Royal Australasian College of Dental Surgeons
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RACDS

Accredited Training in Oral and Maxillofacial Surgery Curriculum

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CONTENTS

Introduction to the curriculum

The Oral and Maxillofacial Surgery (OMS) curriculum is designed to bring all the competencies and elements of training together to produce a well-trained OMS consultant capable of independent practice.

The curriculum is based on adult learning principles and requires trainees to demonstrate a commitment to lifelong learning. Trainees are expected to take responsibility for their own experiential learning and should learn at the time and pace which is most appropriate for them and their context.

A key part of OMS surgical training involves a trainee learning skills from a consultant in order to undertake surgery with increasing independence and incremental complexity. This structured model of training allows experienced surgeons to model the art, craft and science of surgery, encourages trainees to integrate theoretical and practical knowledge, and develop the necessary skills, attitudes and ethical approaches to practice independently.

The teaching and learning practices in the curriculum encourage cognitive flexibility, critical reflection and independent research and acknowledges that individuals approach and experience learning activities in different ways. Self-directed learning, discovery and problem-solving are encouraged. Over time, there is an expectation that trainees will be able to respond flexibly in situations of complexity and uncertainty.

Broad competencies of the OMS training program

To fulfil the goals of the OMS program, the Board of Studies for OMS and the Royal Australasian College of Dental Surgeons (RACDS, 'the College') have identified several broad competencies, which are based on the CanMEDS[1] competencies. To encompass the full spectrum of the profession two further competencies, Technical Expert and Clinical Decision Maker, have been added.

By the end of the OMS training program, within the following competency domains, trainees are expected to:

Medical and Dental Expert

- Practice medicine within their defined scope of practice and expertise
- Perform a patient-centred clinical assessment and establish a management plan
- Plan and perform procedures and therapies for the purpose of assessment and/or management
- Establish plans for ongoing care and, when appropriate, timely consultation
- Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety

Communicator

- Establish professional therapeutic relationships with patients and their families
- Elicit and synthesise accurate and relevant information, incorporating the perspectives of patients and their families
- Share health care information and plans for patients and their families
- Engage patients and their families in developing plans that reflect the patient's health care needs and goals
- Document and share written and electronic information about the medical encounter to optimise clinical decision-making, patient safety, confidentiality, and privacy

Collaborator

- Work effectively with physicians and other colleagues in the health care professions
- Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts

[1] *Frank JR, Snell L, Sherbino J editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015* https://www.royalcollege.ca/rcsite/canmeds/canmeds-framework-e

- Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care

Leader

- Contribute to the improvement of health care delivery in teams, organisations, and systems
- Engage in the stewardship of health care resources
- Demonstrate leadership in professional practice
- Manage career planning, finances and health human resources in a practice

Health Advocate

- Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment
- Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner

Scholar

- Engage in the continuous enhancement of their professional activities through ongoing learning
- Teach students, residents, the public and other health care professionals
- Integrate best available evidence into practice
- Contribute to the creation and dissemination of knowledge and practices applicable to health

Professional

- Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards
- Demonstrate a commitment to society by recognising and responding to societal expectations in health care
- Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation
- Demonstrate a commitment to physician health and well-being to foster optimal patient care

Clinical Decision Making

- Provide compassionate patient-centred care
- Perform a complete and appropriate assessment of a patient
- Organise diagnostic testing, imaging and consultation as appropriate

Technical Expert

- Safely and effectively perform appropriate surgical procedures
- Consistently demonstrate sound surgical skills
- Demonstrate procedural knowledge and technical skill at a level appropriate to their level of experience
- Demonstrate manual dexterity required to carry out procedures
- Adapt their skills in the context of each patient-each procedure
- Maintain skills and learn new skills
- Approach and carry out procedures with due attention to safety of patient, self, and others
- Analyse their own clinical performance for continuous improvement

Cultural competence and safety

The College is committed to providing basic training and resources in cultural competence and supporting its relevance to the provision of health care in Australian and New Zealand. The following Cultural Competency and Safety resources are available on the College's Learning Management System:

- The Royal Australian College of Surgeon's Aboriginal and Torres Strait Islander Health and Cultural Safety eLearning program
- Aboriginal and Torres Strait Islander Health Performance Framework
- Dental Council of New Zealand Statement on Cultural Competence
- Medical Council of New Zealand Statement on Cultural Safety
- Cultural Competence in Australia A Guide - Federation of Ethnic Communities' Councils of Australia

Teaching and learning in the OMS training program

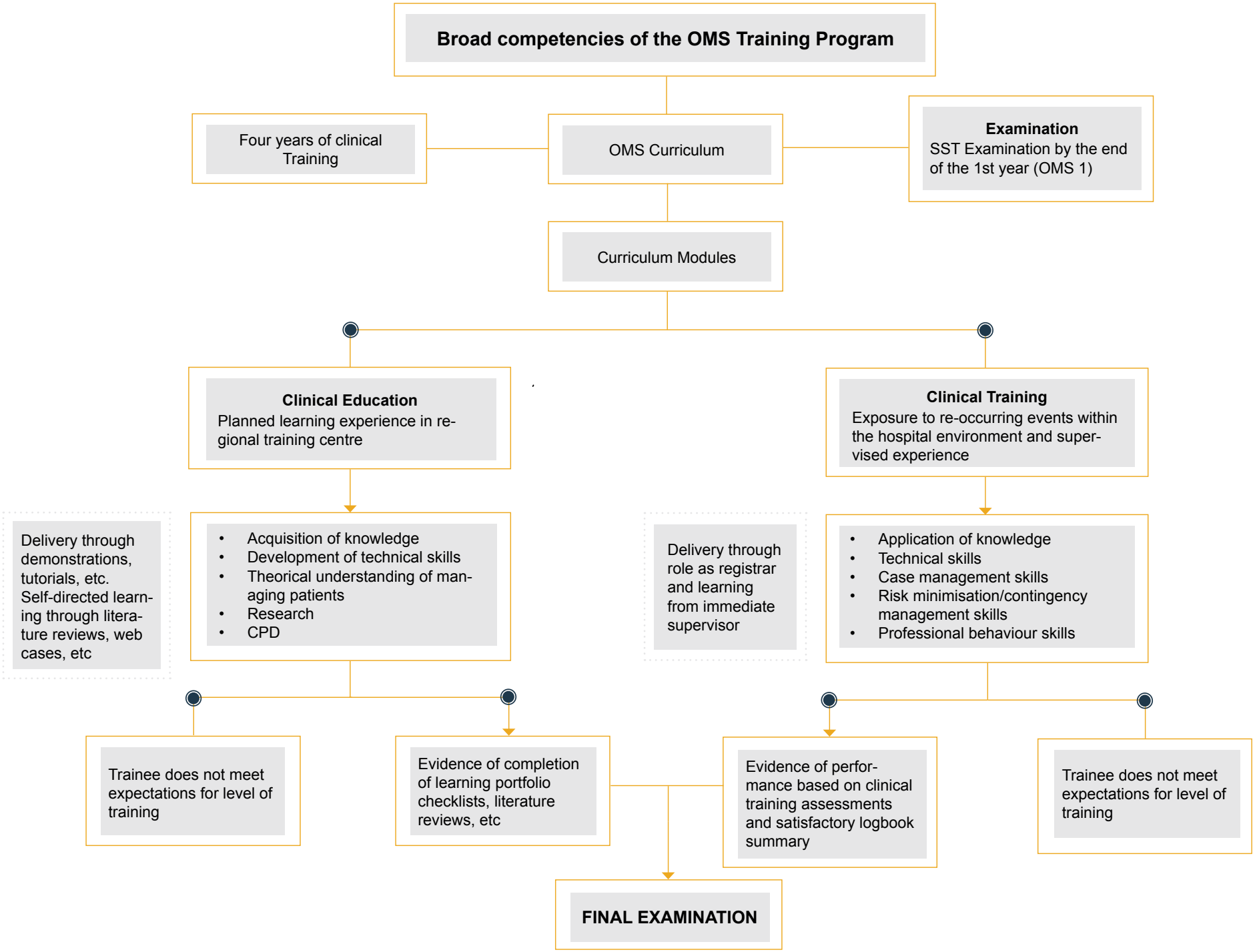
To acquire the broad competencies of the OMS program, trainees are provided with the opportunity to understand the discipline of OMS through the teaching of the modular curriculum, and the opportunity to apply this understanding in the clinical environment.

The learning of these competencies is embedded in the trainees' experiences in formal clinical education events, in the form of lectures, tutorials, group discussion, structured experiences and through self-directed learning methods, in the form of further reading, undertaking literature reviews, and case studies.

The competencies are also integral to clinical training and exposure to clinical experiences under supervision. There will be a balance of inpatient and outpatient, adult, and paediatric cases during clinical training.

Attainment of competencies will be assessed by formal clinical training assessment through regional training centres and by the final examination at a bi-national level.

The overall structure of the OMS curriculum is demonstrated in the following flow chart:


Broad competencies of the OMS Training Program
Four years of clinical Training
OMS Curriculum
Examination
SST Examination by the end of the 1st year (OMS 1)
Curriculum Modules
Clinical Education
Planned learning experience in regional training centre
Clinical Training
Exposure to re-occurring events within the hospital environment and supervised experience
Delivery through demonstrations, tutorials, etc. Self-directed learning through literature reviews, web cases, etc
Acquisition of knowledge
Development of technical skills
Theorical understanding of managing patients
Research
CPD
Delivery through role as registrar and learning from immediate supervisor
Application of knowledge
Technical skills
Case management skills
Risk minimisation/contingency management skills
Professional behaviour skills
Trainee does not meet expectations for level of training
Evidence of completion of learning portfolio checklists, literature reviews, etc
Evidence of performance based on clinical training assessments and satisfactory logbook summary
Trainee does not meet expectations for level of training
FINAL EXAMINATION

The Modules

The central part of the curriculum are the modules which are both self-contained and, when combined, define the domains of learning which are required of a qualified Oral and Maxillofacial Surgeon with the FRACDS (OMS).

Clinical training always includes a balance between education and service and as such trainees will progress through each module at varying rates. Due to this, the completion of each module will occur at different times in the training sequence for each trainee; however, all trainees must complete the required competencies for each module by the end of their training.

The modules are competency based and the curriculum allows stair-cased progression through each of the 16 modules as knowledge and surgical skills are acquired by the trainee. Modules are not recommended in any order, and this is in keeping with the curriculum frameworks of OMS programs internationally. This is also in line with other Australian specialist medical colleges, which rely on trainees completing clinical training within the hospital environment for the attainment of these competencies.

The 16 modules which must be completed to meet the requirements of the FRACDS (OMS) are below:

- Anatomy and Embryology of the Head and Neck
- Radiology and Nuclear Medicine
- Dentoalveolar Surgery
- Pre-prosthetic Surgery and Implantology
- Paediatric Oral & Maxillofacial Surgery
- Oral & Maxillofacial Pathology
- Oral Mucosal Diseases
- Maxillary Sinus Disease
- Oral & Maxillofacial Oncology
- Reconstructive Oral & Maxillofacial Surgery
- Oral & Maxillofacial Trauma
- Orthognathic Surgery
- Facial Pain
- Temporomandibular Joint Disorders
- Oral and Maxillofacial Prosthetics and Technology
- Adjunctive Technologies in Oral and Maxillofacial Surgery

Each module is set out in the following consistent format:

- Summary of module competencies
- Learning opportunities and methods
- Resources - including textbooks, journals, and specific articles
- Related assessment
- Program level competencies for each module

Summary of module competencies

A Summary of Module Competencies is included in each module. These are further elaborated on in competencies identified for each level of the program and are included at the end of each module.

Learning opportunities and methods

Learning Opportunities and Methods have been identified and relate specifically to the type of competency listed in the curriculum. Several instructional techniques appropriate for each category of learning (acquiring knowledge, cognitive skills, psychomotor skills and changing and/or improving attitudes) are included. A variety of techniques, such as lectures, tutorials, and demonstrations with guided observation, ensure that the different trainee learning styles are catered for.

Learning Portfolio Checklist

Checklists are to be included in the trainee's learning portfolio. These give direction on activities which should be encouraged so that trainees can develop skills leading towards the achievement of competencies.

The checklists correspond with the requirements of the modules and are to be checked off on a regular basis to determine the progress of the trainee through the program. In this way, any inconsistencies and problems can be determined and remedial exercises introduced as required. By the end of training each trainee will have checked off all of the required tasks.

Logbook

Trainees are exposed to practical experience in a variety of procedures and will progress through the role of "assistant" to "surgeon". This progression commences initially under the supervision of the consulting surgeon and then through performing the operation independently. The Logbook is used to determine the number of surgical cases the trainee has performed alone or as an assistant or observer.

Logbooks are also used to determine the spread of the trainee's surgical scope and competence to perform various procedures. This is coupled with the AOP assessments of technical competence. The numbers associated with the Logbook encounters listed in the various modules refer to the groups of procedures within the logbook itself.

Literature Reviews, Case Studies and Essays

These three learning opportunities are designed as self-learning packages:
Literature Reviews: topics are offered and suggested in each module. They will be discussed in various different ways, for example in mini seminars.

Case Studies: are suitable for presentation from time to time during seminars and tutorials.
Essays: develop skills in information gathering and writing which form the basis for the written papers during the examinations.

Resources

Textbooks, journals, and specific articles have been listed. These lists are regularly reviewed to ensure currency, and include some older seminal articles, which continue to be relevant and remain as stable references. Library access is important, as are the electronic forms of information such as the internet.

Assessments

The assessment of basic surgical science and training is completed once a trainee has passed the Surgical Sciences and Training (SST) examination and completed the mandatory course requirements.

Clinical training assessments of the remaining modules are included at the end of each module and indicate the assessment for this stage of a trainee's program; however, these assessments could be completed before or after this time (depending on the ability of the trainee during the latter years in the training program and the posts a trainee has occupied). For example, if a trainee occupies an OMS training post at a children's hospital early in their training program they may be more advanced on competencies from the Paediatric OMS module while in OMS 3, as compared to a trainee who has not occupied a post within a children's hospital until OMS 3.

The Assessment of Operative Process (AOP) is designed to assess the technical and procedural skills of the trainees to perform a specific task or operation. The selected AOPs are specific procedures which are the minimum key procedures which trainees are required to achieve through OMS 2, 3 and 4.

The SST Examination, Team Appraisal of Conduct (TAC) and the Final Examination are included in all module assessment criteria.

MODULE 1: Anatomy and Embryology of the Head and Neck

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Continually revise anatomy to maintain an adequate knowledge base • Precisely describe the anatomical structures implicated in oral and maxillofacial surgery, as well as describing in detail other anatomical sites of the body – particularly related to adjunctive surgical procedures utilised by the oral and maxillofacial surgeon. This includes bone harvesting from other sites which may include the iliac crest, cranium, fibular, and ribs • Identify the embryological causes of craniofacial deformities and apply this knowledge to the surgical corrections, e.g. facial clefts, Treacher Collins Syndrome, Pierre Robin Syndrome, Crouzon's • Develop a suitable framework of knowledge on which to continually build • Apply anatomical knowledge to planning and carrying out complex surgical procedures • Apply knowledge to new surgical techniques • Be in a position to use this knowledge to educate his/her junior peers and undergraduate students • Describe the angiosomes of the head and neck and apply this knowledge and understanding to flaps for reconstruction in the oral and maxillofacial region • Describe facial planes in the head and neck and understand the importance in spread of infection • Consult, cooperate and discuss with other clinicians as required • Teach, hand down knowledge and encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department	**Learning Portfolio Checklist** ☐ Application of applied anatomy in the maxillofacial region ☐ Application of applied anatomy to radiological diagnosis ☐ Understand and apply anatomical knowledge to reconstruction in the maxillofacial region **Logbook** Trainee to log - • Removal of submandibular gland and the anatomy • Reconstruction of the orbit and the anatomy • Reconstruction of the mandible including the anatomy of the bone graft harvest **Literature Review** • Applied anatomy of the orbit relative to orbital trauma • Anatomy of the trigeminal nerve • Anatomy of the facial nerve along with repair • Anatomy of the neck and its application to neck dissection • Embryology of facial cleft and craniofacial syndromes **Case Study** • The applied anatomy and mechanisms of spread from SCC in the floor of the mouth • Hemifacial microsomia and its management **Tutorial** • The anatomy of the infratemporal fossa and its application to skull base tumours • The anatomy of the maxilla and the maxillary sinus and its application to implant reconstruction • The anatomy of the mandible and its reconstruction, including the TMJ • The anatomy of the anterior neck and tracheostomy • Craniofacial syndromes and their operative management • Craniofacial growth and development

Refer below (pg. 17 & 18) for a complete list of competencies by level.	• Completion of a College recognised course in Basic and Applied Anatomy

Resources

Textbooks

Standring S (2008). Gray's Anatomy: The Anatomical Basis of Clinical Practice. Churchill Livingstone.

Norton NS (2011). Netter's Head and Neck Anatomy for Dentistry. Elsevier.

Ellis E, Zide MF (2018). Surgical Approaches to the Facial Skeleton (3rded). LWW.

Schoenwolf GC (2014). Larsen's Human Embryology. Churchill Livingstone.

Mark L. Urken MD, FACS, Mack L. Cheney MD, FACS, Keith E. Blackwell MD, Jeffrey R. Harris MD, Tessa A. Hadlock MD, Neal Futran MD, DMD (2011). Atlas of Regional and Free Flaps for Head and Neck Reconstruction

Journals

Australian Dental Journal

British Journal of Oral and Maxillofacial Surgery

Journal of Oral and Maxillofacial Surgery

Journal of Cranio-Maxillofacial Surgery

Journal of Craniofacial Surgery

International Journal of Oral and Maxillofacial Surgery

Specific articles

Landmarks of the facial nerve: implications for parotidectomy.
Pather N, Osman M. Surg Radiol Anat. 2006 May;28(2):170-5.

Identification of the facial nerve main trunk by retrograde dissection of the postauricular branch.
Keefe MA, Castro JR, Keefe MS. Otolaryngol Head Neck Surg. 2009 Jan;140(1):126-7.

A modified pre-auricular approach to the temporomandibular joint and malar arch.
Al-Kayat A, Bramley P. Br J Oral Surg. 1979 Nov;17(2):91-103.

Surgical anatomy of the mandibular ramus of the facial nerve based on the dissection of 100 facial halves.
DINGMAN RO, GRABB WC. Plast Reconstr Surg Transplant Bull. 1962 Mar;29:266-72.

The surgical anatomy of the mandibular distribution of the facial nerve.
Ziarah HA, Atkinson ME. Br J Oral Surg. 1981 Sep;19(3):159-70.

Facial nerve anatomy relevant to cosmetic surgery.
Burnham MA. Oral Maxillofac Surg Clin North Am. 2000 Nov;12(4):613-621.

The vascular anatomy of the human temporalis muscle: implications for surgical splitting techniques.
Cheung LK. Int J Oral Maxillofac Surg. 1996 Dec;25(6):414-21.

Anatomical structure of the buccal fat pad and its clinical adaptations.
Zhang HM, Yan YP, Qi KM, Wang JQ, Liu ZF. Plast Reconstr Surg. 2002 Jun;109(7):2509-18

Journal of Plastic and Reconstructive Surgery	Wound healing after multisegmental Le Fort I osteotomy and transection of the descending palatine vessels. Bell WH, You ZH, Finn RA, Fields RT. J Oral Maxillofac Surg. 1995 Dec;53(12):1425-33 A radiological investigation into the age changes of the inferior dental artery. Bradley JC. Br J Oral Surg. 1975 Jul;13(1):82-90. Neck dissection classification update: revisions proposed by the American Head and Neck Society and the American Academy of Otolaryngology-Head and Neck Surgery. Robbins KT, Clayman G, Levine PA, Medina J, Sessions R, Shaha A, Som P, Wolf GT; American Head and Neck Society; American Academy of Otolaryngology--Head and Neck Surgery. Arch Otolaryngol Head Neck Surg. 2002 Jul;128(7):751-8. Post-traumatic orbital reconstruction: anatomical landmarks and the concept of the deep orbit. Evans BT, Webb AA. Br J Oral Maxillofac Surg. 2007 Apr;45(3):183-9. An experimental investigation of the safe distance for internal orbital dissection. Danko I, Haug RH. J Oral Maxillofac Surg. 1998 Jun;56(6):749-52. Clinical and Anatomic observations on the relationship of the lingual nerve to the mandibular third molar region. Kiesselbach JE, Chamberlain JG. J Oral Maxillofac Surg. 1984 Sep;42(9):565-7. The relationship of the lingual nerve to the mandibular third molar region: an anatomic study. Pogrel MA, Renaut A, Schmidt B, Ammar A. J Oral Maxillofac Surg. 1995 Oct;53(10):1178-81 Cervical fascia: a terminological pain in the neck Guidera AK, Dawes PJ, Stringer MD ANZ J Surg. 2012 Nov;82(11):786-91.

