident is responsible to the registrar/senior registrar and the consultant.

### **3 A & E and in-patient night duty**

The resident is rostered for A & E stay-in call. He forms the first line of the A & E call roster for both dental and maxillofacial emergencies. During these postings, the residents will learn the management of acute conditions as encountered in the A & E department.

### **4 Out-patient Clinic**

Residents will be assigned outpatient duties and operating sessions under local anaesthesia. The residents will also attend consultant and combined clinics. They will be exposed to the range of patients managed by the consultants.

## 5 **Combined Clinics**

Combined clinics for orthognathic and cleft patients will be jointly held with the orthodontic department. The residents will participate in the diagnosis and planning of the cases.

Other combined clinics with other specialties are held regularly, either weekly or monthly. This includes multi-disciplinary Head and Neck Oncology clinic, and Cleft Lip and Palate clinic

## 6 **OMS Journal Club Meeting**

OMS journal clubs are held monthly, organised by the OMS Departments in National University of Singapore and the National Dental Centre. The resident is expected to participate in this meeting and to make presentations assigned to him.

## 7 **L A Operating Session**

Residents will be allotted at least one session a week for minor surgical procedures.

## 8 **G A Operating Sessions**

The resident attends operating sessions of staff in the department/unit. He will participate in the surgery either as assistant or as a surgeon under supervision from the respective supervisors. The level of participation would depend on the complexity of the case, the level of skill of the resident and the level of expectation of his supervisors.

## 9 **Attachments**

The resident would be rostered to the following units for exposure relevant to his training:

- a. General Surgery
- b. Plastics and Reconstructive Surgery
- c. Intensive Care Unit
- d. Anaesthesia
- e. Accident & Emergency Department
- g. Overseas Oral & Maxillofacial units

The period of each attachment is from one to three months.

## 10 **General**

As a member of the department, the resident is expected, from time to time, to undertake duties and responsibilities that the supervisor(s) or Head may assign him. As a staff, he is governed by the departmental guidelines and is expected to follow them.

## C. **DIDACTIC MODULES**

### 1 **Minor Surgery**

#### a Surgical Exodontia

Exodontia – both intra-alveolar and transalveolar  
Assessment and the surgical removal of erupted, unerupted and ectopic teeth

#### b Endodontic Surgery

An understanding of endodontic concepts and techniques and an appreciation of the role of surgery in the management of acute and chronic periapical disease.

### 2 **Infections**

General and anatomical considerations in the spread of infection with emphasis on the management of pericoronitis, abscess, dry socket, cellulitis (Ludwig Angina), osteomyelitis, hepatitis and HIV. The practice of standard precautions will be emphasised.

### 3 **Cysts of the mouth and jaws**

The pathology and the management of cysts of the soft tissues and the jaws and related structures.

### 4 **Benign tumours**

The management of benign tumours of both soft and hard tissues of the jaws and related structures.

### 5 **Disorders of the salivary glands**

The investigation and treatment of diseases of the minor and major salivary glands.

- i. Obstructive and inflammatory conditions
- ii. Infections
- iii. Tumours

### 6 **Maxillary Sinus**

A thorough understanding of the sinus diseases of odontogenic and non-odontogenic origin including tumours. Management of sinus disorders, in particular oroantral communications related to dental procedures.

### 7 **Maxillo-facial Injuries**

Initial care and assessment of the injured. Primary and secondary management of hard and soft tissues injuries and fractures of the facial skeleton. Methods of reduction and fixation.

**8 Orthognathic surgery and principles of orthodontic treatment**

Embryology and surgical anatomy of the oro-facial region. Normal and abnormal growth and development of the face and jaws.

Investigation, diagnosis and surgical management of dento-facial deformity including the use of grafts.

Understanding of the principles of orthodontic treatment and the joint management of dento-facial deformity with the orthodontists.

**9 Management of cleft lip/palate**

Embryological considerations, principles of management and multi-disciplinary approach. ENT aspects and speech therapy. Primary and secondary repair of cleft lip and palate. Social problems for the patients and their families. Pre-surgical dental orthopaedics, alveolar bone grafting and orthognathic surgery.

**10 Management of malignant growth**

Pathology and principles of management. Treatment modalities including chemotherapy, radiotherapy and surgery. Advances in surgical ablation and reconstruction techniques.

**11 Oral Medicine and Therapeutics**

Oral mucosal lesions and oral manifestations of systemic diseases. Management of patient with special needs.

**12 Control of pain / Sedation**

Neurological basis of pain. Regional blocks. Treatment modalities. Local, relative analgesia and general anaesthesia. Sedation in dentistry. IV/IM techniques.

**13 Dental Radiology / Imaging**

Principles and techniques of plain radiography and special imaging. CT-Scan, MRI, ultrasound and Arthrogram.

**14 Care of Surgical Patients**

Pre-operative assessment and post-operative care in surgical patient. Nutritional needs of surgical patients.

**15 Pre-prosthetic surgery**

Preparation of the soft tissue and bone for retention and stability of the prosthesis.

## 16 **Temporomandibular joint**

Diagnosis and management of diseases and disorders of the temporomandibular joint. A detailed understanding of the aetiology and management of the pain dysfunction syndrome and internal derangement of the TM joint together with their treatment by conservative and surgical techniques.