	The anterior loop of the inferior alveolar nerve: prevalence, measurement of its length and a recommendation for interforaminal implant installation based on cone beam CT imaging. Apostolakis D, Brown JE. Clin Oral Implants Res. 2012 Sep;23(9):1022-30. Anatomic study of the mandibular formen, lingula and antilingula in dry mandibles, and its statistical relationship between the true lingula and antilingula. Monnazzi MS, Passeri LA, Gabrielli MF, Bolini PD, de Carvalho WR, da Costa Machado H. Int J Oral Maxillofac Surg. 2012 Jan;41(1):74-8 Clinical Anatomy of the Lingual Nerve: A Review. Sittitavornwong S, Babston M, Denson D, Zehren S, J Friend J Oral Maxillofac Surg. 2017 May;75(5):926 Three nearly anatomical forgotten anatomical triangles of the next: triangles of Beclard, Lesser and Pirogoff and their potential applications in surgical dissection of the neck. Tubbs RS, Rasmussen M, Loukas M, Shoja MM, Cohen-Gadol AA. Surg Radiol Anat. 2011 Jan;33(1):53-7 Landmarks for parotid gland surgery. de Ru JA, van Benthem PP, Bleys RL, Lubsen H, Hordijk GJ. J Laryngol Otol. 2001 Feb;115(2):122-5. Facial Nerve Function after parotidectomy Luc P. Bron, MD; Christopher J. O'Brien, MS, FRACS *Arch Otolaryngol Head Neck Surg.* 1997;123(10):1091-1096. An anatomic study of the lingual nerve in the third molar region. Behnia H, Kheradvar A, Shahrokhi M. J Oral Maxillofac Surg. 2000 Jun;58(6):649-51; discussion 652-3. Cleft lip and palate Mossey PA, Little J, Munger RG, Dixon MJ, Shaw WC. Lancet. 2009 Nov 21,374(9703):1773-85. Illustrated review of the embryology and development of the facial region, part

	2: Late development of the fetal face and changes in the face from the newborn to adulthood. Som PM, Naidich TP. AJNR AM J Neuroradiol. 2014 Jan;35(1):10-8. In situ location of the temporal branch of the facial nerve. Miloro M, Redlinger S, Pennington DM, Kolodge T. J Oral Maxillofac Surg. 2007 Dec;65(12):2466-9 Branchial arch syndromes Alfi D, Lam D, Gateno J. Atlas Oral Maxillofac Surg Clin North Am. 2014 Sep;22(2):167-73

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	AOP HEAD AND NECK		
		AOP REMOVAL OF SUBMANDIBULAR	
		GLAND APPLIED ANATOMY	
			CP AND D - MANAGEMENT
			SCC FLOOR MOUTH
			RESECT'N RECONSTRUCTION
			APPLIED ANATOMY
		AOP – RECONSTRUCTION	
		ORBIT APPLIED ANATOMY	
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe clearly, accurately, and in detail the embryology and anatomy of the head and neck and related structure and function • Identify the differences between cadaveric anatomy and surgical anatomy • Use appropriate anatomical terminology • Recognise and identify common anatomical variants and their clinical relevance • Discuss the osteology of the skull including both intra- and extra-cranial landmarks • Discuss the skull and bony articulations including the orbital and nasal apertures, the base of skull and the pterygopalatine fossa • List the cervical vertebrae, their articulations and soft tissue attachments • Describe the hyoid bone and its soft tissue attachments • Identify in detail the anatomy of the neck including surface anatomy, cutaneous innervation, superficial and deep structures • Identify in detail the anatomy of the face, including the surface anatomy, superficial structures (muscles of facial expression, nerves, arteries, veins, lymphatics, the parotid gland) and deep structures (the muscles of mastication, the temporomandibular joint, and infratemporal fossa) • Describe the scalp including its innervation and blood supply • Describe the anatomy and physiology of the eye, eyelids, the lacrimal apparatus, extra-ocular muscles, the nerves, arteries, and veins of the orbit	• Describe the importance and timing of the various embryological stages of head and neck development and the possible anomalies and resulting deformities that can occur • Discuss the embryology of the neck, face, eye, nasal cavity, paranasal sinuses, mouth, palate and pharynx, larynx, ear and that of the central nervous system • Describe the growth and developmental changes from the foetal skull to that of the child and subsequently the adult skull • Describe the growth and development of the hard and soft tissues of the face including the theories of facial growth such as the functional matrix • Describe the difference and clinical significance of cartilaginous and membranous bony growth • Describe the topography of the central nervous system including a general organisation of the sensory and motor pathways • Describe the anatomy of the spinal cord and spinal nerves including the autonomic nervous system, and internal structure of the spinal cord • Describe the brainstem, cranial nerves and their nuclei including the ascending sensory pathways, motor nuclei and descending pathways • Describe the cerebellum and the cerebellar connections • Describe the gross topography of the	• Apply anatomical knowledge to the interpretation of radiological investigations including plain films, computed tomography (CT) scans, magnetic resonance imaging (MRI), ultrasound and vascular investigations • Apply anatomical knowledge to the examination of the patient • Explain to the patient the risks of surgery based on anatomical principles • Critically evaluate and discuss anatomical and embryological studies in the literature • Apply anatomical knowledge to complex surgical procedures • Apply knowledge of other anatomical sites of the body by carrying out bone harvesting • Apply the knowledge of embryology to the aetiology of craniofacial syndromes and to their surgical management • Plan and apply surgical access and approaches based on regional anatomy • Recognise and predict the spread of infection and malignancy in the head and neck region based on anatomical principles • Communicate anatomical knowledge in appropriate terminology to patients and co-workers

• Describe the anatomy of the external nose and nasal cavity, the paranasal sinuses, and the pterygopalatine fossa • Describe the anatomy of the mouth and palate, including the teeth, oral mucosa, salivary glands, oral and palatal musculature, including the innervation, arterial and venous blood supply, and lymphatic drainage • Explain the anatomy and functioning of the pharynx including its three regions (nasopharynx, oropharynx, laryngopharynx), musculature, innervation, and blood supply	diencephalon (hypothalamus, subthalamus, thalamus and epithalamus) • Describe the anatomy of the cerebral hemispheres including the external topography, cerebral cortex and their internal structures • Describe the anatomy of the choroid plexus and cerebrospinal fluid • Describe in detail the vasculature of the central nervous system including the concept of the blood brain barrier • Describe the anatomy of the larynx including its cartilaginous skeleton, musculature and ligaments, mucosa, innervation, and blood supply • Describe the anatomy and functioning of the structures involved in speech • Describe the anatomy of the external, middle and inner ear • Describe the cranial cavity and contents of the anterior, middle and posterior cranial fossae including the meninges • Describe the anatomy of sites from which soft and hard tissue grafts and flaps may be harvested	

MODULE 2: Radiology and Nuclear Medicine

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Request appropriate imaging relating to a patient's presenting complaint, in consultation with an oral and maxillofacial radiologist • Safely use intraoral and fluoroscopic apparatus • Understand the safe use of conventional and cone beam CT, especially potential hazards of ionising radiation and an understanding of relative radiation doses • Understand the safe use of MRI, and know the absolute contra-indications to MRI • Demonstrate knowledge of radiographic anatomy, distortion and artefacts • Perform basic interpretation of plain radiographs, panoramic tomography (OPG), CT, MRI and Bone Scans of the maxillofacial region with description of radiographic findings and formulation of a differential diagnosis based on these • Request and accurately read appropriate radiographs, OPG and CT in trauma • Request the appropriate imaging investigation (usually MRI) for the evaluation of the temporomandibular joints, and perform basic interpretation of TMJ MRI • Summarise and evaluate nuclear medicine techniques applicable to oral and maxillofacial surgery, including the role of PET in malignant disease, SPECT in condylar hyperplasia and Gallium scanning in infection • Demonstrate knowledge of the appropriate implementation of interventional radiology and its application(s) to oral and maxillofacial surgery • Consult, cooperate and discuss with other clinicians as required • Teach, hand down and encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department	**Learning Portfolio Checklist** ☐ Interpret orthopantomograms ☐ Interpret frontal and lateral cephalograms ☐ Read CT for dental implant assessment ☐ Read CT for orthognathic surgery assessment ☐ Read CT of complex maxillofacial trauma ☐ CT and MRI for tumours of the jaws ☐ Read MRI for TMJ pathology **Literature Review** • Review current imaging of temporomandibular joint pathology • Compare cone beam CT with conventional CT in assessment for dental implant surgery **Lecture / Tutorial** • Imaging evaluation of tumours in the maxillofacial region • CT evaluation of maxillofacial fractures • CT dentascans in the assessment of jaw anatomy prior to implant placement • MRI of the temporomandibular joint • Anatomy, distortion, and artefact on the orthopantomogram **Observation** Ideally, a period of secondment to an oral and maxillofacial radiologist **Clinicopathological Conferences**

Refer below (pg. 23) for a complete list of competencies by level.	

Resources

Textbooks

White SC, Pharoah MJ (2013). Oral Radiology (7th ed). Mosby.

Koenig LJ (2011). Diagnostic Imaging: Oral and Maxillofacial. LWW.

Harnsberger HR, Glastonbury CM, Michel MA, Koch BL (2010). Diagnostic Imaging: Head and Neck 2nd ed). LWW.

MacDonald D (2011). Oral and Maxillofacial Radiology: A Diagnostic Approach. Wiley Blackwell.

Journals

Dentomaxillofacial Radiology

Oral surgery, oral medicine, oral pathology, oral radiology and endodontology

Specific articles

Inferior alveolar nerve injury and surgical difficulty prediction in third molar surgery: the role of dental panoramic tomography.
Jerjes W, El-Maaytah M, Swinson B, Upile T, Thompson G, Gittelmon S, Baldwin D, Hadi H, Vourvachis M, Abizadeh N, Al Khawalde M, Hopper C. J Clin Dent. 2006;17(5):122-30.

MR imaging of temporomandibular joint dysfunction: a pictorial review.
Tomas X, Pomes J, Berenguer J, Quinto L, Nicolau C, Mercader JM, Castro V.
Radiographics. 2006 May-Jun;26(3):765-81.

Detection of lymph node metastases in head and neck cancer: a meta-analysis comparing US, USgFNAC, CT and MR imaging.
de Bondt RB, Nelemans PJ, Hofman PA, Casselman JW, Kremer B, van Engelshoven JM, Beets-Tan RG. Eur J Radiol. 2007 Nov;64(2):266-72.

18F-fluorodeoxyglucose positron emission tomography to evaluate cervical node metastases in patients with head and neck squamous cell carcinoma: a meta-analysis.
Kyzas PA, Evangelou E, Denaxa-Kyza D, Ioannidis JP. J Natl Cancer Inst. 2008 May 21;100(10):712-20.

Detection of cervical lymph node metastasis in head and neck cancer patients with clinically N0 neck-a meta-analysis comparing different imaging modalities.
Liao LJ, Lo WC, Hsu WL, Wang CT, Lai MS. BMC Cancer. 2012 Jun 12;12:236. doi: 10.1186/1471-2407-12-236

Application of cone beam computed tomography in oral and maxillofacial surgery.
Ahmad M, Jenny J, Downie M. Aust Dent J. 2012 Mar;57 Suppl 1:82-94.

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Assessments			
OMS 1	**OMS 1**	**OMS 1**	**OMS 1**
SST EXAMINATION			
	CP AND D ANATOMY		
	ARTIFACTS AND INTERPRETATION		
	OPG		
			CP AND D FORMULATE DETAILED DIFFERENTIAL DIAGNOSIS FOR LESIONS USING ADVANCED IMAGING TECHNIQUES
	CP AND D SAFETY IN CT AND MRI		
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the safe use, design and function of radiological equipment for intraoral use, the panoramic radiograph, CT and MRI • Describe the normal radiographic anatomy of the maxillofacial region and its associated areas including the cervical spine • Interpret facial radiographs and identify distortions and radiographic artifacts • Describe the radiographic assessment of impacted teeth, dentoalveolar and maxillofacial pathology • Describe the principles of imaging for orthognathic surgery and produce tracings of lateral and PA cephalometric radiographs • Describe and interpret plain films and the role of CT in the diagnosis of maxillofacial trauma • Describe the imaging modalities including CT and MRI available for the investigation of temporomandibular joint disease • Describe the principles of radioactive labeling and list the nuclear medicine tests used in oral and maxillofacial surgery • Describe biological basis and accuracy of technetium-99 (Tc99) bone scanning in the diagnosis of growth disturbances of the maxillofacial region	• Order and interpret accurately CT in multiple planes in the assessment of complex midfacial trauma • Evaluate the limitations of arthrography including CT arthrography in assessment of the temporomandibular joint • Critically evaluate MR imaging of the temporomandibular joint • Correctly assess reconstructed CT imaging of the upper and lower jaws for the placement of endosseous implants • Evaluate the role of MRI in the investigation of the odontogenic neoplasms • Correctly select the appropriate nuclear medicine examinations for investigation of chronic infection including osteomyelitis • Describe the role of angiography in the diagnosis of vascular anomalies in the maxillofacial region • Describe the role of interventional radiological techniques in the management of bleeding • Sensitively communicate to a patient the findings, risks, and potential procedures resulting from these various images • Use CT and ultrasound accurately in the assessment of deep space infection of the neck • Identify the role of ultrasound in oral and maxillofacial surgery • Formulate a limited differential diagnosis of radiographically evident lesions of the maxillofacial region	• Apply and interpret intraoperative imaging • Formulate detailed differential diagnoses for lesions of the maxillofacial region using advanced imaging techniques • Assess a reconstructed CT to determine the bone graft volume required for augmentation of the jaws prior to implant placement • Appropriately order and interpret imaging required for the production of a biomodel • Identify the limitations and accuracy of biomodels • Compare and evaluate the methods of confirming skull base involvement in direct neoplastic invasion • Discuss the role of CT and intrathecal contrast in the assessment and localisation of a cerebrospinal fluid (CSF) leak • Diagnose the need for, and correctly order and interpret PET scanning in the staging of head and neck malignancy and in the identification of recurrence • Describe the use of co-registration imaging in the identification of loco-regional recurrence and nodal involvement in head and neck malignancy

	• List common radiographic (including MRI) contrast media and describe their application in imaging of the oral and maxillofacial region • Evaluate the role of single proton emission computed tomography (SPECT) in the diagnosis of condylar hyperplasia	

MODULE 3: Dentoalveolar Surgery

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Apply LA for dentoalveolar surgery • Carry out dentoalveolar procedures in order to: - eliminate acute and chronic infection - limit or eliminate pain - restore anatomic form - restore masticatory function - preserve vital structures - limit the period of disability - eliminate pathology • Surgically remove erupted teeth, un-erupted teeth and impacted teeth, including impacted third molars • Reposition and transplant teeth as required • Manage the impacted canine including their exposure • Manage odontogenic infections • Recognise and treat dentoalveolar pathology, including cysts and other related pathological conditions • Manage and surgically treat periradicular pathology and be competent to perform apicectomy • Carry out pre-prosthetic surgical procedures • Diagnose and perform alveolar reconstruction and defect reconstruction of the alveolus with hard and soft tissues relevant to the problem • Communicate with the patient and/or family of the treatment options, potentials, complications, and risks and obtain informed consent • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as	**Learning Portfolio Checklist** ☐ The accurate assessment of third molar teeth and removal of impacted teeth ☐ Perform model taking and articulation and design appropriate splints for pre-prosthetic surgery ☐ Outline the fascial spaces of the head and neck ☐ Selection and use of appropriate antibiotics for dental infections ☐ Appropriately treat dentoalveolar pathology **Logbook** Trainee to log – • Dentoalveolar – elective • Dentoalveolar – infection **Literature Review** • The indications for the removal of third molar teeth **Tutorial** • Design of mucoperiosteal flaps for oral surgery procedures • Management of impacted third molars, canines and other teeth • Biopsy procedures • The spread of odontogenic infections • The use of antibiotics in oral and maxillofacial surgery • The use of analgesics in oral and maxillofacial surgery • Local anaesthesia techniques • Periapical surgery • Maxillary Sinus and relevance to oral and maxillofacial surgery **Essay** • Discuss the differential diagnosis of radiolucent and radiopaque lesions of the jaws • Discuss the pathways of the spread of odontogenic infections of the head

well as the funding and administration of the employing hospital and health department Refer below (pg. 29 & 30) for a complete list of competencies by level.	and neck **Observation and Demonstration** • The surgical removal of impacted upper and lower third molar teeth • The surgical exposure and attachment bonding of impacted maxillary canines • Incisional/excisional biopsies of hard/soft tissue lesions • Removal of foreign body from maxillary sinus • Closure of oro-antral communication • Incision and drainage of fascial space infections of the head and neck **Case Study** • Nerve damage following the removal of a lower third molar tooth • Odontogenic cysts and tumours of the jaws • Surgical site infections • Localised osteitis **Structured Experience** *(Trainee to make written notes on patient encounters)* • Explanation for the removal of third molars including potential risks and complications • Explanation of the management of periapical pathology and other odontogenic injections • Explanation of the management of maxillary sinus pathology including retrieval of a foreign body from the sinus and closure of an OAF • Explanation of neuropathy, including Trigeminal Neuralgia, and its management

Resources	
Textbooks	**Specific articles**
Fonseca RJ, Marciani RD, Turvey TA (2008). Oral and Maxillofacial Surgery. Saunders. Miloro M, Ghali GE, Larsen P, Waite P (2011). Peterson's Principles of Oral and Maxillofacial Surgery (3rd ed). PMPH USA. Andreasen JO, Bakland LK, Flores MT, Andreasen FM, Andersson L (2011). Traumatic Dental Injuries: A Manual (3rd ed). Wiley Blackwell.	White Paper on Third Molar Data (2007) AAOMS The Management of Impacted Third Molar Teeth (2013) AAOMS Guidance on Extraction of Wisdom Teeth (2000) NICE The effects of NICE guidelines on the management of third molar teeth. McArdle LW, Renton T. Br Dent J. 2012 Sep;213(5):E8. Third molar removal: an overview of indications, imaging, evaluation, and assessment of risk. Marciani RD. Oral Maxillofac Surg Clin North Am. 2007 Feb;19(1):1-13 General technique of third molar removal. Farish SE, Bouloux GF. Oral Maxillofac Surg Clin North Am. 2007 Feb;19(1):23-43 Management of the impacted canine and second molar. Alberto PL. Oral Maxillofac Surg Clin North Am. 2007 Feb;19(1):59-68 Complications of third molar surgery. Bouloux GF, Steed MB, Perciaccante VJ. Oral Maxillofac Surg Clin North Am. 2007 Feb;19(1):117-28 Effectiveness of antibiotic prophylaxis in third molar surgery: a meta-analysis of randomised controlled clinical trials. Ren YF, Malmstrom HS. J Oral Maxillofac Surg. 2007 Oct;65(10):1909-21. Coronectomy of the lower third molar is safe within the first 3 years. Leung YY, Cheung LK. J Oral Maxillofac Surg. 2012 Jul;70(7):1515-22. Is endodontic treatment necessary during coronectomy procedure? Sencimen M, Ortakoglu K, Aydin C, Aydintug YS, Ozyigit A, Ozen T, Gunaydin Y. J Oral Maxillofac Surg. 2010 Oct;68(10):2385-90.
Journals	
Australian Dental Journal British Dental Journal British Journal of Oral and Maxillofacial Surgery Journal of Oral and Maxillofacial Surgery International Journal of Oral and Maxillofacial Surgery Journal of the Canadian Dental Association	

	A randomised controlled clinical trial to compare the incidence of injury to the inferior alveolar nerve as a result of coronectomy and removal of mandibular third molars. Renton T, Hankins M, Sproate C, McGurk M. Br J Oral Maxillofac Surg. 2005 Feb;43(1):7-12. Coronectomy: a technique to protect the inferior alveolar nerve. Pogrel MA, Lee JS, Muff DF.J Oral Maxillofac Surg. 2004 Dec;62(12):1447-52. Nerve injuries after third molar removal. Ziccardi VB, Zuniga JR. Oral Maxillofac Surg Clin North Am. 2007 Feb;19(1):105-15 Microsurgical repair of the inferior alveolar nerve: success rate and factors that adversely affect outcome. Bagheri SC, Meyer RA, Cho SH, Thoppay J, Khan HA, Steed MB. J Oral Maxillofac Surg. 2012 Aug;70(8):1978-90. Retrospective review of microsurgical repair of 222 lingual nerve injuries. Bagheri SC, Meyer RA, Khan HA, Kuhmichel A, Steed MB. J Oral Maxillofac Surg. 2010 Apr;68(4):715-23. EFNS guidelines on the pharmacological treatment of neuropathic pain: 2010 revision. Attal N, Cruccu G, Baron R, Haanpää M, Hansson P, Jensen TS, Nurmikko T; European Federation of Neurological Societies. Eur J Neurol. 2010 Sep;17(9):1113-e88. The displaced lower third molar: a literature review and suggestions for management. Huang IY, Wu CW, Worthington P. J Oral Maxillofac Surg. 2007 Jun;65(6):1186-90. Optimal treatment of descending necrotising mediastinitis. Corsten MJ, Shamji FM, Odell PF, Frederico JA, Laframboise GG, Reid KR, Vallieres E, Matzinger F. Thorax. 1997 Aug;52(8):702-8.

	EFNS guideline on the treatment of cerebral venous and sinus thrombosis in adult patients. Einhäupl K, Stam J, Bousser MG, De Bruijn SF, Ferro JM, Martinelli I, Masuhr F; European Federation of Neurological Societies. Eur J Neurol. 2010 Oct;17(10):1229-35. Do dental infections really cause central nervous system infections? Lazow SK, Izzo SR, Vazquez D. Oral Maxillofac Surg Clin North Am. 2011 Nov;23(4):569-78 Contemporary management of third molars. Hyam DM. Australian Dental Journal 2018, 68:(1 suppl):519-26

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	AOP REMOVAL OF AN IMPACTED TOOTH		
CP AND D MANAGEMENT OF DENTOALVEOLAR INJURIES			
	AOP PATIENT WITH DENTOALVEOLAR PATHOLOGY USING APPROPRIATE IMAGING		
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level	
Level One	**Levels Two and Three**
Perform removal of erupted teeth also • Endodontic surgery • Hemisection of teeth • Periodontal surgery • Localised grafting procedures, both hard and soft tissues • Guided tissue regeneration • Alveolar osseous surgery • Crown lengthening procedures Manage impacted teeth • Diagnose impacted teeth, using appropriate clinical and radiographic interpretation to determine the position of anatomical structures • Surgically remove, reposition, reimplant, and/or transplant, impacted teeth Odontogenic infections. • Describe in detail the anatomy of the fascial spaces of the head and neck and the spread of infection to these spaces • Explain the surgical management of such infections including Ludwig's angina • Identify normal microflora of the mouth, para nasal sinuses and skin • Recognise and describe the common microflora of odontogenic infections, facial skin infections, sinus infections, pharyngeal infections • Indicate the principles, and demonstrate the techniques of sampling and analysing micro-organisms involved in infections, culture and sensitivity testing • Explain the basis of empirical antibiotic therapy The medically compromised patient • Discuss the management of the medically compromised patient, including extremes of age • Liaise with relevant medical specialists in the care of medically compromised patients undergoing oral and maxillofacial surgery	Surgical management of odontogenic infections • Carry out a thorough history, examination, and diagnosis of odontogenic infections • Sensitively communicate to patients the findings of their assessment and diagnosis, the potential procedures, and associated risks • Obtain informed consent • Perform appropriate surgical management of odontogenic infections including management of the airway Assess and manage co-existing medical problems • Assess the location and severity for a patient with a spreading odontogenic infection • Interpret appropriate imaging of infection using CT, ultrasound and MRI • Perform incision and drainage routines of odontogenic infections, e.g. submandibular buccal and palatal abscesses • Utilise drains and drainage techniques that are appropriate for the patient's needs • Accurately assess patients at risk of osteonecrosis • Apply knowledge of prophylactic protocols associated with the diagnosis and arrange appropriate management of osteoradionecrosis including hyperbaric oxygen • Diagnose and undertake medical and surgical management of cases of osteomyelitis of the jaws • Make appropriate decisions regarding airway management for patients with deep fascial space infections • Consult and work effectively with anaesthetic and intensive care staff in the management of patients • Work in teams in the appropriate response to fulminant and life-threatening head and neck infections, such as necrotising fascititis and rhinocerebral zygomycosis • Manage complications of severe infections including haemorrhage and shock, ophthalmic, chest and cerebral complications Deformities and defects of the dentoalveolar complex • Carry out a thorough history, examination, and diagnosis of patients requiring surgical alteration, repair, graft, excision, reduction, or

	augmentation of the hard and or/soft tissues of the dentoalveolar complex such as frenectomy, reduction of the tuberosity, excision of a fibrous tuberosity, an osseous tuberosity and removal of bony exostoses including mandibular and maxillary tori, corticotomy <u>Augmentation of hard tissue defects</u> • Bone grafting procedures, guided tissue regeneration, surgical revision procedures, Intraoral pedical soft tissue grafting procedures, free soft tissue grafts (including donor graft procedures), subepithelial grafting procedures, Alveolar distraction procedures <u>Reconstruction of soft tissue defects</u> • Apically repositioned flap, bone replacement procedures, guided tissue regeneration, soft tissue grafts and connective tissue grafts • Vestibuloplasty procedures including soft tissue grafts and donor site management • Lowering of the floor of the mouth with and without skin or mucosal grafting • Alveoloplasty and alveolectomy • Excision of redundant tissue, i.e., denture hyperplasia • Mucogingival surgery, gingivectomy, gingivoplasty, free soft tissue grafting procedures, apically repositioned flaps and pedicle flap procedures • Management of oroantral and oronasal fistulae • Sensitively communicate to patients the findings of their assessment and diagnosis, the potential procedures, and associated benefits and risks • Obtain informed consent • Provide patients and/or family with post-operative instructions and arrange appropriate post-operative follow up • Examine, diagnose, manage, and perform appropriate procedures for patients with alveolar pathology including odontogenic cysts and tumours or non-odontogenic lesions occurring within the alveolus • Perform and manage soft and hard tissue recontouring, osseous, osteoperiosteal and cartilage grafting of the mandible or maxilla and repair of hard and soft tissues <u>The medically compromised patient</u> • Manage the medically compromised patient, including extremes of age

MODULE 4: Pre-prosthetic Surgery and Implantology

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Manage the implant patient from assessment through to, and understand, prosthetic rehabilitation • Independently and safely manage the implant patient including the pre-prosthetic soft and hard tissue management of such patients • Identify (discuss/explain/evaluate/differentiate between/compare and contrast) various methods involved with implant reconstruction • Select appropriate investigative tools that are cost-effective and useful • Appropriately select between the various methods involved with implant reconstruction according to the symptoms and needs of each patient • Communicate with patients (and their families) about procedures, potentials, and risks associated with pre-prosthetic surgery and implants to the head and neck area in particular the face and jaws, in ways that encourage their participation in informed decision making • Demonstrate sound basic surgical skills and competently carry out specific surgical procedures (including microscopic and endoscopic abilities), applying appropriate and safe operative techniques within each of these parameters • Communicate with and co-ordinate surgical teams to achieve an optimal clinical environment • Converse with and work with colleagues in allied specialties • Manage patients in ways that demonstrate sensitivity to their psychological needs • Develop a care plan for a patient in collaboration with members of an multidisciplinary team • Make clinical decisions and judgements based on sound evidence for the benefit of the patient • Demonstrate insight into his/her limitations of expertise and refer patients • Consult, cooperate and discuss with other clinicians as required	**Learning Portfolio Checklist** ☐ Examination and diagnosis of a patient requiring pre-prosthetic and implant surgery ☐ Examine and interpret appropriate imaging including plain radiographs and CT scans ☐ Treatment plan including pre-prosthetic surgery and implant placement **Logbook** Trainee to log – • Pre-prosthetic – minor • Pre-prosthetic – major • Pre-prosthetic – implants **Literature Review** • Indications for pre-prosthetic surgery • Bone grafting to the maxilla • Bone grafting to the mandible • The placement of dental implants and where • Immediate implants and their problems • Implant design and surface coatings **Case Study** • Rehabilitation of a patient with significant soft and hard tissue defects with implants **Tutorial** • Clinical assessment of the patient for dental implant therapy • Soft tissues in relation tom dental implants • The immediate implant and the immediate bridge • Navigation in relation to implant placement • Zygomatic implants • Extra oral implants and their application • The multidisciplinary approach to case management • Establishing and maintaining an implant practice

• Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department • Understand the biological basis of success (or failure) of orofacial implants Refer below (pg. 37 & 38) for a complete list of competencies by level.	

Resources	
Textbooks	**Specific articles**
Misch CE (2007). Contemporary Implant Dentistry (3rd ed). Mosby. Fonseca RJ, Davis WH (1995). Reconstructive Preprosthetic Oral and Maxillofacial Surgery (2nd ed). WB Saunders.	A classification of the edentulous jaws. Cawood JI, Howell RA. Int J Oral Maxillofac Surg. 1988 Aug;17(4):232-6. Tilted implants for the rehabilitation of edentulous jaws: a systematic review. Del Fabbro M, Bellini CM, Romeo D, Francetti L.Clin Implant Dent Relat Res. 2012 Aug;14(4):612-21. The All-on-Four Treatment Concept: A Systematic Review. Patzelt SB, Bahat O, Reynolds MA, Strub JR. Clin Implant Dent Relat Res. 2013 Apr 5. [Epub ahead of print] "All-on-4" immediate-function concept for completely edentulous maxillae: a clinical report on the medium (3 years) and long-term (5 years) outcomes. Maló P, de Araújo Nobre M, Lopes A, Francischone C, Rigolizzo M. Clin Implant Dent Relat Res. 2012 May;14 Suppl 1:e139-50. The all on 4 shelf: mandible. Jensen OT, Adams MW, Cottam JR, Parel SM, Phillips WR 3rd. J Oral Maxillofac Surg. 2011 Jan;69(1):175-81. Sinus floor augmentation surgery using autologous bone grafts from various donorsites: a meta-analysis of the total bone volume. Klijn RJ, Meijer GJ, Bronkhorst EM, Jansen JA. Tissue Eng Part B Rev. 2010 Jun;16(3):295-303. Interventions for replacing missing teeth: augmentation procedures of the maxillary sinus. Esposito M, Felice P, Worthington HV. Cochrane Database Syst Rev. 2014 May 13;5:CD008397. De novo bone induction by recombinant human bone morphogenetic protein-2(rhBMP-2) in maxillary sinus floor augmentation. Boyne PJ, Lilly LC, Marx RE, Moy PK, Nevins M, Spagnoli DB, Triplett RG. J Oral Maxillofac Surg. 2005 Dec;63(12):1693-707.
Journals	
Journal or Oral and Maxillofacial Implants Journal of Oral and Maxillofacial Surgery British Journal of Oral and Maxillofacial Surgery International Journal of Oral and Maxillofacial Surgery	

	Pivotal, randomized, parallel evaluation of recombinant human bone morphog eneticprotein2/absorbable collagen sponge and autogenous bone graft for ma xillarysinus floor augmentation. Triplett RG, Nevins M, Marx RE, Spagnoli DB, Oates TW, Moy PK, Boyne PJ. J Oral Maxillofac Surg. 2009 Sep;67(9):1947-60. Oral bisphosphonate-associated osteonecrosis of the jaw after implant surgery: a case report and literature review. Bedogni A, Bettini G, Totola A, Saia G, Nocini PF. J Oral Maxillofac Surg. 2010 Jul;68(7):1662-6. The nature and frequency of bisphosphonate-associated osteonecrosis of the jaws in dental implant patients: a South Australian case series. Goss A, Bartold M, Sambrook P, Hawker P. J Oral Maxillofac Surg. 2010 Feb;68(2):337-43. Oral implants in radiated patients: a systematic review. Colella G, Cannavale R, Pentenero M, Gandolfo S. Int J Oral Maxillofac Implants. 2007 Jul-Aug;22(4):616-22. Effect of postoperative radiotherapy on the functional result of implants placedduring ablative surgery for oral cancer. Schepers RH, Slagter AP, Kaanders JH, van den Hoogen FJ, Merkx MA. Int J Oral Maxillofac Surg. 2006 Sep;35(9):803-8. The mental foramen and nerve: clinical and anatomical factors related to dent alimplant placement: a literature review. Greenstein G, Tarnow D. J Periodontol. 2006 Dec;77(12):1933-43. Vertical distance from the crest of bone to the height of the interproximal papillabetween adjacent implants. Tarnow D, Elian N, Fletcher P, Froum S, Magner A, Cho SC, Salama M, Salama H, Garber DA. J Periodontol. 2003 Dec;74(12):1785-8. The effect of inter-implant distance on the height of inter-implant bone crest.

	Tarnow DP, Cho SC, Wallace SS. J Periodontol. 2000 Apr;71(4):546-9. A systematic review of post-extractional alveolar hard and soft tissue dimensional changes in humans. Tan WL, Wong TL, Wong MC, Lang NP. Clin Oral Implants Res. 2012 Feb;23 Suppl 5:1-21. Surgical protocols for ridge preservation after tooth extraction. A systematic review. Vignoletti F, Matesanz P, Rodrigo D, Figuero E, Martin C, Sanz M. Clin Oral Implants Res. 2012 Feb;23 Suppl 5:22-38. Interventions for replacing missing teeth: horizontal and vertical bone augmentation techniques for dental implant treatment. Esposito M, Grusovin MG, Felice P, Karatzopoulos G, Worthington HV, Coulthard P. Cochrane Database Syst Rev. 2009 Oct 7;(4):CD003607.

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	AOP TREATMENT OF HARD SOFT TISSUE PROBLEM PREPROSTHETIC REASONS (VESTIBULOPLASTY)		
		AOP PLACEMMENT IMPLANT	
			AOP PLACEMENT IMPLANT WITH ADJUNCTIVE PROCEDURES
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Define the basic principles in the management of prosthetic rehabilitation • Recognise and identify indications for preprosthetic surgery • Describe the anatomy and physiology of the head and neck with particular reference to implant surgery • Identify and discuss medical factors affecting treatment • Describe the implications for the aged patient in preprosthetic and implant surgery • Describe the anatomy and pathophysiology of edentulous bone loss • Resorption • Factors influencing bone loss • Metabolic Osteoporosis Osteomalacia Drug therapy Renal osteodystrophy Nutritional Facial Morphology, etc Mechanical factors – trauma Alteration in form • Discuss the management of patients with compromised bone – irradiated bone, bisphosphonate treated bone • Discuss the principles of bone induction and the biology of grafting Principles of osteoinduction Principles of transplantation Bone grafts Compare and contrast various diagnostic imaging modalities	• Take a history, examine, diagnose and plan the treatment for patients who need preprosthetic surgery and implants • Present well documented assessments and recommendations in written and verbal form • Communicate with patients (and their families) about procedures, potentials, and risks associated with basic preprosthetic surgery and implants in ways that encourage their participation in informed decision making • Using appropriate medical terminology, clearly communicate with allied specialists • Describe the concepts of osseointegration and transfer of load • Differentiate the various types of implants • Perform basic preprosthetic surgical procedures to include: Frenectomy and socket preservation Removal denture hyperplasia Submucous vestibuloplasty Vestibuloplasty with skin or mucosal graft Lowering floor of mouth with or without graft Mylohyoid ridge reduction Reduction of tuberosity Tuberoplasty Mental nerve reposition Mandibular and maxillary Bone augmentation Alveoloplasty Secondary alveolar recontouring Redundant crestal tissue removal Maxillary tuberosity reduction Tuberplasty Tori removal Papillary hyperplasia, etc • Perform basic implant surgery (one or two	• Perform complex surgical implant procedures including adjunctive procedures • Augmentation of the alveolar process Harvest autogenous bone utilising such donor sites as, lateral mandible, chin, iliac crest, tibia, etc Augmentation with alloplastic materials such as calcium based compounds and mixtures, such as platelet rich plasma (PRP) and bone morphogenetic protein (BMP) Lateralisation of the inferior dental nerve Sinus lift procedures Alveolar distraction Guided tissue regeneration with membranes • Communicate with patients (and their families) about procedures, potentials and risks associated with the above modalities in ways that encourage their participation in informed decision making • Discuss the management of complex implant problems and rehabilitation • Immediate loading and its implications Orthognathic surgery associated with implants Bone graft procedures and augmentation grafts Distraction osteogenesis to reposition the jaws and segments of the jaws Orthopaedic and orthodontic applications

• Conventional imaging for preprosthetic and implant surgery Panoranic radiograph Lateral cephalometric radiograph Periapical radiograph Occlusal radiograph Tomography CT Imaging and computer aided planning 3D reconstruction MR imaging Bone scans (Tc99) 3D biomodelling, etc	implants in the maxilla and/or mandible not requiring adjunctive surgical procedures) • Manage post-operative complications	Restoration of acquired head and Neck defects Reconstruction of the trauma patient Reconstruction of the patient with congenital deformity Reconstruction of the patient with developmental deformity Reconstruction and rehabilitation of the Cancer patient Management of irradiated bone Reconstruction of the patient with an alveolar cleft Extra-oral implants including zygomatic implants BAHA and its indications

MODULE 5: Paediatric Oral and Maxillofacial Surgery

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS(OMS) should be able to: • Explain and justify the current approaches to antenatal investigation and limitations with respect to facial deformity • Appropriately examine the paediatric patient • Communicate with patients (and their families) about procedures, potentials and risks associated with paediatric care • Manage patients and their parents in ways that demonstrate sensitivity to their psychological as well as physiological needs • Identify the normal anatomy and physiology growth curves and milestones of childhood • Implement appropriate perioperative management skills (including fluid and electrolyte management) particularly related to care of the surgical paediatric patient • Manage the common oral and maxillofacial surgical disorders of childhood • Discuss and understand the principles, and be able to manage and surgically treat oral and maxillofacial pathological conditions, congenital and developmental anomalies and trauma in children • Participate in the paediatric OMS clinic and/or cleft lip and palate clinic and be able to competently assess and treat patients as required • Consult, cooperate and discuss with other clinicians as required • Teach and encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 45 & 46) for a complete list of competencies by level.	**Learning Portfolio Checklist** ☐ Perform a Cephalometric analysis (TE) ☐ Participate in the cleft lip and palate/ craniofacial team (CDM) **Logbook** Trainee to log – • Dentoalveolar – elective – syndromic or cleft patient • Trauma • Pathology • Orthognathic – complex - cleft/craniofacial • TMJ • Reconstructive – distant grafts for congenital abnormalities **Literature Review** • Discuss the use of distraction osteogenesis for the paediatric patient with airway obstruction • Use of resorbable materials in paediatric OMS **Lecture / Tutorial** • Alveolar bone grafting to the maxillary alveolar cleft (TE) • Principles of managing facial fractures in the paediatric patient (CDM) • Orthognathic surgery in the cleft and craniofacial microsomia patient (TE) • Management of paediatric facial fractures (mid-facial and mandibular fractures) (TE) • Principles of assessment of upper airway obstruction (CDM) **Essay** • Discuss the pathway of management from birth to maturity in infant craniosynostoses • Discuss the management of TMJ ankylosis in the growing patient **Demonstration** *(Trainee to practice the same procedure on the opposite side)* • Management of mandibular congenital asymmetry

	Structured Experience *(Trainee to make written notes on patient encounters)* • Informed consent (parents and child) • Explanation of the procedure of alveolar bone grafting to a cleft and harvest of the graft, including potential side effects, risks and specific complications • Explanation of orbital floor exploration +/- reconstruction in a child following trauma, potential post-operative course, risks and specific complications of orbital surgery • Psychological and ethical management – balanced discussion with parents and child of the option of orthognathic surgery in a patient who presents with a significant medical comorbidity (e.g. cystic fibrosis), intellectual disability, limited life expectancy or religious belief which impacts upon potential management

Resources	
Textbooks	**Specific articles**
Kaban L, Troulis M (2004). Pediatric Oral and Maxillofacial Surgery. Saunders. Posnick JC (2000). Craniofacial and Maxillofacial Surgery in Children and Young Adults. Saunders. Atlas of Oral & Maxillofacial Surgery, Elsevier 2015 Oral & Maxillofacial Surgery- Eds Anderson, Kahnberg and Pogrel, 2010. Chapter 45 “Cleft Lip & Palate- an overview”	A proposed modification for the classification of cleft lip and cleft palate. Spina V. Cleft Palate J. 1973 Jul;10:251-2. From birth to maturity: a group of patients who have completed their protocol management. Part I. Unilateral cleft lip and palate. Schnitt DE, Agir H, David DJ. Plast Reconstr Surg. 2004 Mar;113(3):805-17. From birth to maturity: a group of patients who have completed their protocol management. Part II. Isolated cleft palate. David DJ, Anderson PJ, Schnitt DE, Nugent MA, Sells R. Plast Reconstr Surg. 2006 Feb;117(2):515-26. The reconstruction of anterior residual bone defects in patients with cleft lip, alveolus and palate. A review. Witsenburg B. J Maxillofac Surg. 1985 Oct;13(5):197-208. Ensuring success in alveolar bone grafting: a three-dimensional approach. Craven C, Cole P, Hollier L Jr, Stal S. J Craniofac Surg. 2007 Jul;18(4):855-9. Bergland O, Semb G, Abyholm FE. Elimination of the residual alveolar cleft by secondary bone grafting and subsequent orthodontic treatment. Cleft Palate J 1986;23:175–204. Secondary osteoplasty of the alveolar cleft defect. Horswell BB, Henderson JM. J Oral Maxillofac Surg. 2003 Sep;61(9):1082-90. Not all dwarfed mandibles are alike Pruzansky S. Birth Defects 1969;1:120. Surgical correction of hemifacial microsomia in the growing child. Kaban LB, Moses MH, Mulliken JB. Plast Reconstr Surg. 1988 Jul;82(1):9-19. Three-dimensional approach to analysis and treatment of hemifacial microsomia. Kaban LB, Mulliken JB, Murray JE. Cleft Palate J. 1981 Apr;18(2):90-9.
Journals	
International Journal of Oral and Maxillofacial Surgery Cleft Palate and Craniofacial Surgery Journal Journal of Craniofacial Surgery Plastic & Reconstructive Surgery – (Cleft & Craniofacial Education modules)	

	The O.M.E.N.S. classification of hemifacial microsomia. Vento AR, LaBrie RA, Mulliken JB. Cleft Palate Craniofac J. 1991 Jan;28(1):68-76 OMENS-Plus: analysis of craniofacial and extracraniofacial anomalies in hemifacial microsomia. Horgan JE, Padwa BL, LaBrie RA, Mulliken JB. Cleft Palate Craniofac J. 1995 Sep;32(5):405-12. Hemifacial Microsomia: use of the OMENS-Plus classification at the Royal Children's Hospital of Melbourne. Poon C-H, Meara JG, Heggie AA. Plast Reconstr Surg 2003;111:1011-8. Longitudinal analysis of mandibular asymmetry in hemifacial microsomia. Polley JW, Figueroa AA, Liou EJ, Cohen M. Plast Reconstr Surg. 1997 Feb;99(2):328-39. A longitudinal three-dimensional evaluation of the growth pattern in hemifacial microsomia treated by mandibular distraction osteogenesis: a preliminary report. Kusnoto B, Figueroa AA, Polley JW.J Craniofac Surg. 1999 Nov;10(6):480-6. Midfacial growth after costochondral graft construction of the mandibular ramus in hemifacial microsomia. Padwa BL, Mulliken JB, Maghen A, Kaban LB. J Oral Maxillofac Surg. 1998 Feb;56(2):122-7 Progression of facial asymmetry in hemifacial microsomia. Kearns GJ, Padwa BL, Mulliken JB, Kaban LB. Plast Reconstr Surg. 2000 Feb;105(2):492-8. Surgical correction of mandibular hypoplasia in hemifacial microsomia: the case for treatment in early childhood. Kaban LB, Padwa BL, Mulliken JB. J Oral Maxillofac Surg. 1998 May;56(5):628-38.