Techniques of imaging the joint, management of acute, long standing and chronic recurrent dislocation of the temporomandibular joint, the surgical management of ankylosis and condylar hyperplasia and other developmental anomalies.

## 17 **Implant surgery**

Course in Dental Implantology (Core Programme)

This course will include didactic and clinical training as well as a hands-on course on the surgical and prosthodontic techniques covering the following areas:

- a) Scientific basis of dental implants
- b) Overview of dental implantology
- c) Diagnosis and treatment planning
- d) Diagnostic imaging
- e) Surgical procedures
- f) Soft tissue management
- g) Prosthodontic procedures
  - i. Complete edentulous
  - ii. Partial edentulous
- h) Single tooth replacement
- i) Immediate replacement implants – surgical and prosthodontic considerations
- j) Post insertion management
- k) Complications and their management

## 18 **Lasers**

General principles, surgical indications and procedures.

## 19 **Principles of Clinical and Epidemiologic Research (Core Programme)**

The course will present principles of clinical and epidemiologic research and statistical analysis, using practice-based examples. The emphasis will be on understanding and applying concepts and methods rather than on mathematical computation of statistics.

A practical feature is microcomputer applications involving personal hands-on introduction and training in statistical software packages in popular use in clinical and epidemiological research. To optimise learning, these practical sessions are carried out in small groups.

20 **Others**

Medical reports, Workmen's Compensation Act, Protocol writing, critical review.

Dental care for patients with special needs and who are medically compromised e.g. thromboembolic disorders, infective endocarditis and cardiac disorders, hepatic disorders and viral hepatitis, diabetes mellitus and related disorders, post-irradiated patients, immunodeficient patients.

Adjunctive procedures related to orthognathic surgery including rhinoplasty and distraction osteogenesis, maxillofacial technology including occlusal registration, model surgery and rehabilitative appliances.

D. **LABORATORY / TECHNIQUE TRAINING**

The resident is required to take on the laboratory preparation and work-up for orthognathic, cleft and trauma cases. Wiring techniques would be taught and laboratory sessions would be provided.

E. **RESEARCH**

As part of the Programme, residents are required to undertake a research project under supervision. They are required to carry out practical work and to produce an original written document in connection with it. The topic of the project is finalised between the residents, the Director and the project supervisors. Every effort is made to allow the residents to work in an area in which they are interested.

The aim of the research project is to demonstrate that the residents can:

- State a problem clearly
- Identify a problem of significance to the Programme subject area
- Select and use appropriate methods to investigate the findings
- Report the findings and comment on their meaning
- Describe all these stages clearly

During the residency, the residents will review the relevant literature, devise and perform experiments, analyse the results and write the report. It is an invaluable exercise in improving skills such as organisation, critical judgement, literature search, result analysis and report production.

# RECOMMENDED READINGS

To understand Oral and Maxillofacial Surgery, it is essential to become familiar with the basic principles of Medicine and Surgery, Oral Medicine, Pathology and Oral Radiology, and Prosthetics. The residents should keep up to date by reading Oral Surgery Journals, especially (but not exclusively) the following:

## Journals

1. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics
2. Journal of Oral Pathology and Medicine
3. British Journal of Oral and Maxillofacial Surgery
4. Journal of Cranio-Maxillofacial Surgery
5. Journal of Oral and Maxillofacial Surgery
6. International Journal of Oral and Maxillofacial Surgery
7. International Journal of Adult Orthodontics and Orthognathic Surgery
8. Journal of Head and Neck Surgery
9. International Journal of Oral and Maxillofacial Implants
10. Journal of Prosthetic Dentistry
11. Journal of Dental Research

## Books

1. Peterson's Principles of Oral & Maxillofacial Surgery Volume 1 & 2 2<sup>nd</sup> Edition  
Miloró 2004
2. Contemporary Oral and Maxillofacial Surgery 4<sup>th</sup> Edition  
Peterson et al (Mosby)
3. Oral and Maxillofacial Pathology 2nd Edition  
Neville B W, Damm D D, Allen C M, Bouquet J E. W.B.Saunders Co. 2002
4. Maxillo-facial Injuries Volume 1 & 2 2<sup>nd</sup> Edition  
Rowe and Williams Churchill Livingstone 1998
5. A Textbook and Colour Atlas of the Temporomandibular Joint  
Norman JE de B Bramley P (Wolfe)
6. Modern practice in orthognathic and reconstructive surgery Volume I and III  
Bell WH, Saunders 1992
7. Oral Cancer: A synopsis of pathology and management  
Dimitroulis G, Avery BS Wright 1997
8. Medical problems in Dentistry  
Scully, Cawson Wright
9. Oral health care for those with HIV infection and other special needs  
Porter, Scully Science Reviews 1995

10. The mouth in health and disease  
Scully Heinemann
  
11. Basic pharmacology and drug use in dentistry  
Cawson RA, Spector WG, Skelly AM
  
12. Essential surgical practice  
Cuschieri and Giles and Moussa (Wright)
  
13. Introduction of symptoms and signs of surgical disease  
Browse
  
14. Davidsons Principles and Practice of Medicine  
Churchill Livingstone

*N.B. The fact that a textbook or journal is considered essential or supplementary reading for you does not mean that you must purchase it. The librarian will be happy to explain to you the various means by which you can borrow texts books and journal (or articles there from).*