	No evidence for long-term effectiveness of early osteodistraction in hemifacial microsomia. Nagy K, Kuijpers-Jagtman AM, Mommaerts MY. Plast Reconstr Surg. 2009 Dec;124(6):2061-71 Hemimandibular hyperplasia--hemimandibular elongation. Obwegeser HL, Makek MS. J Maxillofac Surg. 1986 Aug;14(4):183-208. Bone scintigraphy as a diagnostic method in unilateral hyperactivity of the mandibular condyles: a review and meta-analysis of the literature. Saridin CP, Raijmakers PG, Tuinzing DB, Becking AG. Int J Oral Maxillofac Surg. 2011 Jan;40(1):11-7. Effect of alveolar bone grafting in the mixed dentition on maxillary growth in complete unilateral cleft lip and palate patients. Daskalogiannakis J, Ross R B. Cleft Palate Craniofac J 1997;34:455-458. Nevoid basal cell carcinoma syndrome: a review of the literature. Manfredi M, Vescovi P, Bonanini M, Porter S. Int J Oral Maxillofac Surg 2004;33:117-124. Management of Airway Obstruction in Infants With Pierre Robin Sequence. Runyan CM, Uribe-Rivera A, Tork S, Plast Reconstr Surg Glob Open. 2018 May 10;6(5):e1688. doi: 10.1097/GOX.0000000000001688. The role of distraction osteogenesis in the management of craniofacial syndromes Heggie AA, Kumar R, Shand JM. Annals of Maxillofacial Surgery 2013: 3; 4-10 Craniofacial Disorders. Heggie AA Aust Dent J 2018; 63: (1 Suppl): S58-68 Paediatric Oral & Maxillofacial Surgery Shand JM Aust Dent J 2018; 63: (1 Suppl): S69-78.

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	CP AND D MANAGEMENT OF DENTOALVEOLAR INJURIES IN A PAEDIATRIC PATIENT		
		AOP HARVEST OF CANCELLOUS ILIAC CREST BONE GRAFT	
			AOP MANAGEMENT OF PAEDIATRIC MANDIBULAR OR MID-FACIAL FRACTURE
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Perform an examination using techniques that are age appropriate and matched to the needs of the patient • Order and interpret appropriate investigations • Discuss the pharmacological aspects of pain control and antimicrobial therapy for children • Perform the peri-operative management of the medically compromised paediatric patient • Communicate with patients and their families about procedures, potential complications and risks associated with the paediatric patient • Describe facial growth and development • Discuss the management of cystic and odontogenic lesions in children	• Discuss the implications of surgery and trauma on the growing patient • Remove or expose impacted/ankylosed teeth, and undertake management of medically complicated patients (haematological disorders etc) for dento-alveolar procedures • Manage oro-facial infections • Describe TMJ disorders in children and differences from the adult population. • Perform surgery for intra-oral soft tissue anomalies and lesions: frenum, soft tissue lesions, gingivo-fibromatoses & salivary gland lesions (mucocoeles, ranula) etc • Manage dentoalveolar injuries • Perform the initial assessment and management of the child patient with orbital, mid-facial and mandibular fractures • Discuss the options, principles of management and use of fixation in children • Describe the pathology, genetics and management of disorders of disorders presenting in childhood eg NBCCS, fibrous dysplasia, Langerhans cell histocytosis Cleft lip and palate / Craniofacial microsomia: • Describe the stages in management of the cleft / CFM patient (pathway protocols) • Discuss treatment planning for surgical skeletal correction • Perform a cephalometric analysis • Perform model taking and articulation or computer planning • Perform clinical photography	• Remove or expose impacted teeth in the syndromic or cleft patient • Describe the management of patients with bone disorders eg osteogenesis imperfecta, osteopetrosis, fibrous dysplasia • Perform surgery for cystic and fibro-osseous lesions • Describe the assessment, diagnosis and the management of patients with limited jaw opening / mandibular hypomobility • Describe the principles of surgical management in the interdisciplinary management of clediocranial dysplasia or hypodontia syndromes, e.g. ectodermal dysplasia • Surgical management of dento-alveolar and maxillofacial injuries in the paediatric patient • Describe the principles of interdisciplinary management of severe craniofacial trauma • Participate in the cleft lip and palate/craniofacial team and Orthognathic meetings • Describe and have knowledge of: - Pre-surgical orthopaedics and early orthodontic treatment - The principles of primary cleft repair • Understand the management of: - Maxillary alveolar cleft - Surgically-assisted maxillary expansion - Oronasal and palatal fistula repair - The surgical management of the cleft maxilla and related orthognathic surgery - Reconstruction of the cleft alveolus for tooth replacement - Craniofacial implantology - Ear and orbital prostheses

		- Surgical protocols in management of the more common craniofacial syndromes, e.g. Treacher Colins Syndrome, craniosynostoses • Discuss the assessment and management options for upper airway obstruction in infants and children • Discuss the role of distraction osteogenesis for the paediatric patient

MODULE 6: Oral and Maxillofacial Pathology

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Apply knowledge of radiology in the interpretation of pathology in the maxillofacial region, including what radiological modality is indicated for various tissues types • Understand the sequencing of investigations of head and neck pathology, and the sensitivities and specificity of various investigations with respect to pathological type • Have a sound knowledge of normal histology and apply this knowledge in the treatment of conditions in the maxillofacial area • Have a sound knowledge of the histopathology of various conditions in the maxillofacial region and apply this knowledge in the treatment of these problems • Have a sound knowledge of normal and abnormal haematological values in the management of patients with maxillofacial diseases • Have a sound knowledge of normal and abnormal biochemistry and special tests in the management of patients with maxillofacial disease • Investigate and treat benign pathology in the maxillofacial region • Investigate and treat malignant pathology in the maxillofacial region in association with a multidisciplinary clinic • Appropriately manage and treat pathology in the maxillofacial region using both surgical and non-surgical protocols • Appropriately reconstruct defects following ablation of pathology in the maxillofacial region • Understand concepts of dermoscopy, margin control surgery and aesthetic subunit reconstruction in the management of cutaneous malignancy • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required	**Learning Portfolio Checklist** ☐ Recognise, describe and interpret radiological pathology in the maxillofacial region ☐ Recognise histopathology in the maxillofacial region ☐ Recognise and interpret various haematological and biochemical tests ☐ Independently manage patients with pathology in the maxillofacial region ☐ Independently or jointly manage malignant pathology of the maxillofacial region in a multidisciplinary setting **Logbook** Trainee to log – • Pathology – benign • Pathology – malignant • Pathology – reconstruction of the defect after removal of the pathology **Literature Review** • Reconstruction of the mandible following tumour ablation • Odontogenic tumours in the maxillofacial region • Salivary Gland tumours and their management • Staging of squamous cell carcinoma of the oral cavity • Keratocycts of the maxilla and mandible and their management • Neoplasms of the immune system • Management of malignant melanoma in the head and neck region • Management of non-melanoma skin cancer in the head and neck region **Tutorial** • Keratocysts of the mandible • Parotid salivary gland pathology • Minor salivary gland pathology • Squamous cell carcinoma of the oral cavity • Osteoradionecrosis of the jaws • Granulomatous diseases of the maxillofacial region • Premalignant disease

• Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department	• Haematology and diagnostic tests • Fibro osseous disease and systemic diseases effecting bone **Case Study** • Maxillary reconstruction after resection • Mandibular reconstruction after resection including rehabilitation **Observation** • Neck dissection in relation to malignant disease in the head and neck • Parotidectomy for benign pathology • Nerve grafting and repair, microvascular free transfer of tissues **Simulation** • TMJ Arthroscopy • Salivary endoscopy – Salivary stones and dilation of ducts (sialadenoscopy) • Endoscopy of the maxillary sinus – removal of foreign bodies, orbital floor exploration • Microneurosurgery/Microvascular surgery **Structured Experience** • Explanation of malignant disease to a patient and family members • Explanation, management and rehabilitation of the cancer patient

Resources	
Textbooks	**Specific Articles**
Neville BW, Damm DD, Allen CM, Bouquot J (2008). Oral and Maxillofacial Pathology (3rd ed). Saunders. Cardesa A, Slootweg P (2006). Pathology of the Head and Neck. Springer. Barnes L, Reichart P, Sidransky D (2005). World Health Organization Classification of Tumours: Pathology and Genetics of Head and Neck Tumours. WHO Press.	KCOT Characterization and management of the keratocystic odontogenic tumor in relation to its histopathological and biological features. Mendes RA, Carvalho JF, van der Waal I. Oral Oncol. 2010 Apr;46(4):219-25. The treatment of odontogenic keratocysts by excision of the overlying, attached mucosa, enucleation, and treatment of the bony defect with carnoy solution. Stoelinga PJ. J Oral Maxillofac Surg. 2005 Nov;63(11):1662-6. Systematic review of the treatment and prognosis of the odontogenic keratocyst. Blanas N, Freund B, Schwartz M, Furst IM. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2000 Nov;90(5):553-8. A systematic review of the recurrence rate for keratocystic odontogenic tumour in relation to treatment modalities. Kaczmarzyk T, Mojsa I, Stypulkowska J. Int J Oral Maxillofac Surg. 2012 Jun;41(6):756-67. Critical time of exposure of the rabbit inferior alveolar nerve to Carnoy's solution. Frerich B, Cornelius CP, Wiethölter H. J Oral Maxillofac Surg. 1994 Jun;52(6):599-606. The effect of surgical medicaments on peripheral nerve function. Loescher AR, Robinson PP. Br J Oral Maxillofac Surg. 1998 Oct;36(5):327-32. Nevoid basal cell carcinoma syndrome: a review of the literature. Manfredi M, Vescovi P, Bonanini M, Porter S. Int J Oral Maxillofac Surg. 2004 Mar;33(2):117-24. Odontogenic keratocysts: a clinical and histologic comparison of the parakeratin and orthokeratin variants.
Journals	
Journal of Oral and Maxillofacial Surgery International Journal of Oral and Maxillofacial Surgery Journal of Cranio-Maxillofacial Surgery Journal of Oral Pathology Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics	

	Crowley TE, Kaugars GE, Gunsolley JC. J Oral Maxillofac Surg. 1992 Jan;50(1):22-6. <u>Ameloblastoma</u> The ameloblastoma: primary, curative surgical management. Carlson ER, Marx RE. J Oral Maxillofac Surg. 2006 Mar;64(3):484-94. Ameloblastoma: a surgeon's dilemma. Ghandhi D, Ayoub AF, Pogrel MA, MacDonald G, Brocklebank LM, Moos KF.J Oral Maxillofac Surg. 2006 Jul;64(7):1010-4. Rational approach to diagnosis and treatment of ameloblastomas and odontogenic keratocysts. Chapelle KA, Stoelinga PJ, de Wilde PC, Brouns JJ, Voorsmit RA. Br J Oral Maxillofac Surg. 2004 Oct;42(5):381-90. Surgical treatment of recurring ameloblastoma, are there options? Hammarfjord O, Roslund J, Abrahamsson P, Nilsson P, Thor A, Magnusson M, Kjeller G, Englesson-Sahlström C, Strandkvist T, Warfvinge G, Krüger-Weiner C. Br J Oral Maxillofac Surg. 2013 Dec;51(8):762-6. Long-term follow up on recurrence of 305 ameloblastoma cases. Hong J, Yun PY, Chung IH, Myoung H, Suh JD, Seo BM, Lee JH, Choung PH. Int J Oral Maxillofac Surg. 2007 Apr;36(4):283-8. Comparison of long-term results between different approaches to ameloblastoma. Nakamura N, Higuchi Y, Mitsuyasu T, Sandra F, Ohishi M. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2002 Jan;93(1):13-20. Maxillary ameloblastoma: a retrospective study of 13 cases. Nastri AL, Wiesenfeld D, Radden BG, Eveson J, Scully C. Br J Oral Maxillofac Surg. 1995 Feb;33(1):28-32.

	Ameloblastoma in children. Ord RA, Blanchaert RH Jr, Nikitakis NG, Sauk JJ. J Oral Maxillofac Surg. 2002 Jul;60(7):762-70 The unicystic ameloblastoma: a clinicopathological study of 57 cases. Ackermann GL, Altini M, Shear M. J Oral Pathol. 1988 Nov;17(9-10):541-6. Unicystic ameloblastoma. A review of 193 cases from the literature. Philipsen HP, Reichart PA. Oral Oncol. 1998 Sep;34(5):317-25. Recurrence related to treatment modalities of unicystic ameloblastoma: a systematic review. Lau SL, Samman N. Int J Oral Maxillofac Surg. 2006 Aug;35(8):681-90. <u>MRONJ</u> American Association of Oral and Maxillofacial Surgeons Position Paper on Medication-Related Osteonecrosis of the Jaw—2014 Update Ruggiero SL, Dodson TB, Fantasia J, Goodday R, Aghaloo T, Mehrotra Bhoomi, O'Ryan F. Journal of Oral and Maxillofacial Surgery. 2014 Oct: 72(10):1938-1956. Bisphosphonate osteonecrosis of the jaw--a literature review of UK policies versus international policies on bisphosphonates, risk factors and prevention. Patel V, McLeod NM, Rogers SN, Brennan PA. Br J Oral Maxillofac Surg. 2011 Jun;49(4):251-7. Nature and frequency of bisphosphonate-associated osteonecrosis of the jaws in Australia. Mavrokokki T, Cheng A, Stein B, Goss A. J Oral Maxillofac Surg. 2007 Mar;65(3):415-23. Oral bisphosphonate-induced osteonecrosis: risk factors, prediction of risk using serum CTX testing, prevention, and treatment.

	Marx RE, Cillo JE Jr, Ulloa JJ. J Oral Maxillofac Surg. 2007 Dec;65(12):2397-410. Clinical investigation of C-terminal cross-linking telopeptide test in prevention and management of bisphosphonate-associated osteonecrosis of the jaws. Kunchur R, Need A, Hughes T, Goss A. J Oral Maxillofac Surg. 2009 Jun;67(6):1167-73. A C-terminal crosslinking telopeptide test-based protocol for patients on oral bisphosphonates requiring extraction: a prospective single-center controlled study. Hutcheson A, Cheng A, Kunchar R, Stein B, Sambrook P, Goss A. J Oral Maxillofac Surg. 2014 Aug;72(8):1456-62. <u>ORN</u> Risk factors for osteoradionecrosis after head and neck radiation: a systematic review. Nabil S, Samman N. Oral Surg Oral Med Oral Pathol Oral Radiol. 2012 Jan;113(1):54-69. Incidence and prevention of osteoradionecrosis after dental extraction in irradiated patients: a systematic review. Nabil S, Samman N. Int J Oral Maxillofac Surg. 2011 Mar;40(3):229-43. Osteoradionecrosis: a new concept of its pathophysiology. Marx RE. J Oral Maxillofac Surg. 1983 May;41(5):283-8. The radiation-induced fibroatrophic process: therapeutic perspective via the antioxidant pathway. Delanian S, Lefaix JL. Radiother Oncol. 2004 Nov;73(2):119-31. Osteoradionecrosis of the mandible: scientific basis for clinical staging. Schwartz HC, Kagan AR. Am J Clin Oncol. 2002 Apr;25(2):168-71. Prevention of osteoradionecrosis: a randomized prospective clinical trial of hyperbaric oxygen versus penicillin.

	Marx RE, Johnson RP, Kline SN. J Am Dent Assoc. 1985 Jul;111(1):49-54. Efficacy of pre- and postirradiation hyperbaric oxygen therapy in the prevention of postextraction osteoradionecrosis: a systematic review. Fritz GW, Gunsolley JC, Abubaker O, Laskin DM. J Oral Maxillofac Surg. 2010 Nov;68(11):2653-60. A new concept in the treatment of osteoradionecrosis. Marx RE. J Oral Maxillofac Surg. 1983 Jun;41(6):351-7. Hyperbaric oxygen therapy for radionecrosis of the jaw: a randomized, placebo-controlled, double-blind trial from the ORN96 study group. Annane D, Depondt J, Aubert P, Villart M, Géhanno P, Gajdos P, Chevret S. J Clin Oncol. 2004 Dec 15;22(24):4893-900. Major healing of refractory mandible osteoradionecrosis after treatment combining pentoxifylline and tocopherol: a phase II trial. Delanian S, Depondt J, Lefaix JL. Head Neck. 2005 Feb;27(2):114-23. Paradigm shifts in the management of osteoradionecrosis of the mandible. Jacobson AS, Buchbinder D, Hu K, Urken ML. Oral Oncol. 2010 Nov;46(11):795-801. <u>FNA CNB Frozen Section</u> Comparison of ultrasound-guided core-needle biopsy and fine-needle aspiration in the assessment of head and neck lesions. Kraft M, Laeng H, Schmuziger N, Arnoux A, Gürtler N. Head Neck. 2008 Nov;30(11):1457-63. The sensitivity and specificity of frozen-section histopathology in the management of benign oral and maxillofacial lesions. Aronovich S, Kim RY. J Oral Maxillofac Surg. 2014 May;72(5):914-9. Accuracy of frozen sections in assessing margins in oral cancer resection. Ord RA, Aisner S.

	J Oral Maxillofac Surg. 1997 Jul;55(7):663-9 Accuracy, utility, and cost of frozen section margins in head and neck cancer surgery. DiNardo LJ, Lin J, Karageorge LS, Powers CN. Laryngoscope. 2000 Oct;110(10 Pt 1):1773-6. Impact of use of frozen section assessment of operative margins on survival in oral cancer. Pathak KA, Nason RW, Penner C, Viallet NR, Sutherland D, Kerr PD. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009 Feb;107(2):235-9. <u>Salivary gland</u> Modern management and pathophysiology of ranula: literature review. Harrison JD. Head Neck. 2010 Oct;32(10):1310-20. A systematic review and meta-analysis of the diagnostic accuracy of fine-needle aspiration cytology for parotid gland lesions. Schmidt RL, Hall BJ, Wilson AR, Layfield LJ. Am J Clin Pathol. 2011 Jul;136(1):45-59. A systematic review and meta-analysis of the diagnostic accuracy of ultrasound-guided core needle biopsy for salivary gland lesions. Schmidt RL, Hall BJ, Layfield LJ. Am J Clin Pathol. 2011 Oct;136(4):516-26. Minimally invasive options for salivary calculi. Witt RL, Iro H, Koch M, McGurk M, Nahlieli O, Zenk J. Laryngoscope. 2012 Jun;122(6):1306-11. Alternatives for the treatment of salivary duct obstruction. McGurk M, Brown J. Otolaryngol Clin North Am. 2009 Dec;42(6):1073-85 Outcome of minimally invasive management of salivary calculi in 4,691 patients. Iro H, Zenk J, Escudier MP, Nahlieli O, Capaccio P, Katz P, Brown J, McGurk M. Laryngoscope. 2009 Feb;119(2):263-8.

	Sialoendoscopy: A new approach to salivary gland obstructive pathology. Nahlieli O, Nakar LH, Nazarian Y, Turner MD. J Am Dent Assoc. 2006 Oct;137(10):1394-400.

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	AOP HEAD AND NECK EXAMINATION PATHOLOGY		
		AOP TREATMENT REQUIRING SOFT TISSUE GRAFT/FLAP LOCAL AND DISTANT SITE	
	AOP INCISIONAL BIOPSY		
	AOP EXCISIONAL BIOPSY	TREATMENT REQUIRING HARD TISSUE GRAFT LOCAL DISTANT SITE	
			CP AND D MANAGE PATHOLOGY MAXILLOFACIAL REGION
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

MODULE 7: Oral Mucosal Diseases

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Recognise the presenting symptoms of malignant and non-malignant oral mucosal disease • Understand the underlying pathology and aetiology of malignant and non-malignant oral mucosal disease • Investigate and diagnose oral mucosal conditions having a thorough knowledge about their biologic basis, natural history, progression and prognosis • Communicate with patients (and their families) about procedures, reasonable expectations, limitations and risks associated with malignant and non-malignant oral mucosal disease • Identify and forecast the on-going relationship between the conditions and general medical signs – i.e., be able to relate the condition to any underlying medical problem • Assess the contribution of the more common testing regimens including the role of biopsy and tissue sampling • Appropriately communicate with patients, general dental and medical practitioners, as well as other specialties regarding management and treatment • Develop a care plan for patients with non-malignant mucosal disease and follow-up these patients as required • Develop a care plan for patients with malignant oral mucosal disease in conjunction with a multidisciplinary clinic • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department	**Learning Portfolio Checklist** Involved in the examination, diagnosis, pathological assessment, and treatment of patients with a broad range of malignant and non-malignant oral mucosal disease including (CDM) - Recurrent oral aphthae - Oral lichen planus - Mucous membrane pemphigoid - Pemphigus vulgaris - Erythema multiforme - Lupus erythematosis - Temporomandibular Disorder - Oral dysaesthesia - Oral candidosis **Logbook** Trainee to attend – • Oral medicine clinics • Clinicopathological meetings **Literature Review / Tutorials** • The role of viruses in oral mucosal disorders • Current concepts of the immune response found in OLP and how these concepts may help explain the clinical course of this disease • The published evidence of the success of treatment for patients with mucosal disorders **Essay** • Briefly outline the diagnosis and treatment of burning mouth syndrome • Discuss the concepts of neuropathy and neuropathic pain as they relate to the clinical practice • Desquamative gingivitis is a clinical manifestation of several different disease processes. Discuss these processes in terms of their immunopathogeneses as this relates to their diagnosis • Outline the diagnosis and treatment of orofacial granulomatosis

Refer below (pg. 62) for a complete list of competencies by level.	• Sjogren's Syndrome (SS) as an inflammatory disease that affects the exocrine glands. Outline the classification and diagnosis of SS • The aetiology of oral lichen planus remains unknown; however, it has been postulated to involve immunogenic triggering of apoptosis in basal keratinocytes. Outline your understanding of the aetiology of oral lichen planus **Observation** • The pathological assessment of a range of mucosal disease **Case Study** Documented treatment of patients with - – Recurrent aphthous ulceration – Oral lichen planus – Mucous membrane pemphigoid – Pemphigus vulgaris – Erythema multiforme – Lupus erythematosis – Temporomandibular Disorder – Oral dysaesthesia – Oral candidosis – Dry mouth **Structured Experience** *(Trainee to make written notes on patient encounters)* • Explanation of the diagnosis, management and continuing care of patients with a range of non-malignant mucosal disease as well as patients with TMD, oral dysaesthesia and trigeminal neuropathies

Resources	
Textbooks	**Specific Articles**
Neville BW, Damm DD, Allen CM, Bouquot J (2008). Oral and Maxillofacial Pathology (3rd ed). Saunders. Slootweg PJ, Cardesa A (2006). Pathology of the Head and Neck. Springer. Farah CS, Balasubramaniam R, McCullough MJ (2018). Contemporary Oral Medicine. Springer.	<u>OLP</u> Malignant transformation of oral lichen planus and oral lichenoid lesions: A meta-analysis of 20095 patient data. Aghbari SMH, Abushouk AI, Attia A, Elmaraezy A, Menshawy A, Ahmed MS, Elsaadany BA, Ahmed EM. Oral Oncol. 2017 May;68:92-102. The malignant transformation of oral lichen planus and oral lichenoid lesions: a systematic review. Fitzpatrick SG, Hirsch SA, Gordon SC. J Am Dent Assoc. 2014 Jan;145(1):45-56. Oral lichen planus: controversies surrounding malignant transformation. Gonzalez-Moles MA, Scully C, Gil-Montoya JA. Oral Dis. 2008 Apr;14(3):229-43. Lack of clinicopathologic correlation in the diagnosis of oral lichen planus based on the presently available diagnostic criteria and suggestions for modifications. van der Meij EH, van der Waal I. J Oral Pathol Med. 2003 Oct;32(9):507-12. Lichenoid dysplasia: a distinct histopathologic entity. Krutchkoff DJ, Eisenberg E. Oral Surg Oral Med Oral Pathol. 1985 Sep;60(3):308-15. <u>Potentially malignant disorders</u> Oral potentially malignant disorders: risk of progression to malignancy. Speight P. M., Khurram S. A. and Kujan O. Oral Surg Oral Med Oral Pathol Oral Radiol. 2018 Jun;125(6):612-627 Interventions for treating oral leukoplakia to prevent oral cancer. Lodi G, Franchini R, Warnakulasuriya S, Varoni EM, Sardella A, Kerr AR, Carrassi A, MacDonald LC, Worthington HV. Cochrane Database Syst Rev. 2016 Jul 29;7:CD001829.
Journals & web-based materials	
Pubmed Oral Oncology Journal of Oral and Maxillofacial Surgery British Journal of Oral and Maxillofacial Surgery International Journal of Oral and Maxillofacial Surgery Australian Dental Journal Journal of Oral Pathology and Oral Medicine Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics	

	Diagnostic tests for oral cancer and potentially malignant disorders in patients presenting with clinically evident lesions. Macey R, Walsh T, Brocklehurst P, Kerr AR, Liu JL, Lingen MW, Ogden GR, Warnakulasuriya S, Scully C. Cochrane Database Syst Rev. 2015 May 29;(5):CD010276 Nomenclature and classification of potentially malignant disorders of the oral mucosa. Warnakulasuriya S, Johnson NW, van der Waal I. J Oral Pathol Med. 2007 Nov;36(10):575-80. Potentially malignant disorders of the oral and oropharyngeal mucosa; terminology, classification and present concepts of management. van der Waal I. Oral Oncol. 2009 Apr-May;45(4-5):317-23. Oral leukoplakia and malignant transformation. A follow-up study of 257 patients. Silverman S Jr, Gorsky M, Lozada F. Cancer. 1984 Feb 1;53(3):563-8. Erythroplakia of the oral cavity. Shafer WG, Waldron CA. Cancer. 1975 Sep;36(3):1021-8. Malignant transformation rate in oral submucous fibrosis over a 17-year period. Murti PR, Bhonsle RB, Pindborg JJ, Daftary DK, Gupta PC, Mehta FS. Community Dent Oral Epidemiol. 1985 Dec;13(6):340-1. <u>Vesiculobullous disease</u> Definitions and outcome measures for mucous membrane pemphigoid: recommendations of an international panel of experts. Murrell DF, Marinovic B, Caux F et al. J Am Acad Dermatol. 2015 Jan;72(1):168-74. World Workshop on Oral Medicine VI: a systematic review of the treatment of mucocutaneous pemphigus vulgaris.

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	Recurrent erythema multiforme: clinical characteristics, etiologic associations, and treatment in a series of 48 patients at Mayo Clinic, 2000 to 2007. Wetter DA, Davis MD. J Am Acad Dermatol. 2010 Jan;62(1):45-53. Systemic Immunomodulating Therapies for Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis: A Systematic Review and Meta-analysis. Zimmermann S, Sekula P, Venhoff M, Motschall E, Knaus J, Schumacher M, Mockenhaupt M. JAMA Dermatol. 2017 Jun 1;153(6):514-522 Comprehensive survival analysis of a cohort of patients with Stevens-Johnson syndrome and toxic epidermal necrolysis. Sekula P, Dunant A, Mockenhaupt M, Naldi L, Bouwes Bavinck JN, Halevy S, Kardaun S, Sidoroff A, Liss Y, Schumacher M, Roujeau JC; RegiSCAR study group. J Invest Dermatol. 2013 May;133(5):1197-204.

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	CP AND D ASSESSMENT AND MANAGEMENT OF ORAL MUCOSAL DISEASE INCLUDING IMMUNOHISTOCHEMISTRY		
		CP AND D ASSESSMENT AND UNDERSTANDING OF ORAL MUCOSAL DISEASE	
		CP AND D ASSESSMENT, TMD ORAL PAIN	
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the structure and function of normal oral and facial mucosa • Describe the mucosal manifestations of systemic disease • Discuss the incidence of clinical conditions with borderline abnormality, e.g. Linea Alba, Fordyce anomaly, etc • Describe and diagnose white and red patches of the oral mucosa • Describe, diagnose and manage patients with oral manifestations of: fungal disease viral disease bacterial disease dermatoses, e.g. lichen planus blood dyscrasias, e.g. anaemia neoplasia • Describe the similarities and difference between neoplasia, hypertrophy and hyperplasia • Describe the use of systemic and topical agents in the management of oral mucosal conditions including the use of steroids. • Diagnose and manage gingival swellings • Diagnose and manage salivary gland conditions • Diagnose and manage sore mouth and differentiate between the role of different underlying causes • Diagnose causes of endogenous and exogenous pigmentation of oral mucosa and peri-oral region • Order and interpret appropriate and special tests to confirm a diagnosis • Incisional and excisional biopsy • Immunofluorescence • Identify and manage iatrogenic mucosal conditions • Management of xerostomia • Management of halitosis	• Describe the manifestations of melanotic naevi of maxillofacial area • Diagnose oral manifestations of sexually transmitted diseases • Describe the maxillofacial manifestation of immunodeficiency states • Describe current pharmacology and therapeutics for oral mucosal diseases including the role and efficacy of antiviral agents • Diagnose and manage bacterial, fungal and viral diseases of the oral mucosa • Diagnose and manage patients with vesiculo-bullous lesions of the oral mucosa • Diagnose and manage cysts of oral mucosa • Diagnose oral malignancy, including the lip • Discuss malignant transformation of the oral mucosa • Describe and manage the changes in oral mucosa in relation to systemic disease, e.g. diabetes and mal-absorption syndromes • Describe and manage the malignant transformation risk of Lichen Planus • Management of vascular lesions of the oral mucosa	• Define the relationship between melanin pigmentation and systemic diseases and distinguish between them (this is quite rare) • Describe the manifestation of oro-facial syndromes, e.g. Bechets, Sturge Weber and Basal Cell Naevus Syndrome • Diagnose and manage the oral mucosal manifestations of haematological disorders • Diagnose and manage oral mucosal dermatoses and auto-immune disorders • Describe and manage the effects of drugs on the oral mucosa • Management of oral mucosal ulceration • Manage oral malignancy in association with a multidisciplinary team • Management of granulomatous conditions of the head and neck

MODULE 8: Maxillary Sinus Disease

Broad competencies	Learning opportunities and methods
At the completion of training a trainee should be able to: • Describe the detailed anatomy of the nose and paranasal sinuses including their relations to surrounding structures • Describe normal physiology of the nose and paranasal sinuses • Describe the pathology and microbiology of sinus mucosal disease • Examine the nose and paranasal sinuses clinically and with appropriate imaging • Give a detailed differential diagnosis of sinus disease, in particular sinusitis • Discuss the surgical and non-surgical management of antral disease • Diagnose and manage oro-antral and oro-nasal communications • Have knowledge of the nose and paranasal sinuses as they relate to maxillofacial trauma and orthognathic surgery • Discuss the role of endoscopy in sinus disease • Consult, cooperate and discuss with other clinical specialties as required Refer below (pg. 67) for a complete list of competencies by level.	**Learning Portfolio Checklist** ☐ Imaging of the paranasal sinuses ☐ Nasendoscopy – examination of the nose and naso-pharynx, including for tumours and cleft deformities ☐ Closure of oro-antral fistula ☐ Options for the removal of foreign bodies from the maxillary sinus ☐ Sinus lift procedure for reconstruction of the posterior maxilla ☐ Endoscopic sinus surgery ☐ Manage the paranasal sinuses in maxillary and mid-facial trauma ☐ Closure of oro-nasal fistula in cleft patients **Logbook** Trainee to log – • Maxillary Sinus • Reconstructive – hard tissue • Reconstructive – graft harvest • Pathology – malignant • Pathology – benign • Trauma • Preprosthetic – implants **Literature Review** • Augmentation/reconstruction of the atrophic maxilla prior to implant placement/zygomatic fixtures • Management of sinus disease • Microbiology of the infected sinus • Management of neoplastic sinus pathology – maxillectomy, reconstruction, obturation • Endoscopic sinus surgery **Suggested tutorials or workshops** • Applied anatomy and physiology of the nose and paranasal sinuses • Imaging of the paranasal sinuses

	• The use of implants in the reconstruction of the maxilla • Workshop on endoscopic sinus techniques • Differential diagnosis of sinus disease • The sinuses in mid-facial trauma • The maxillary sinuses in orthognathic surgery • Reconstruction of maxillary defects, the importance of maxillary sinus **Observation** • Surgical management of malignant sinus disease, maxillectomy and neck dissection • Reconstruction options for resected maxillary with local, pedicled (regional) and vascularised (distant) free flaps **Case Study** • Management of the recurrent oro-antral communication • Surgical options for reconstruction of the maxillectomy defects (local, regional, distant tissues vs alloplastic) • Management of the atrophic maxilla, sinus lift bone grafts and implant fixture placement • Management of severe life-threatening infections of the maxillary sinus eg fungal

Resources	
Textbooks	**Specific Articles**
Duncavage J, Becker S (2010). The Maxillary Sinus: Medical and Surgical Management. Thieme. Wormald PJ (2007). Endoscopic Sinus Surgery: Anatomy, Three-Dimensional Reconstruction, and Surgical Technique (2nd ed). Thieme. Cardesa A, Alos L (2005). Nasal Cavity and Paranasal Sinuses. In A Cardesa, PJ Slootweg (eds), Pathology of the Head and Neck (pp 39 – 71).	Indications for the Caldwell-Luc approach in the endoscopic era. Barzilai G, Greenberg E, Uri N. Otolaryngol Head Neck Surg. 2005 Feb;132(2):219-20. Prognostic factors of maxillary sinus malignancies. Nazar G, Rodrigo JP, Llorente JL, Baragaño L, Suárez C. Am J Rhinol. 2004 Jul-Aug;18(4):233-8. Prevalence of maxillary sinus disease and abnormalities in patients scheduled for sinuslift procedures. Beaumont C, Zafiropoulos GG, Rohmann K, Tatakis DN. J Periodontol. 2005 Mar;76(3):461-7. Maxillary sinus disease of odontogenic origin. Mehra P, Murad H. Otolaryngol Clin North Am. 2004 Apr;37(2):347-64. Management of acute complicated sinusitis: a 5-year review. Mortimore S, Wormald PJ. Otolaryngol Head Neck Surg. 1999 Nov;121(5):639-42. Applicability of buccal fat pad grafting for oral reconstruction. Toshihiro Y, Nariai Y, Takamura Y, Yoshimura H, Tobita T, Yoshino A, Tatsumi H, Tsunematsu K, Ohba S, Kondo S, Yanai C, Ishibashi H, Sekine J. Int J Oral Maxillofac Surg. 2013 May;42(5):604-10. Closure of oroantral communications: a review of the literature. Visscher SH, van Minnen B, Bos RR. J Oral Maxillofac Surg. 2010 Jun;68(6):1384-91. Closure of oroantral fistula. Awang MN. Int J Oral Maxillofac Surg. 1988 Apr;17(2):110-5. Kiran Kumar Krishanappa S1, Eachempati P, Kumbargere Nagraj S, Shetty NY, Moe S, Aggarwal H, Mathew RJ. Interventions for treating oro-antral communications and fistulae due to dental procedures. Cochrane Database Syst Rev. 2018 Aug 16;8:CD011784. doi: 10.1002/14651858.CD011784.pub3.

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	CP&D - MANAGEMENT OF AN OAF		
	AOP - SOFT TISSUE FLAP CLOSURE OF OAF		
		AOP – MANAGEMENT OF BENIGN MAXILLARY SINUS LESION	
		CP&D – MANAGEMENT OF SINUSITIS FOLLOWING MAXILLARY SURGERY	AOP – BONE GRAFT FOR MAXILLARY RECONSTRUCTION
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the detailed anatomy of the nose and paranasal sinuses • Describe the range of diseases of the maxillary sinus • Take a thorough history and perform an examination • Interpret the imaging of the maxillary sinus • Assess risk to the maxillary sinus in dentoalveolar surgery from both clinical and radiographic examination including indications for advanced imaging • Describe the role of pharmacology and surgery in the management of sinus disease	• Describe the use of and indications for prosthetic obturation in relation to the maxillary sinus • Describe the techniques for foreign body localisation and removal from the maxillary sinus • Perform surgical repair of oro-antral communications using local flaps • Perform oral and nasal antrostomy • Discuss the development and management of oro-nasal and oro-antral fistulae following trauma to the palate	• Perform the closure of oro-antral fistula using regional flaps • Discuss the management of recurrent oro-antral fistulae • Perform nasendoscopy • Discuss the diagnosis and management of severe maxillary sinus infections • Discuss the diagnosis, management and prognosis of maxillary sinus disease with the patients and their families

MODULE 9: Oral & Maxillofacial Oncology

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS(OMS) should be able to: • Recognise the early symptoms of Oral and Maxillofacial malignancy • Accurately identify the pathogenesis and aetiology of OM malignancy • Investigate and accurately diagnose patients that potentially have OM malignancy • Communicate with patients (and their families) about procedures, reasonable expectations, limitations and risks associated with OM malignancy • Manage the OM malignancy patient from assessment through to rehabilitation within a multi-disciplinary Head and Neck team • Demonstrate sound basic surgical skills and competently carry out surgical procedures applying appropriate and safe operative techniques in the treatment of OM malignancy • Communicate with and co-ordinate surgical teams to achieve an optimal clinical environment • Develop a care plan for a patient in collaboration with members of a multi-disciplinary team • Be prepared to enter advanced training in oral and maxillofacial oncology in such areas as independent practice in the neck and associated areas and in such techniques as microvascular free tissue transfer • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 75) for a complete list of competencies by level.	**Learning Portfolio Checklist** Diagnosis of oral malignancy ☐ Participate in the multi-disciplinary team as an effective oncology team member in operative procedures in the surgical management of OM malignancy ☐ Provide leadership to the multidisciplinary oncology team in terms of iOM cancer care (The oral and maxillofacial surgeon is the principal expert in the area of oral and maxillofacial pathology and the dental management of oncology patients; expertise in this area is important for optimal patient care) **Logbook** Trainee to log – • Pathology-malignant • Reconstructive **Literature Review** • Management of the clinically negative (N0) neck **Tutorial** • Assessment and staging of OM cancer • The use of radiotherapy in OM malignancy • The use of grafts and flaps in the management of OM cancer • The indications and techniques for maxillectomy • Segmental or rim mandibulectomy **Observation** Tumour Resection • Soft tissue - buccal mucosa, tongue, floor of mouth • Hard tissue – ramus, angle, symphysis, condyle maxilla • Reconstruction - palatal rotation flap, facial artery myomucosal flap, buccal fat pad flap, temporalis flap, free tissue transfer **Case Study**

	• Tumour involving retromolar trigone • Tumour needing maxillectomy • Tumour requiring Hemiglossectomy • Patient with Osteoradionecrosis **Structured Experience** *(Trainee to make written notes on patient encounters)* Explanation of diagnosis of cancer • Explanation of the management of cancer • Explanation of continuing/palliative care • Care of the palliative patient • Behaviours and strategies to prevent self-harm (smoking and drinking)

Resources	
Textbooks	**Specific Articles**
Schmidt BL (2010). Principles of oral cancer management. In L Andersson, KE Kahnberg, MA Pogrel (eds), Oral and Maxillofacial Surgery (pp 705-734). Wiley-Blackwell. Shah JP, Shah J, Johnson NW (2003). Oral Cancer. Informa Healthcare. Neville BW, Damm DD, Allen CM, Bouquot J (2008). Oral and Maxillofacial Pathology (3rd ed). Saunders. Cardesa A, Slootweg P (2006). Pathology of the Head and Neck. Springer.	Patterns of cervical lymph node metastasis from squamous carcinomas of the upper aerodigestive tract. Shah JP. Am J Surg. 1990 Oct;160(4):405-9. Detection of lymph node metastases in head and neck cancer: a meta-analysis comparing US, USgFNAC, CT and MR imaging. de Bondt RB, Nelemans PJ, Hofman PA, Casselman JW, Kremer B, van Engelshoven JM, Beets-Tan RG. Eur J Radiol. 2007 Nov;64(2):266-72. 18F-fluorodeoxyglucose positron emission tomography to evaluate cervical node metastases in patients with head and neck squamous cell carcinoma: a meta-analysis. Kyzas PA, Evangelou E, Denaxa-Kyza D, Ioannidis JP. J Natl Cancer Inst. 2008 May 21;100(10):712-20. Detection of cervical lymph node metastasis in head and neck cancer patients with clinically N0 neck-a meta-analysis comparing different imaging modalities. Liao LJ, Lo WC, Hsu WL, Wang CT, Lai MS. BMC Cancer. 2012 Jun 12;12:236. Treatment failure and margin status in head and neck cancer. A critical view on the potential value of molecular pathology. Slootweg PJ, Hordijk GJ, Schade Y, van Es RJ, Koole R. Oral Oncol. 2002 Jul;38(5):500-3. Discontinuous vs in-continuity neck dissection in carcinoma of the oral cavity. Leemans CR, Tiwari R, Nauta JJ, Snow GB. Arch Otolaryngol Head Neck Surg. 1991 Sep;117(9):1003-6. Long-term follow-up of the RTOG 9501/intergroup phase III trial: postoperative concurrent radiation therapy and chemotherapy in high-risk squamous cell carcinoma of the head and neck. Cooper JS, Zhang Q, Pajak TF, Forastiere AA, Jacobs J, Saxman SB, Kish JA, Kim HE, Cmelak AJ, Rotman M, Lustig R, Ensley JF, Thorstad W, Schultz
Journals & web based materials	
International Journal of Oral and Maxillofacial surgery Journal of Oral and Maxillofacial Surgery British Journal of Oral and Maxillofacial Surgery Journal of Cranio-Maxillofacial Surgery Journal of ENT and Head and Neck Surgery www.cancer.gov/cancertopics/types/oral/ www.cancer.gov/cancertopics/types/head-and -neck/ www.eastman.ucl.ac.uk/iaoo/links.html iaoms E – learning Project train Web lectures Needs Head and Neck Journals NCCN Guidelines	

	CJ, Yom SS, Ang KK. Int J Radiat Oncol Biol Phys. 2012 Dec 1;84(5):1198-205. Postoperative concurrent radiotherapy and chemotherapy for high-risk squamous-cell carcinoma of the head and neck. Cooper JS, Pajak TF, Forastiere AA, Jacobs J, Campbell BH, Saxman SB, Kish JA, Kim HE, Cmelak AJ, Rotman M, Machtay M, Ensley JF, Chao KS, Schultz CJ, Lee N, Fu KK; Radiation Therapy Oncology Group 9501/Intergroup. N Engl J Med. 2004 May 6;350(19):1937-44. Postoperative irradiation with or without concomitant chemotherapy for locally advanced head and neck cancer. Bernier J, Domenge C, Ozsahin M, Matuszewska K, Lefèbvre JL, Greiner RH, Giralt J, Maingon P, Rolland F, Bolla M, Cognetti F, Bourhis J, Kirkpatrick A, van Glabbeke M; European Organization for Research and Treatment of Cancer Trial 22931. N Engl J Med. 2004 May 6;350(19):1945-52. Patterns of invasion and routes of tumor entry into the mandible by oral squamous cell carcinoma. Brown JS, Lowe D, Kalavrezos N, D'Souza J, Magennis P, Woolgar J. Head Neck. 2002 Apr;24(4):370-83. Evidence for imaging the mandible in the management of oral squamous cell carcinoma: a review. Brown JS, Lewis-Jones H. Br J Oral Maxillofac Surg. 2001 Dec;39(6):411-8. Influence of bone invasion and extent of mandibular resection on local control of cancers of the oral cavity and oropharynx. O'Brien CJ, Adams JR, McNeil EB, Taylor P, Laniewski P, Clifford A, Parker GD. Int J Oral Maxillofac Surg. 2003 Oct;32(5):492-7. Neck dissection classification update: revisions proposed by the American Head and Neck Society and the American Academy of Otolaryngology-Head and Neck Surgery.

	Robbins KT, Clayman G, Levine PA, Medina J, Sessions R, Shaha A, Som P, Wolf GT; American Head and NeckSociety; American Academy of Otolaryngology--Head and Neck Surgery. Arch Otolaryngol Head Neck Surg. 2002 Jul;128(7):751-8. An analysis of factors influencing the outcome of postoperative irradiation for squamous cell carcinoma of the oral cavity. Parsons JT, Mendenhall WM, Stringer SP, Cassisi NJ, Million RR. Int J Radiat Oncol Biol Phys. 1997 Aug 1;39(1):137-48. Randomized trial addressing risk features and time factors of surgery plus radiotherapy in advanced head-and-neck cancer. Ang KK, Trotti A, Brown BW, Garden AS, Foote RL, Morrison WH, Geara FB, Klotch DW, Goepfert H, Peters LJ. Int J Radiat Oncol Biol Phys. 2001 Nov 1;51(3):571-8. Extracapsular extension is a poor predictor of disease recurrence in surgically treated oropharyngeal squamous cell carcinoma. Lewis JS Jr, Carpenter DH, Thorstad WL, Zhang Q, Haughey BH. Mod Pathol. 2011 Nov;24(11):1413-20. Use of decision analysis in planning a management strategy for the stage N0 neck. Weiss MH, Harrison LB, Isaacs RS. Arch Otolaryngol Head Neck Surg. 1994 Jul;120(7):699-702. Tumor thickness influences prognosis of T1 and T2 oral cavity cancer--but what thickness? O'Brien CJ, Lauer CS, Fredricks S, Clifford AR, McNeil EB, Bagia JS, Koulmandas C. Head Neck. 2003 Nov;25(11):937-45. Gingival carcinoma: retrospective analysis of 72 patients and indications for elective neck dissection. Lubek J, El-Hakim M, Salama AR, Liu X, Ord RA. Br J Oral Maxillofac Surg. 2011 Apr;49(3):182-5. Frequency and therapeutic implications of "skip metastases" in the neck from squamous carcinoma of the oral tongue.

	Byers RM, Weber RS, Andrews T, McGill D, Kare R, Wolf P. Head Neck. 1997 Jan;19(1):14-9. Posterior triangle metastases of squamous cell carcinoma of the upper aerodigestive tract. Davidson BJ, Kulkarny V, Delacure MD, Shah JP. Am J Surg. 1993 Oct;166(4):395-8. Relevance of skip metastases for squamous cell carcinoma of the oral tongue and the floor of the mouth. Dias FL, Lima RA, Kligerman J, Farias TP, Soares JR, Manfro G, Sa GM. Otolaryngol Head Neck Surg. 2006 Mar;134(3):460-5. Metastases to level IIb in squamous cell carcinoma of the oral cavity: a systematic review and meta-analysis. Lea J, Bachar G, Sawka AM, Lakra DC, Gilbert RW, Irish JC, Brown DH, Gullane PJ, Goldstein DP. Head Neck. 2010 Feb;32(2):184-90. Accuracy of frozen sections in assessing margins in oral cancer resection. Ord RA, Aisner S. J Oral Maxillofac Surg. 1997 Jul;55(7):663-9. Accuracy, utility, and cost of frozen section margins in head and neck cancer surgery. DiNardo LJ, Lin J, Karageorge LS, Powers CN. Laryngoscope. 2000 Oct;110(10 Pt 1):1773-6. A meta-analysis of the randomized controlled trials on elective neck dissection versus therapeutic neck dissection in oral cavity cancers with clinically node-negative neck. Fasunla AJ, Greene BH, Timmesfeld N, Wiegand S, Werner JA, Sesterhenn AM. Oral Oncol. 2011 May;47(5):320-4.

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST Examination			
	AOP INCISIONAL BIOPSY AOP EXCISIONAL BIOPSY		
		CP AND D MANAGEMENT OF ADANCE MALIGNANCY	AOP TRACHEOSTOMY
		CP AND D POST OP FOLLOW UP PATIENT WITH MALIGNANCY	AOP REMOVAL SUBMANDIBULAR GLAND CP AND D NECK DIESSECTION
SKULL BASE APPROACH		TEAM APPRAISAL OF CONDUCT(TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the molecular basis of the pathogenesis of OM malignancy • Describe the concepts of pre-malignant lesions and conditions • Describe classification and staging for OM malignancy including disease in the neck • Describe the assessment and diagnosis of a patient with OM malignancy • Describe treatment planning for OM malignancy • Perform incisional biopsy • Perform fine needle aspiration for cytology • Discuss the surgical management of a patient with OMmalignancy and the importance of the multidisciplinary team • Discuss postoperative and follow up care of patients with OM malignancy • Discuss the management of complications including osteoradionecrosis • Perform clinical ward management of patients with OMmalignancy • Discuss the use of radiotherapy in OM malignancy	• Participate in the multidisciplinary oncology team • Perform indirect laryngoscopy • Perform a fibre optic naso-endoscopy • Describe the surgical management of the neck in OM malignancy (levels 1-5) • Describe techniques involved in soft and hard tissue reconstruction of the jaws and associated structures • Perform intra-oral resection of oral malignancy • Perform tracheostomy • Describe techniques for wide surgical resection • Harvest non-vascularised bone grafts • Perform postoperative and follow up care including the management of complications for a patient with OM malignancy • Communicate with patients (and their families) about procedures, potentials, and risks associated with oral malignancy in ways that encourage their participation in informed decision making	• Perform operative procedures in the surgical management of OM malignancy • Perform maxillectomy • Perform wide surgical resection for oral malignancy • Perform elective neck dissection • Perform complex reconstructions for oral malignancy • Perform surgical access to the skull base • Direct postoperative and follow-up care for the patient with OM malignancy • Surgically manage osteoradionecrosis • Provide leadership to the multidisciplinary oncology team

MODULE 10: Reconstructive Oral and Maxillofacial Surgery

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Demonstrate sound basic surgical skills and competency to be able to perform reconstructive surgery within the oral and maxillofacial region • Describe reconstructive techniques available for surgical rehabilitation: - following resective surgery for tumours, osteoradionecrosis - of congenital and developmental conditions - of secondary deformity • Communicate with patients (and their families) about procedures, reasonable expectations, limitations and complications associated with specific reconstructive surgical techniques • Communicate and coordinate surgical teams and adjunctive resources to achieve an optimal clinical outcome • Manage the patient from assessment through to comprehensive rehabilitation • Recognise and be able to apply the most appropriate reconstructive procedure to achieve an optimum functional outcome in each patient • Liaise with other medical and dental specialties for the optimum reconstruction and rehabilitation of the maxillofacial patient • Recognise the advantages and disadvantages of prosthetic obturation versus vital reconstruction for patients with defects in the oral cavity, e.g. maxillectomy • Recognise the advantages and disadvantages of prosthetic obturation versus biological reconstruction for patients with defects of the facial region, e.g. nose, eye, ear • Describe the various alloplastic materials used in facial reconstruction and their indications, risks, advantages and disadvantages • Integrate a knowledge of preprosthetic surgery and osseointegration into a reconstructive plan for patients with maxillofacial defects	**Learning Portfolio Checklist** ☐ Perform reconstructive surgery on surgical defects including oro-antral fistula. ☐ Outline the graft sites available for non-vascularised grafts. ☐ Outline the sites and anatomical basis of vascularised flaps for use in the maxillofacial region ☐ Raising of a temporalis flap for palatal reconstruction ☐ Harvest of a radial forearm free flap ☐ Free fibula flap for mandibular reconstruction ☐ Identification and protection of the facial nerve ☐ Identification of the appropriate landmarks in graft harvest including calvarial bone harvest **Logbook** Trainee to log – • Reconstructive – hard tissue • Reconstructive – soft tissue • Reconstructive – composite • Reconstructive – graft harvest **Literature Review** • Augmentation/reconstruction of the atrophic edentulous maxilla prior to implant placement • Reconstruction of the post oncologic maxillectomy defect • The utility of HBO in the management of osteoradionecrosis in the maxillofacial region • Reconstruction of the post traumatic orbital floor defect (alloplast versus autogenous) **Tutorial** • The anatomical basis of flaps in the maxillofacial region • The use of implants in reconstructive surgery • Workshop on microvascular surgical techniques • Chemotherapy and radiotherapy – their applications for reconstructive

• Describe the differences in healing of free and vascularised autogenous hard and soft tissue grafts in the facial region • Understand the implications of growth in the paediatric patient on reconstructive techniques • Understand the effect of surgery, radiotherapy, chemotherapy and medical conditions on the performance and complications of reconstructive facial surgery • Describe the indications for adjunctive techniques in reconstructive surgery such as hyperbaric oxygen, BMP, etc • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 87) for a complete list of competencies by level.	surgery • Reconstructive techniques on congenital conditions • Alloplastic and allogenic materials available to the reconstructive surgeon • Which flap where? • Reconstructive techniques on the orbit **Observation** • Reconstructive surgery using vascularised free flaps • Composite reconstruction and secondary deformity **Case Study** • Mandibular reconstruction with free fibula flap • Floor of mouth reconstruction using radial forearm flap • Palatal defect reconstruction using buccal fat pad • Reconstruction of floor of mandibular body defect caused by osteoradionecrosis

Resources	
Textbooks	**Specific articles**
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Journals	
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Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
		AOP SURGICAL APPROACHES TO THE ORBIT	

		AOP TREATMENT REQUIRING SOFT TISSUE HARVEST, LOCAL DISTANT	
		AOP TREATMENT REQUIRING HARD TISSUE HARVEST, LOCAL DISTANT	
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level

Level One	Level Two	Level Three
• Describe the anatomy of the maxillo-facial region • Describe the common pathological conditions that lead to surgical intervention requiring reconstruction. These should include: Cysts of the oral region Odontogenic tumours Benign non-odontogenic tumours Inflammatory jaw lesions Metabolic and genetic jaw diseases Malignant tumours, etc • Describe the repair of oro-antral, oro-nasal and oro-cutaneous fistulae • Discuss the importance of aesthetics in facial reconstruction and the placement of facial incisions • Describe the principles and materials for fixation in reconstructive surgery • Describe the types, clinical indications, applications and complications of soft and hard tissue grafts commonly used in the maxillofacial region • Describe the types, clinical indications, applications and complications of alloplastic and allogeneic materials available to the	• Discuss disorders of facial asymmetry including post-traumatic deformity • Hemifacial hypertrophy • Hemifacial atrophy • Hemi-mandibular hypertrophy, etc • Describe the anatomical basis of local and regional flaps in the maxillofacial region • Describe the classification of nerve injuries and their repair • Perform the harvest of soft and hard tissue grafts • Perform the reconstruction of alveolar defects of the maxilla and mandible using appropriate materials • Describe the use of intra-oral and extra-oral implant based devices used in reconstructive maxillofacial surgery • Perform temporal and coronal flaps • Perform surgical approaches to the orbit such as: - Blepharoplasty - Transconjunctival and Transcaruncular - Mid-lid and Subtarsal - Infraorbital	• Perform the reconstruction of orbital deformities including dystopia and enopthalmos • Perform reconstructive procedures for correction of facial asymmetry • Perform reconstructive procedures for complex defects of the maxillofacial region • Describe the principles and techniques of distraction osteogenesis • Discuss techniques of soft tissue expansion • Describe the anatomical basis of distant flaps for use in the maxillofacial region • Describe the indications for the use of vascularised free flaps in the maxillofacial region • Perform surgical access to the midface including nasal bones and cartilaginous skeleton, Weber-Ferguson and facial degloving approaches • Understand role of maxillofacial surgeon in skull base access and common approaches • Discuss the implications of chemotherapy and radiotherapy on reconstructive surgery

maxillofacial surgeon • Discuss of the use of prosthetic devices in reconstruction • Differentiate between the variety of intra-oral incisions available to the maxillofacial surgeon • Discuss the role of adjunctive therapies in reconstructive surgery by medical and dental practitioners, prosthodontists, speech pathologists, physiotherapists, dieticians etc	- Subcilary - Lateral brow, etc • Describe reconstructive techniques and the role of adjunctive therapies for osteoradionecrosis	

MODULE 11: Oral & Maxillofacial Trauma

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Competently manage the airway in the trauma patient • Accurately examine and diagnose the patient with facial trauma • Investigate with appropriate tests the trauma patient • Appropriately order, understand and be able to read special tests including plain radiographs, CT scans, MRI scans • Independently manage facial trauma including both soft and hard tissue components • Competently manage and treat patients suffering from severe and acute oral and maxillofacial trauma • Sensitively deal with such patients through all of the stages of treatment from the initial assessment and diagnosis through to the postoperative requirements including education and ongoing medical, physical and/or psychological needs • Work in conjunction with other surgeons as required • Competently coordinate and manage a care plan for trauma patients in order to produce an optimal result • Develop an optimal post-operative care and rehabilitation plan in conjunction with nursing and rehabilitation staff • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required	**Learning Portfolio Checklist** ☐ Perform a clinical examination on a multi trauma patient ☐ Interpret a CT scan ☐ Interpret a MRI scan ☐ Independently manage the trauma patient – both hard and soft tissues **Logbook** Trainee to log – • Facial Trauma **Literature Review** • Sequencing the treatment of the multi-trauma patient • Managing the frontal sinus • Fractures of the condylar neck, open and closed treatment **Tutorial** • Management of the orbital in “orbital blowout” fractures • Fracture dislocations of the mandibular condyle • Approaches to the facial skeleton • Interpretation of the CT and MRI scan • Management of soft tissue injuries **Case Study** • Fracture dislocation condyle unilateral • Fracture dislocation condyle bilateral

• Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 96 & 97) for a complete list of competencies by level.	• TMJankylosis • The rehabilitation of the head injured patient – co-ordination with speech pathologists, physiotherapists, occupational therapists, etc **Observation** • Treatment of a fractured mandible • Treatment of a zygomatic fracture • Exploration of the orbital soft and hard tissue repair **Simulation Laboratory** • Placement of plates for a bi lateral mandibular facture and a complicated fracture in the mid-face **Structured Experience** *(Trainee to make written notes on patient encounters)* • Explanation of trauma to the family of a patient who attempted to commit suicide • Explanation of the management of the trauma patient • Explanation of the postoperative and continuing management of the trauma patient including any rehabilitation required

Resources	
Textbooks	**Specific articles**
Fonseca R, Barber HD, Powers M, Frost DE (2012). Oral and Maxillofacial Trauma (4th ed). Saunders. Ward Booth P, Eppley B, Schmelzeisen R (2011). Maxillofacial Trauma and Esthetic Facial Reconstruction (2nd ed). Saunders. Hammer B (1995). Orbital Fractures: Diagnosis, Operative Treatment, Secondary Corrections. Hogrefe & Huber. Ellis E, Zide ME (2005). Surgical Approaches to the Facial Skeleton (2nd ed). Lippencott Williams & Wilkins.	Subclassification of fractures of the condylar process of the mandible. Loukota RA, Eckelt U, De Bont L, Rasse M. Br J Oral Maxillofac Surg. 2005 Feb;43(1):72-3. Nomenclature/classification of fractures of the mandibular condylar head. Loukota RA, Neff A, Rasse M. Br J Oral Maxillofac Surg. 2010 Sep;48(6):477-8. Indications for open reduction of mandibular condyle fractures. Zide MF, Kent JN. J Oral Maxillofac Surg. 1983 Feb;41(2):89-98. Mandibular condyle fractures: a consensus.

Journals	
Journal of Oral and Maxillofacial Surgery International Journal of Oral and Maxillofacial Surgery Journal of Craniofacial Surgery Oral and Maxillofacial Clinics of North America	Bos RR, Ward Booth RP, de Bont LG. Br J Oral Maxillofac Surg. 1999 Apr;37(2):87-9. Open reduction and internal fixation versus closed treatment and mandibulomaxillary fixation of fractures of the mandibular condylar process: a randomized, prospective, multicenter study with special evaluation of fracture level. Schneider M, Erasmus F, Gerlach KL, Kuhlisch E, Loukota RA, Rasse M, Schubert J, Terheyden H, Eckelt U. J Oral Maxillofac Surg. 2008 Dec;66(12):2537-44. Open versus closed treatment of fractures of the mandibular condylar process-a prospective randomized multi-centre study. Eckelt U, Schneider M, Erasmus F, Gerlach KL, Kuhlisch E, Loukota R, Rasse M, Schubert J, Terheyden H. J Craniomaxillofac Surg. 2006 Jul;34(5):306-14. Patient benefit from endoscopically assisted fixation of condylar neck fractures--a randomized controlled trial. Schmelzeisen R, Cienfuegos-Monroy R, Schön R, Chen CT, Cunningham L Jr, Goldhahn S. J Oral Maxillofac Surg. 2009 Jan;67(1):147-58. Endoscope-assisted transoral reduction and internal fixation versus closed treatment of mandibular condylar process fractures--a prospective double-center study. Kokemueller H, Konstantinovic VS, Barth EL, Goldhahn S, von See C, Tavassol F, Essig H, Gellrich NC. J Oral Maxillofac Surg. 2012 Feb;70(2):384-95. Occlusal results after open or closed treatment of fractures of the mandibular condylar process. Ellis E 3rd, Simon P, Throckmorton GS. J Oral Maxillofac Surg. 2000 Mar;58(3):260-8. Frontal sinus fractures. Echo A, Troy JS, Hollier LH Jr. Semin Plast Surg. 2010 Nov;24(4):375-82. Osteosynthesis with miniaturized screwed plates in maxillo-facial surgery.

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Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			

	CP AND D MANAGEMENT OF DENTOALVEOLAR INJURIES		
	CP AND D REPORT ON A PATIENT WITH MAXILLOFACIAL TRAUMA		
			AOP OPEN REDUCTION AND FIXATION OF A FRACTURED MANDIBLE
		AOP SPLINT CONSTRUCTION FOR TRAUMA	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe and identify the metabolic response to trauma Neuro-endocrine responses Inflammatory mediators Clinical implications • Explain the healing responses to traumatic injuries including: Soft tissues Bone Cartilage The response of peripheral nerves to injury • Manage patients experiencing shock – Early management of severe trauma (EMST) Classification Clinical manifestations of shock Pathological changes of shock Irreversible shock Therapy Common pitfalls in the treatment of shock • Order and supervise an appropriate nutritional regime following trauma Consequences of malnutrition Nutritional assessment Metabolic response to starvation and trauma Nutritional requirements Enteral nutrition Parenteral Nutrition • List the most significant components of emergency and intensive care of the traumatised patient (EMST) Pre-hospital care Primary assessment and resuscitation Secondary survey and diagnosis Physical examination	• Obtain an emergency airway if needed Systematic approach to airway management Endotracheal intubation Tracheostomy Cricothyroidotomy Prolonged artificial airway • Identify the salient features of the management of non-penetrating chest trauma • Examine and assess abdominal trauma and indicate its management • Assess urological injuries • Assess and prioritise the management of the poly- trauma patient • Differentiate between the different ophthalmic consequences of oral and maxillofacial Injuries • Ophthalmic assessment Minor eye injuries Non-perforating eye injuries Perforating eye injuries Perforating injuries to the orbit Retrobulbar haemorrhage Traumatic optic neuropathy Disorders of ocular mobility Displacement of the globe Nasolacrimal injuries Indirect ophthalmic consequences of injury The relationship between maxillofacial and eye injuries • Carry out an early assessment of a trauma patient	• Design a treatment plan for the oral and maxillofacial trauma patient Open reduction and internal rigid fixation of mandibular fractures Complications associated with mandibular fractures • Manage trauma and injuries to the TMJ and the TMJ region Applied anatomy of the region Incidence and classification of TMJ fractures Diagnostic findings Treatment of condylar fractures Surgical approaches to the TMJ Surgical approaches to the condyle (including endoscopic approach) Evaluation of chronic TMJ problems Late management of dysfunction Late management of intra- articular injuries Management of TMJ injuries Management of malocclusion Management of TMJ dislocation Management of TMJ ankylosis • Manage and treat fractures of the zygomatic complex and arch Diagnose and treat injuries to the midface and orbits Fractures of the maxilla Treatment of Le Fort I type fracture Treatment of Le Fort II type fracture Treatment of Le Fort III type fracture Treatment of naso-ethmoid fracture Treatment of orbital fractures Anatomy and management of the medial canthal ligament

Neurologic re-evaluation Diagnostic testing Blood and urine tests Radiology Operative priorities Intensive care priorities • Carry out a neurological evaluation and management of the trauma patient Initial Assessment Detailed management Grading the severity of injury Glasgow Coma Score (GCS) Diagnostic studies of head injury Special problems in head injury Spinal cord injury • Describe in detail the applied anatomy of the head and neck Skin lines and the lines of Langer Scalp Skin of the face Facial bones and the facial skeleton Lower face Extra-oral surgical approaches Intra-oral surgical approaches Muscles Arterial blood supply to the head and neck Veins of the head and neck Neuro anatomy Regional anatomy Nasal anatomy Parotid region Submandibular gland Floor of the mouth • Evaluate the radiographs and imaging obtained Plain radiographs CT scanning	Oral and maxillofacial examination Examination of the oral cavity Extraoral examination Imaging for oral and maxillofacial trauma Treatment planning in complex oral and maxillofacial trauma • Request the correct radiology for assessing oral and maxillofacial Injury • Manage dentoalveolar injuries • Manage mandibular fractures Statistics associated with mandibular injuries Classification of mandibular fractures Diagnosis of mandibular fractures General principles in the treatment of mandibular fractures • Manage soft tissue injuries Anatomy of the skin Suturing Suture materials • Classification and management of soft tissue wounds • Classification of bullets and firearms • Wound ballistics • The physics of ballistics • Classification of gunshot wounds • Treatment of gunshot wounds • Shot gun wounds to the head and neck • Indicate the appropriate use of bio-materials in facial trauma management • Implantable materials • TMJ reconstruction • Analyse the significant issues in relation to the management of facial fractures in the geriatric patient Tissue changes in the ageing face	Manage and treat orbital blow out fractures • Manage and treat patients with traumatic injuries to the frontal sinus Function and physiology of the frontal sinus Diagnosis Surgical approaches to the frontal sinus Classification • Treatment of frontal sinus fractures • Manage and treat patients with nasal fractures Anatomy Patterns of injury Treatment • Manage and treat injuries to structures requiring special treatment, salivary ducts, trigeminal and facial nerve injury • Classify the pathophysiology of gunshot wounds • Assess and treat a patient suffering from gunshot wounds and implement an appropriate and effective treatment plan • Analyse the significant issues in relation to the management and treatment of fractures in the growing patient General considerations in the management of paediatric patients Incidence Clinical examination Radiographic examination Fracture management The late management and treatment of facial fractures • Manage and treat avulsive oral and maxillofacial injuries Assessment Goals of reconstruction Surgical approaches – soft tissues • Indicate the appropriate use of oral and

MRI evaluation Ultrasound • A thorough knowledge of the principles of internal fixation of facial fractures AO principles (rigid and compression fixation) Champy principles (monocortical fixation) Biomechanics of the facial skeleton	Systemic considerations Special considerations in the management of the geriatric patient (Blood supply to the mandible and the management of the atrophic mandibular fracture) Bone grafting of the atrophic ridge Postoperative complications	maxillofacial prosthetics and treatment for the trauma patient Intra oral rehabilitation Extra oral rehabilitation Facial prostheses Implantology for the trauma patient • Diagnose and effectively treat infections in the trauma patient

MODULE 12: Orthognathic Surgery

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Recognise and describe the various developmental, acquired and traumatic conditions leading to deformities of the face and jaws • Examine, diagnose, plan and surgically treat such conditions at the correct time during growth and development • Examine, diagnose, plan and surgically treat older patients (>40 years of age) AND, patients with obstructive sleep apnoea requiring jaw(s) advancement • Correctly interpret the various diagnostic modalities and planning procedures applicable for such corrections • Demonstrate sound basic surgical skills and competently carry out the routine surgical procedures applying appropriate and safe operative techniques in the treatment of dento-facial deformity • Implement the various pre-operative, operative and post-operative management requirements for such patients, including possible complications and their treatment • Consult, cooperate and discuss with other specialist clinicians as required • Understand the principles of orthodontic treatment as they relate to orthognathic surgery • Teach and encourage other junior trainees, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 109) for a complete list of competencies by level.	**Learning Portfolio Checklist** ☐ Diagnosis of Dentofacial Deformity ☐ Perform Clinical examination recognizing the salient clinical features of the DFD patient (important for case planning) ☐ Perform Clinical photography ☐ Perform Cephalometric analyses ☐ Articulation of Study Models (refer to module on technology) ☐ Virtual surgical planning ☐ Treatment and perioperative care of the orthognathic surgical patient **Logbook** Trainee to log – • Orthognathic – single jaw • Orthognathic – bimaxillary • Orthognathic – complex **Literature Review** • Mandibular asymmetry • Condylar hypoplastic conditions • Condylar hyperplastic conditions • Mandibular enlargement disorders- unilateral and bilateral • Mandibular AP disproportions • Maxillary dysplasias in all manifestations **Case Study** • Condylar resorption following orthognathic surgery **Tutorial** • Clinical assessment of Dento Facial Deformity • Model surgery and cephalometric analysis & Virtual surgical planning • Operative techniques – mandible, midface, bimaxillary • Fixation methods • Grafting techniques and materials • Complications of orthognathic surgery

	• Special considerations for cleft and craniofacial syndromes • Obstructive sleep apnea, diagnosis and management with jaw advancement **Practical Tutorial** • Saw bone models, fixation and surgical simulation • Use of cephalometric planning software, e.g. Dolphin, Quick Ceph Systems

Resources	
Textbooks	**Specific articles**
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Journals & web-based materials	
The International Journal of Adult Orthodontics and Orthognathic Surgery American Journal of Orthodontics and Dentofacial Orthopaedics Journal of Craniofacial Surgery Journal of Oral and Maxillofacial Surgery The Cranio-maxillofacial Hyperguide - www.cmf.hyperguides.com International Journal of Oral and Maxillofacial Surgery	

Journal of Cranio-Maxillofacial Surgery	Anterior open bite malocclusion: stability of maxillary repositioning using rigid internal fixation. Arpornmaeklong P, Heggie AA Aust Ortho J. 2000; 16:69-81 Skeletal stability following maxillary impaction and mandibular advancement. Arpornmaeklong P, Shand JM, Heggie AA Int J Oral Maxillofac Surg. 2004; 33: 656-663 Stability of open bite correction with sagittal split osteotomy and closing rotation of the mandible. Stansbury CD, Evans CA, Miloro M, BeGole EA, Morris DE. J Oral Maxillofac Surg. 2010 Jan;68(1):149-59. Stability of open bite correction with sagittal split osteotomy and closing rotation of the mandible. Stansbury CD, Evans CA, Miloro M, BeGole EA, Morris DE. J Oral Maxillofac Surg. 2010 Jan;68(1):149-59. Closing anterior open bites by intruding molars with titanium miniplate anchorage. Sherwood KH, Burch JG, Thompson WJ. Am J Orthod Dentofacial Orthop. 2002 Dec;122(6):593-600. Long-term stability of anterior open-bite treatment by intrusion of maxillary posterior teeth. Baek MS, Choi YJ, Yu HS, Lee KJ, Kwak J, Park YC. Am J Orthod Dentofacial Orthop. 2010 Oct;138(4):396.e1-9 Bicortical screw stabilization of sagittal split osteotomies. Ochs MW. J Oral Maxillofac Surg. 2003 Dec;61(12):1477-84. In vitro comparison of screw versus plate fixation in the sagittal split osteotomy. Foley WL, Beckman TW. Int J Adult Orthodon Orthognath Surg. 1992;7(3):147-51.

	Comparison of biodegradable and titanium fixation systems in maxillofacial surgery: a two-year multi-center randomized controlled trial. van Bakelen NB, Buijs GJ, Jansma J, de Visscher JG, Hoppenreijs TJ, Bergsma JE, Stegenga B, Bos RR. J Dent Res. 2013 Dec;92(12):1100-5. Simultaneous removal of third molars during sagittal split osteotomies: the case against. Schwartz HC. J Oral Maxillofac Surg. 2004 Sep;62(9):1147-9. Removal of third molars with sagittal split osteotomies: the case for. Precious DS. J Oral Maxillofac Surg. 2004 Sep;62(9):1144-6. Variations in the anatomical dimensions of the mandibular ramus and the presence of third molars: its effect on the sagittal split ramus osteotomy. Beukes J, Reyneke JP, Becker PJ. Int J Oral Maxillofac Surg. 2013 Mar;42(3):303-7. The presence of mandibular third molars during sagittal split osteotomies does not increase the risk of complications. Doucet JC, Morrison AD, Davis BR, Gregoire CE, Goodday R, Precious DS. J Oral Maxillofac Surg. 2012 Aug;70(8):1935-43. Perioperative antibiotic prophylaxis in orthognathic surgery: a systematic review and meta-analysis of clinical trials. Tan SK, Lo J, Zwahlen RA. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2011 Jul;112(1):19-27. Effects of dextrans, heparin and hyperbaric oxygen on mandibular tissue damage after osteotomy in an experimental system. Nilsson LP, Granström G, Röckert HO. Int J Oral Maxillofac Surg. 1987 Feb;16(1):77-89. Prospective study of the incidence of serious posterior maxillary haemorrhage during a tuberosity osteotomy in low level Le Fort I operations. O'Regan B, Bharadwaj G. Br J Oral Maxillofac Surg. 2007 Oct;45(7):538-42. Neurosensory disturbance of the inferior alveolar nerve after bilateral sagittal split osteotomy: a systematic review.

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Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	AOP MODEL SURGERY SPLINT CONSTRUCTION ORTHOGNATHIC SURGERY		
		AOP OSTEOTOMY MANDIBLE MAXILLA	
		CP AND D PATIENT REQUIRING ORTHOGNATHIC SURGERY	
			AOP HARD TISSUE GRAFT HARVEST DISTANT SITE HIP

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the anatomy and embryology of the face and jaws • Describe developmental and acquired deformities of the maxillofacial region • Describe the psychology and psychological impact of orthognathic surgery on the patient • Describe the physiology and biomechanics of the jaws and masticatory apparatus • Take a thorough history, examination and order appropriate investigations for the patient requiring orthognathic surgery • Perform cephalometric analysis • Perform model taking and model articulation • Perform clinical photography • Perform virtual surgical planning • Describe the orthodontic principles and treatment in orthognathic surgery • Describe the principles of orthognathic surgery • Identify the biological basis for orthognathic surgery with respect to neuromuscular adaptation • Describe the anatomy of the region with specific reference to its blood supply • Identify the methods of fixation used in orthognathic surgery including waferless/splintless surgery; the biomaterials used, and indicate possible risks of using those biomaterials and tech	• Describe the operative procedures involved with orthognathic surgery in detail - Mid-facial advancement - Le Fort I osteotomy repositiong including segmentalization - Mandibular ramus & body osteotomies - Genioplasty • Describe the principles of operative procedures involved with - Le Fort II osteotomy - Le Fort III osteotomy - Zygomatic osteotomy patterns • Perform low-level maxillary and mandibular ramus osteotomy procedures • Describe the complications involved with orthognathic surgery • Identify and list implantable materials used for augmentation and grafting Autologous materials - bone, PRP and BMP Frozen bone, lyophilised bone, and cartilage Alloplastic materials, etc • Appropriate communication to a patient of the risks, and benefits of the proposed procedures	• Perform orthognathic surgical correction of facial deformities including: • Lefort 1 maxillary osteotomies • Segmental maxillary osteotomies • Mandibular ramus and body procedures including genioplasty • Understand the procedures for zygomatic and orbital osteotomies for facial correction in developmental and secondary trauma patients • Treat patients with secondary traumatic injury • This includes any operative procedure in the maxilla facial region requiring orthognathic correction. • Manage intra-operative and post-operative complications including the surgical securing of the airway and haemorrhage • Perform distant graft harvest as required • Manage a patient exhibiting relapse • Perform orthognathic surgery on medically compromised patients with conditions such as: - Obstructive sleep apnoea - Post traumatic injuries • Perform access osteotomies to the skull base as required • Understand the role of distraction osteogenesis in mandibular and maxillary osteotomies

MODULE 13: Facial Pain

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Describe the pathophysiological basis and various theories of facial pain • Understand the essential differences between acute and chronic facial pain and the psychological implications • Be competent in the interviewing and examination of a person presenting with facial pain • Order and accurately interpret appropriate investigations in order to diagnose and treat patients with facial pain • Describe the differential diagnosis of facial pain • Review the pharmacological mechanisms of pain control • Identify and acknowledge the multidisciplinary setting in the management of facial pain • Understand the role of pharmacotherapy and counseling in the treatment of a wide range of pain syndromes • Appreciate the limited but specific role of surgery in the management of pain syndromes Refer below (pg. 114) for a complete list of competencies by level.	**Learning Portfolio Checklist** ☐ Examine and diagnose a patient with facial pain ☐ Examine and interpret appropriate investigations for the patient with facial pain ☐ Plan a course of treatment for the facial pain patient, surgical and non-surgical ☐ The chronic pain clinic and the management of facial pain **Logbook** Trainee to log – • Use of cryotherapy in chronic facial pain • Therapeutic use of nerve blocks in facial pain • Microneurosurgery in the management of facial pain **Literature Review** • Pathophysiological basis and various theories of facial pain • The role of diagnostic blocks in the management of facial pain • The use of cryotherapy in the management of facial pain • The pharmacotherapy of facial pain • Review neurosurgical procedures for facial pain management • Review nerve repairs (inferior alveolar nerve and lingual nerves) **Case Study** • Manage the multiply operated TMJ patient with facial pain • Involvement with a facial pain clinic • Trigeminal nerve repairs **Tutorial** • Differential diagnosis of chronic facial pain • The management of chronic facial pain e.g.: pharmacotherapy and counselling • Psychological aspects of facial pain • Microsurgery in the management of trigeminal nerve pain • Role of nerve repairs – for post traumatic neuromas

Resources	
Textbooks	**Specific articles**
De Leeuw, Klasser GD (2013). Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management (5th ed). Quintessence. Warfield C, Bajwa Z (2004). Principles and Practice of Pain Medicine (2nd ed). McGraw-Hill. Oleson J, Tfelt-Hansen P, Welch KMA, Goadsby PJ, Ramadan NM (2005). The Headaches. LWW.	The International Classification of Headache Disorders, 3rd edition (beta version). Headache Classification Committee of the International Headache Society (IHS). Cephalalgia. 2013 Jul;33(9):629-808. Management of burning mouth syndrome: systematic review and management recommendations. Patton LL, Siegel MA, Benoliel R, De Laat A. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007 Mar;103 Suppl:S39.e1-13. Burning mouth syndrome. Torgerson RR. Dermatol Ther. 2010 May-Jun;23(3):291-8. Practice parameter: the diagnostic evaluation and treatment of trigeminal neuralgia (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology and the European Federation of Neurological Societies. Gronseth G, Cruccu G, Alksne J, Argoff C, Brainin M, Burchiel K, Nurmikko T, Zakrzewska JM. Neurology. 2008 Oct 7;71(15):1183-90. Practice parameter: evidence-based guidelines for migraine headache (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Silberstein SD. Neurology. 2000 Sep 26;55(6):754-62 EFNS guideline on the drug treatment of migraine--revised report of an EFNS task force. Evers S, Afra J, Frese A, Goadsby PJ, Linde M, May A, Sándor PS; European Federation of Neurological Societies. Eur J Neurol. 2009 Sep;16(9):968-81.
Journals	
Journal of Orofacial Pain	

	Evidence-based guideline update: pharmacologic treatment for episodic migraine prevention in adults: report of the Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society. Silberstein SD, Holland S, Freitag F, Dodick DW, Argoff C, Ashman E; Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society.Neurology. 2012 Apr 24;78(17):1337-45. EFNS guideline on the treatment of tension-type headache - report of an EFNS task force. Bendtsen L, Evers S, Linde M, Mitsikostas DD, Sandrini G, Schoenen J; EFNS. Eur J Neurol. 2010 Nov;17(11):1318-25. Acute and preventive pharmacologic treatment of cluster headache. Francis GJ, Becker WJ, Pringsheim TM. Neurology. 2010 Aug 3;75(5):463-73. Cluster headache: pathogenesis, diagnosis, and management. May A. Lancet. 2005 Sep 3-9;366(9488):843-55. Management of neuropathic orofacial pain. Lewis MA, Sankar V, De Laat A, Benoliel R. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007 Mar;103 Suppl:S32.e1-24. Evaluation and treatment of central pain syndromes. Nicholson BD. Neurology. 2004 Mar 9;62(5 Suppl 2):S30-6. Review of current guidelines on the care of postherpetic neuralgia. Argoff CE. Postgrad Med. 2011 Sep;123(5):134-42. Practice parameter: treatment of postherpetic neuralgia: an evidence-based report of the Quality Standards Subcommittee of the American Academy of Neurology. Dubinsky RM, Kabbani H, El-Chami Z, Boutwell C, Ali H; Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2004 Sep 28;63(6):959-65. Elongated styloid process and Eagle's syndrome.

	Montalbetti L, Ferrandi D, Pergami P, Savoldi F. Cephalalgia. 1995 Apr;15(2):80-93. Cryotherapy for trigeminal neuralgia: a 10 year audit. Zakrzewska J. Br J Oral Maxillofac Surg. 1991 Feb;29(1):1-4. Repair of the trigeminal nerve: a review. Jones R. Aust Dent J. 2010 Jun;55(2):112-9. doi: 10.1111/j.1834-7819.2010.01216.x.

Assessments

OMS 1	OMS 2	OMS 3	OMS 4
SST EXAMINATION			
	CP AND D MANAGEMENT FOR SURGICAL AND NON SURGICAL TREATMENT OF PAIN		
		AOP MANAGEMENT OF A PERSON PRESENTING WITH PAIN	
		CD – Trigeminal nerve repairs	AOP CRYOBLOCKADE OF FACIAL PAIN
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the neuroanatomy of the head and neck • Describe the theories and the neurophysiology of pain • Describe the pharmacology of analgesics and anaesthetic agents, anti-epileptics, and psychotropic drugs • Take a history of a patient presenting with facial pain • Complete a detailed head and neck examination with emphasis on neurology	• Order and interpret appropriate investigations for facial pain, e.g., CT, MRI, and electro-encephalogram (EEG), etc • Differentially diagnose: Vascular facial pains Myofascial and other muscular pains Facial neuralgias Neuropathic pain Temporomandibular pain Psychogenic pain including atypical facial pain • Perform head and neck nerve blocks for diagnostic and therapeutic purposes • Pharmacological management for a patient with facial pain	• Perform cryoneurectomy • Discuss microsurgery – nerve decompression, excision of neuroma • Discuss nerve ablation – chemical, radiofrequency

MODULE 14: Temporomandibular Joint Disorders

Broad competencies	Learning opportunities and methods
At the completion of training a trainee should be able to: • Describe the anatomy and physiology of the temporomandibular joint • Assess and differentiate the key signs and symptoms of the various temporomandibular disorders (TMD) • Take a thorough history and examination • Select and interpret appropriate imaging for the temporomandibular joint and/or other investigations for TMD • Discuss condylar resorption • Discuss the non-surgical and pharmacological treatment modalities • Discuss the indications for surgical intervention for TMD • Discuss the surgical approaches to the TMJ • Discuss the surgical techniques: arthrocentesis, arthroscopy, arthrotomy and TMJ reconstruction or replacement • Perform appropriate surgical procedures such as arthrocentesis • Implement appropriate aftercare for patients who have undergone TMJ surgery • Perform reduction of a dislocated mandible • Discuss the management of chronic dislocation of the mandible • Discuss the benign and malignant pathological conditions involving the TMJ Refer below (pg.120) for a complete list of competencies by level.	**Learning Portfolio Checklist** ☐ Exam and diagnose TMD patients ☐ Examine and interpret TMJ imaging: plain films, CT & MRI scans ☐ Treatment plan – surgical and non-surgical approaches for the TMJ patient **Logbook** Trainee to log – • TMJ arthrocentesis • TMJ arthrotomy • TMJ reconstruction • Reduction of dislocated TMJ **Literature Review** • Indications for TMJ surgery • The role of TMJ arthrocentesis • Management of TMJ ankylosis • Mandibular hypomobility • Mandibular hypermobility • TMJ replacement • Condylar resorption **Case Study** • The multiply operated TMJ leading to TMJ replacement • Surgical management of recurrent TMJ dislocations • Surgical management of TMJ ankylosis **Suggested Tutorials** • Clinical assessment of the TMD patient and interpretation of imaging • Assessment & management of condylar resorption • Treatment planning for TMD patients: conservative versus surgical • Surgical approaches to the TMJ • Options for TMJ reconstruction or replacement • Management of complications following TMJ surgery

	• Management of the dislocated mandible and recurrent dislocation • Management of TMJ ankylosis

Resources	
Textbooks	**Specific Articles**
Atlas of Temporomandibular Joint Surgery. 2nd Edition Peter Quinn, Eric Granquist. Publ: Wiley-Blackwell 2015 Temporomandibular Joint Total Joint Replacement – TMJ TJR. Editor: Louis Mercuri. Publ: Springer 2016 Operative Oral & Maxillofacial Surgery. 3rd Edition Ed. J. Langdon, M Patel, R Ord, P Brennan. Publ: Apple Academic Press Inc Oakville, Canada 2017 *(multiple chapters on TMJ Surgery)*	Comparison of the outcomes of three surgical treatments for end-stage temporomandibular joint disease. Dimitroulis G. Int J Oral Maxillofac Surg. 2014 Aug;43(8):980-9 A new surgical classification for temporomandibular joint disorders. Dimitroulis G. Int J Oral Maxillofac Surg. 2013 Feb;42(2):218-22. A critical review of interpositional grafts following temporomandibular joint discectomy with an overview of the dermis-fat graft. Dimitroulis G. Int J Oral Maxillofac Surg. 2011 Jun;40(6):561-8.
Journals	Idiopathic Condylar Resorption: A Survey and Review of the Literature. Alsabban L, Amarista FJ, Mercuri LG, Perez D. J Oral Maxillofac Surg. 2018 Jul 19. pii: S0278-2391(18)30771-7.
International Journal of Oral and Maxillofacial Surgery Journal of Oral and Maxillofacial Surgery Journal of Orofacial Pain	Surgical Management of Idiopathic Condylar Resorption: Orthognathic Surgery Versus Temporomandibular Total Joint Replacement. Chigurupati R, Mehra P. Oral Maxillofac Surg Clin North Am. 2018 Aug;30(3):355-367. Costochondral grafting for paediatric temporomandibular joint reconstruction: 10-year outcomes in 55 cases. Awal DH, Jaffer M, Charan G, Ball RE, Kennedy G, Thomas S, Farook SA, Mills C, Ayliffe P. Int J Oral Maxillofac Surg. 2018 Jun 27. pii: S0901-5027(18)30227-3. doi: 10.1016/j.ijom.2018.06.004. [Epub ahead of print] Single puncture versus standard double needle arthrocentesis for the management of temporomandibular joint disorders: A systematic review. Nagori SA, Roy Chowdhury SK, Thukral H, Jose A, Roychoudhury A.

	J Oral Rehabil. 2018 Oct;45(10):810-818. doi: 10.1111/joor.12665. Epub 2018 Jun 22. Review. Combined or Staged Temporomandibular Joint and Orthognathic Surgery for Patients with Internal Derangement and Dentofacial Deformities. Kim S, Keith DA. Oral Maxillofac Surg Clin North Am. 2018 Aug;30(3):351-354. Is the Anchored Disc Phenomenon a Truly Distinct Entity? A Systematic Review. Al-Belasy FA, Salem AS. J Oral Maxillofac Surg. 2018 Sep;76(9):1883.e1-1883.e10 The sequential treatment of temporomandibular joint ankylosis with secondary deformities by distraction osteogenesis and arthroplasty or TMJ reconstruction. Zhang W, Yang X, Zhang Y, Zhao T, Jia J, Chang S, Liu Y, Yu B, Chen Y, Ma Q. Int J Oral Maxillofac Surg. 2018 Aug;47(8):1052-1059. Evaluation of condylar resorption rates after orthognathic surgery in class II and III dentofacial deformities: A systematic review. Nunes de Lima V, Faverani LP, Santiago JF Jr, Palmieri C Jr, Magro Filho O, Pellizzer EP. J Craniomaxillofac Surg. 2018 Apr;46(4):668-673. Adaptability of stock TMJ prosthesis to joints that were previously treated with custom joint prosthesis. Abramowicz S, Barbick M, Rose SP, Dolwick MF. Int J Oral Maxillofac Surg. 2012 Apr;41(4):518-20. Does Orthognathic Surgery Cause or Cure Temporomandibular Disorders? A Systematic Review and Meta-Analysis. Al-Moraissi EA, Wolford LM, Perez D, Laskin DM, Ellis E 3rd. J Oral Maxillofac Surg. 2017 Sep;75(9):1835-1847 Temporomandibular Lavage Versus Nonsurgical Treatments for Temporomandibular Disorders: A Systematic Review and Meta-Analysis. Bouchard C, Goulet JP, El-Ouazzani M, Turgeon AF. J Oral Maxillofac Surg. 2017 Jul;75(7):1352-1362

	Retrospective study of facial nerve function following temporomandibular joint arthroplasty using the endaural approach. Liu F, Giannakopoulos H, Quinn PD, Granquist EJ. Craniomaxillofac Trauma Reconstr. 2015 Jun;8(2):88-93. Microbiology Alloplastic Total Joint Infections: A 20-Year Retrospective Study. Riegel R, Sweeney K, Inverso G, Quinn PD, Granquist EJ. J Oral Maxillofac Surg. 2018 Feb;76(2):288-293. Biomet Microfixation Temporomandibular Joint Replacement System: a 3-year follow-up study of patients treated during 1995 to 2005. Giannakopoulos HE, Sinn DP, Quinn PD. J Oral Maxillofac Surg. 2012 Apr;70(4):787-94 Open versus arthroscopic surgery for the management of internal derangement of the temporomandibular joint: a meta-analysis of the literature. Al-Moraissi EA. Int J Oral Maxillofac Surg. 2015 Jun;44(6):763-70. A protocol for management of temporomandibular joint ankylosis in children. Kaban LB, Bouchard C, Troulis MJ. J Oral Maxillofac Surg. 2009 Sep;67(9):1966-78. A protocol for management of temporomandibular joint ankylosis. Kaban LB, Perrott DH, Fisher K. J Oral Maxillofac Surg. 1990 Nov;48(11):1145-51 Wolford LM. Twenty-year follow up on a patient fitted temporomandibular joint prosthesis: the Techmedica/ TMJ concepts device. J Oral Maxillofac Surg 2015;73:952-960 Idiopathic condylar resorption: current clinical perspectives. Posnick JC, Fantuzzo JJ. J Oral Maxillofac Surg. 2007 Aug;65(8):1617-23. Synovial chondromatosis of the temporomandibular joint: a case description with systematic literature review.L. Guarda-Nardini, F. Piccotti, G. Ferronato, D. Manfredini: Int. J. Oral Maxillofac. Surg. 2010; 39: 745–755.

	Temporomandibular joint neoplasms and pseudotumors. Warner B, Luna M, Newland J. Advances in Anatomic pathology, 2000; 7(6): 365-381

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
TMJ anatomy and physiology	CP&D – ASSESSMENT & MANAGEMENT OF PATIENT WITH TMD Imaging review of TMJ		
		AOP – ARTHROCENTESIS	
		CP&D – CONDYLAR RESORPTION	
		CD – Ankylosis management CD- Recurrent TMJ dislocations	AOP - SURGICAL APPROACH TO TMJ
			CP&D – MANAGEMENT OF ADVANCED DISEASE OF THE TMJ/ TMJ replacement
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe the anatomy, histology and physiology of the masticatory apparatus • Describe the systemic arthritides in relationship to the TMJ • Discuss the differences and interrelationship between the muscles and joint • Describe internal derangement of the TMJ • Perform a history and examination • Perform appropriate imaging and interpret investigations for the TMJ • Describe the correlation between clinical findings and the investigations • Perform reduction of a dislocated mandible • Discuss the non-surgical management of TMD • Discuss the indications for surgical management of TMD • Discuss the management of TMD in a multi-disciplinary setting	• Perform injections (intraarticular or intramuscular) • Understand the non-surgical treatment of TMJ disorders, e.g. occlusal splints, medications, physiotherapy etc and know when to refer for management by other specialists • Participate in the management of TMD in a multi-disciplinary setting • Discuss arthroscopic procedures • Manage the postoperative care of patients following surgical treatment of TMD • Describe the surgical procedures involving the TMJ • Discuss the history of prosthetic reconstruction of the TMJ • Discuss the management of idiopathic condylar resorption • Discuss the management of chronic pain following TMD surgery	• Perform a complete surgical approach to the TMJ for trauma or TMD • Perform arthrocentesis • Participate in the following procedures as part of a surgical team: internal derangement hypomobility disorders of TMJ chronic dislocation ankylosis congenital & development anomalies • Discuss and participate in the management of benign & malignant pathology of the TMJ • Describe the reconstruction of the TMJ with a range of flaps or grafts • Manage common intra- and postoperative complications of temporomandibular surgery • Describe the indications, techniques and planning for total joint replacements • Discuss the medical and surgical management patients with pain and dysfunction syndromes after unsuccessful TMJ surgery • Discuss the diagnosis, management and prognosis of TMD with the patients and their families

MODULE 15: Oral and Maxillofacial Prosthetics and Technology

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Manage the needs of patients requiring Maxillofacial prosthetics • Perform the various techniques available to the OMS in order to treat surgical • deformity of the oral and maxillofacial region • Correctly determine and plan utilisation of such techniques during treatment planning, operative surgery, and post-surgical rehabilitation • Carry out the appropriate steps and current laboratory procedures involved in maxillofacial model surgery and splint preparation • Perform implant therapy, including those pre-prosthetic procedures relevant to extra-oral and intra-oral implant placement, including incorporation into orthognathic and reconstructive surgical procedures • Identify the resources needed to establish an appropriate working laboratory facility in new or under-serviced area • Formulate treatment plans which include the appropriate application of recent technological developments, including specifically: - custom-made skeletal prosthetic parts - 3D biomodelling • Have a working knowledge/understanding of computer-aided navigational treatment planning and surgery • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 124) for a complete list of competencies by level	**Learning Portfolio Checklist** ☐ Make an appropriate selection of articulator and accurately mount models ☐ Perform model surgery for orthognathic patients ☐ Perform model surgery for trauma patients ☐ Design and Construct splints for palatal surgery and other procedures ☐ Use Biomodels in OMS **Logbook** Trainee to log and document experience of at least 1 case in all categories listed in the Learning Portfolio Checklist above **Case Presentation plus Discussion** • Articulation and planning for a bimaxillary osteotomy **Literature Review / Essay Question / Tutorial** • Discuss the utilisation of 3D biomodels in contemporary oral and maxillofacial surgery • Discuss computer simulation in orthognathic surgical planning • Discuss use of alloplastic implants in reconstructive oral and maxillofacial surgery

Resources	
Textbooks	**Specific Articles**
Beumer J, Marunick MT, Esposito SJ (2011). Maxillofacial Rehabilitation: Prosthodontic and Surgical Management of Cancer-Related, Acquired, and Congenital Defects of the Head and Neck (3rd ed). Quintessence. Parashis A, Diamantopoulos P (2013). Clinical Application of Computer-Guided Implant Surgery. CRC Press. Lynch SE, Marx RE, Nevins M, Wisner-Lynch LA (2008). Tissue Engineering: Applications in Oral and Maxillofacial Surgery and Periodontics (2nd ed). Quintessence.	Tissue engineering technology and its possible applications in oral and maxillofacial surgery. Payne KF, Balasundaram I, Deb S, Di Silvio L, Fan KF. Br J Oral Maxillofac Surg. 2014 Jan;52(1):7-15. Secondary reconstruction of panfacial fractures. Khader R, Wallender A, Van Sickels JE, Cunningham LL. Oral Maxillofac Surg. 2014 Mar;18(1):99-109. Computer-assisted craniomaxillofacial surgery. Edwards SP. Oral Maxillofac Surg Clin North Am. 2010 Feb;22(1):117-34. Stereotactic navigation in oral and maxillofacial surgery. Collyer J. Br J Oral Maxillofac Surg. 2010 Mar;48(2):79-83. Computer planning and intraoperative navigation in cranio-maxillofacial surgery. Bell RB. Oral Maxillofac Surg Clin North Am. 2010 Feb;22(1):135-56. Navigation-assisted mandibular body distraction osteogenesis: a preliminary study in goats. Cai M, Shen G, Cheng AH, Lin Y, Yu D, Ye M. J Oral Maxillofac Surg. 2014 Jan;72(1):168.e1-7.
Journals	
International Journal of Oral and Maxillofacial Surgery British Journal of Oral and Maxillofacial Surgery Journal of Oral and Maxillofacial Surgery Journal of Cranio-Maxillofacial Surgery	

Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
	AOP ARTICULATION OF MODELS AND SPLINT CONSTRUCTION		
		CP AND D USE OF COMPUTER TECHNOLOGY IN PLANNING	
		AOP NAVIGATION IN ORAL AND MAXILLOFACIAL SURGERY	
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level	
Level One	**Levels Two and Three**
• Describe the anatomical structures of the head and neck • Describe the physiology and biomechanics of the jaws and masticatory apparatus • Identify the correct radiology for diagnosis including: Cephalometric analysis Model taking and articulation Clinical photography • Understand and describe the materials used for intraoral and extra oral prosthetic reconstruction, both of the hard tissues and soft tissues (eyes, ears, noses and other prosthetic components) • Describe the use of Biomodels in Oral and Maxillofacial Surgery • Understand the principals behind Navigation and discuss the use of Navigation techniques in Oral and Maxillofacial Surgery	• Perform articulation of models Appropriate choice of articulator Correlate mounting of models with the clinical situation to ensure accuracy • Perform model surgery Appropriate segmental sectioning of models Movement of segments, in accordance with the surgical treatment plan Stabilisation of segments in desired positions Recording of quantum and direction of movement of each individual segment • Perform the construction of the surgical appliances commonly used in Oral and Maxillofacial Surgery • Discuss, understand and guide the technicians in facial and body prosthetic rehabilitation • Discuss, understand and guide the use of biomodelling in maxillofacial surgery • Discuss, understand and use contemporary technologies in treatment planning, computer aided cephalometrics and navigation surgery • Discuss, understand and use 3D cephalmoetrics and virtual computer planning in Oral and Maxillofacial Surgery • Discuss the design and use of splints in maxillofacial surgery, e.g. TMJ dysfunction, sleep apnoea • Manage a patient requiring a Maxillary obturator

MODULE 16: Adjunctive Technologies in Oral and Maxillofacial Surgery

Broad competencies	Learning opportunities and methods
A trainee eligible to sit for the FRACDS (OMS) should be able to: • Describe the mechanism of laser production • Apply this technology for therapeutic use • Describe the mechanisms of cryotherapy and its use in oral and maxillofacial surgery • Apply these technologies in oral and maxillofacial surgery • Be familiar and be able to use endoscopic approaches to surgery in the maxillofacial region, eg. endoscopic sinus surgery, endoscopic fracture surgery, arthroscopy of the TMJ • Diagnose and select cases suited to endoscopic, laser and cryotherapeutic surgical techniques • Effectively apply endoscopic, laser and cryotherapeutic surgical techniques to the spectrum of applications in both general use and specific applications in the maxillofacial region • Apply the techniques of computer aided navigational surgery in the oral and maxillofacial region • Apply the techniques of computer planning in the oral and maxillofacial region • Consult, cooperate and discuss with other clinicians as required • Teach and hand down, encourage other juniors, undergraduates and graduates on ward rounds, clinics and other classes as required • Understand the processes involved in the employing hospital as well as the funding and administration of the employing hospital and health department Refer below (pg. 130) for a complete list of competencies by level	**Learning Portfolio Checklist** ☐ Complete a course on laser technology ☐ Use of lasers in the treatment of benign and malignant lesions of the maxillofacial Region ☐ Use of cryotherapy in the maxillofacial Region ☐ Treatment planning using virtual techniques in the computer and navigation to the patient ☐ Use of Computer planning in oral and maxillofacial surgery **Logbook** Trainee to log – • Use of laser therapy (5, 6) • use of cryotherapy (5, 6) • use of the arthroscope in the TMJ (13) • use of the endoscope in sinus disease (14) • endoscopically assisted trauma surgery (4) *(Number refers to category in Logbook)* **Literature Review** • The use of lasers in Maxillofacial Surgery • The use of cryosurgery in Maxillofacial surgery • The use of endoscopic surgery in the Maxillofacial Region, arthroscope, endoscope • Virtual planning of surgical procedure • The use of navigation in maxillofacial surgery **Case Study** • Use of navigation techniques for TMJ release or ankylosis or tumour resection • Secondary orbital reconstruction **Tutorial** • Plan an orthodontic case using either Quick Ceph or Dolphin technology (CDM) • Carry out model surgery following the STO production (CDM)

Resources	
All hospitals expect surgeons and trainees to complete a laser course before using the laser. Such a course should be completed within the first 2 years.	
Textbooks	**Specific articles**
Ward Booth P, Eppley B, Schmelzeisen R (2011). Maxillofacial Trauma and Esthetic Facial Reconstruction (2nd ed). Saunders.	<u>Computer assisted surgery</u> Computer-assisted craniomaxillofacial surgery. Edwards SP. Oral Maxillofac Surg Clin North Am. 2010 Feb;22(1):117-34. Stereotactic navigation in oral and maxillofacial surgery. Collyer J. Br J Oral Maxillofac Surg. 2010 Mar;48(2):79-83. Computer planning and intraoperative navigation in cranio-maxillofacial surgery. Bell RB. Oral Maxillofac Surg Clin North Am. 2010 Feb;22(1):135-56. Navigation-assisted mandibular body distraction osteogenesis: a preliminary study in goats. Cai M, Shen G, Cheng AH, Lin Y, Yu D, Ye M. J Oral Maxillofac Surg. 2014 Jan;72(1):168.e1-7. <u>Cone beam CT</u> Cone-beam computerized tomography (CBCT) imaging of the oral and maxillofacial region: a systematic review of the literature. De Vos W, Casselman J, Swennen GR. Int J Oral Maxillofac Surg. 2009 Jun;38(6):609-25. Applications of cone beam computed tomography in the practice of oral and maxillofacial surgery. Quereshy FA, Savell TA, Palomo JM. J Oral Maxillofac Surg. 2008 Apr;66(4):791-6. Comparative dosimetry of dental CBCT devices and 64-slice CT for oral and maxillofacial radiology.
Journals	
International Journal of Oral and Maxillofacial Surgery Journal of Oral and Maxillofacial Surgery British Journal of Oral and Maxillofacial Surgery Journal of Cranio-Maxillofacial Surgery Journal of Craniofacial Surgery	

	Ludlow JB, Ivanovic M. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2008 Jul;106(1):106-14. Clinical indications and perspectives for intraoperative cone-beam computed tomography in oral and maxillofacial surgery. Pohlenz P, Blessmann M, Blake F, Heinrich S, Schmelzle R, Heiland M. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007 Mar;103(3):412-7. <u>BMP</u> A comprehensive clinical review of recombinant human bone morphogenetic protein-2 (INFUSE Bone Graft). McKay WF, Peckham SM, Badura JM. Int Orthop. 2007 Dec;31(6):729-34. Bone morphogenetic proteins. Chen D, Zhao M, Mundy GR. Growth Factors. 2004 Dec;22(4):233-41. De novo bone induction by recombinant human bone morphogenetic protein-2 (rhBMP-2) in maxillary sinus floor augmentation. Boyne PJ, Lilly LC, Marx RE, Moy PK, Nevins M, Spagnoli DB, Triplett RG. J Oral Maxillofac Surg. 2005 Dec;63(12):1693-707. Pivotal, randomized, parallel evaluation of recombinant human bone morphogenetic protein-2/absorbable collagen sponge and autogenous bone graft for maxillary sinus floor augmentation. Triplett RG, Nevins M, Marx RE, Spagnoli DB, Oates TW, Moy PK, Boyne PJ. J Oral Maxillofac Surg. 2009 Sep;67(9):1947-60. Randomized study evaluating recombinant human bone morphogenetic protein-2 for extraction socket augmentation. Fiorellini JP, Howell TH, Cochran D, Malmquist J, Lilly LC, Spagnoli D, Toljanic J, Jones A, Nevins M. J Periodontol. 2005 Apr;76(4):605-13. <u>PRP</u> Platelet-rich plasma: Growth factor enhancement for bone grafts.

	Marx RE, Carlson ER, Eichstaedt RM, Schimmele SR, Strauss JE, Georgeff KR. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1998 Jun;85(6):638-46. The biology of platelet-rich plasma and its application in oral surgery: literature review. Nikolidakis D, Jansen JA. Tissue Eng Part B Rev. 2008 Sep;14(3):249-58. <u>Botox</u> Clinical use of botulinum toxins in oral and maxillofacial surgery. Majid OW. Int J Oral Maxillofac Surg. 2010 Mar;39(3):197-207. <u>Endoscopy</u> Endoscopic techniques in oral and maxillofacial surgery. Pedroletti F, Johnson BS, McCain JP. Oral Maxillofac Surg Clin North Am. 2010 Feb;22(1):169-82. <u>Laser</u> Intraoral laser surgery. Wlodawsky RN, Strauss RA. Oral Maxillofac Surg Clin North Am. 2004 May;16(2):149-63. Low-level laser therapy in oral and maxillofacial surgery. Kahraman SA. Oral Maxillofac Surg Clin North Am. 2004 May;16(2):277-88. Laser physics and tissue interaction. Guttenberg SA, Emery RW 3rd. Oral Maxillofac Surg Clin North Am. 2004 May;16(2):143-7. Complications of CO2 laser procedures in oral and maxillofacial surgery Brandon MS, Strauss RA. Oral Maxillofac Surg Clin North Am. 2004 May;16(2):289-299.

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Assessments			
OMS 1	**OMS 2**	**OMS 3**	**OMS 4**
SST EXAMINATION			
		AOP ARTHROSCOPY TMJ/ENDOSCOPIC ORID MANDIBULAR CONDYLE	
		AOP SIALADENOSCOPY OF PAROTID DUCT OR SUBMANDIBULAR	
		CP AND D VIRTUAL PLANNING AND NAVIGATION ORBITAL RECONSTRUCTION	
		TEAM APPRAISAL OF CONDUCT (TAC)	FINAL EXAMINATION
		FINAL EXAMINATION	

List of competencies by level		
Level One	**Level Two**	**Level Three**
• Describe technologies, e.g. endoscopes, lasers, etc • Describe the application of technologies in oral and maxillofacial surgery • Perform laboratory and simulation procedures to obtain credentialing • Discuss the contribution of adjunctive procedures, e.g. physiotherapy, splint therapy, etc • Assist in procedures using these technologies	• Perform a range of procedures using these technologies, e.g. endoscopy, cryosurgery, and laser ablation, etc • Communicate with patients (and/or their families) the procedures, risks and potential of each of these forms of treatment	• Perform complex procedures, e.g. endoscopically assisted management of condylar neck fractures or removal of sialoliths from the salivary glands • Use the Laser (as appropriate) for the removal of benign and malignant lesions in the Oral and Maxillofacial Region • Use Cryosurgical techniques in the Oral and Maxillofacial Region • Manage complications of these procedures • Design and communicate with patients management plans that include alternative operative procedures