

**CENTRE FOR CRANIOFACIAL ANOMALIES**  
**POST DOCTORAL FELLOSHIP PROGRAMME IN**  
**CLEFT & CRANIOFACIAL SURGERY**  
**SYLLABUS**

Clefts and Craniofacial Anomalies are some of the most commonly encountered congenital anomalies. With valuable support from various non-profit organizations, centres of excellence in the management of Cleft and Craniofacial Anomalies are developing at rapid pace all over the world. Multidisciplinary approach in the management of Cleft and Craniofacial Anomalies is vital. Various surgical, medical, dental and speech and language specialties are involved in this holistic management. The complete rehabilitation of an individual with these deformities begins from the time of its detection, which could be in its intra uterine life, to the time well into his adulthood. Rapid advances, innovations and changes in ideas have to be disseminated and surgical skills need to be taught to surgeons interested in specializing in this branch. This fellowship program aims at empowering surgeons with this essential armamentarium towards providing a complete and scientific surgical treatment to individuals suffering from these anomalies. The fellowship program is conducted by the Centre For Craniofacial Anomalies under the auspices of YENEPOYA UNIVERSITY, supported by the Yenepoya Medical and Dental College.

**Objectives:**

- To orient the fellow towards acquisition of technical skills required in Cleft and b craniofacial surgery and the preoperative planning.
- To inculcate the idea of multidisciplinary approach in the rehabilitation of individuals with Cleft and Craniofacial Anomalies
- To expose the fellow to the basic knowledge in the other specialties involved in the management of Cleft and Craniofacial Anomalies like, Orthodontics, Otolaryngology, Speech and Language Pathology, Paediatrics, and Paediatric and General Dentistry.

- To involve the fellow in research activities involving surgical and supportive management of the Cleft and Craniofacial Anomalies.
- To support the fellow to undertake research in genetics, etiopathogenesis, epidemiology of the Cleft and Craniofacial Anomalies.
- To involve the fellow in Community based rehabilitation activities for individuals with Cleft and Craniofacial Anomalies.
- To evolve the fellow into a specialist Cleft and Craniofacial Surgeon well versed with the basic skills and well oriented with the advanced skills in the holistic management of Cleft and Craniofacial Anomalies.

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**Duration:**

The length of curriculum will extend to one academic year.

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**Total Intake:**

- Maximum of two candidates per academic year.
  - Proposed to take two more candidates in the mid year.
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**Eligibility:**

- M.D.S. in Oral and Maxillofacial Surgery (recognized by DCI)
- OR
- M.S. in General Surgery / M.S. in E.N.T. (recognized by MCI).
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**Completion of Curriculum:**

- To complete the curriculum the fellow shall update his / her knowledge as per the prescribed curriculum.
- Maintain a Log Book on a day to day basis of his / her Clinical, Academic and Research work.
- Present at least one paper at a National Level Conference.
- Have at least one publication in an indexed journal.
- Perform, assist, observe and be involved in the planning of the specified number of surgeries.

## **Course Content / Curriculum:**

### **Facial Cleft:**

- Introduction:
  - History
  - Epidemiology
- Anatomy and Pathology:
  - Normal Anatomy and Embryology of Craniofacial Complex Embryogenesis Cleft Lip and Palate and Craniofacial Anomalies
  - Genetics: Syndromic and Non-syndromic
  - Postnatal Craniofacial Growth and Development
  - Anatomy in Cleft Lip and Palate and Craniofacial Anomalies
  - Facial Growth in Cleft Lip and Palate
- Classification:
  - Cleft Lip and Palate
  - Rare Clefts
  - Other Craniofacial Anomalies
- Unilateral Cleft Lip Deformity:
  - Anatomy
  - Management
  - Presurgical Orthopaedics
  - Evolution of Surgery
  - Lip Adhesion
  - Techniques of Lip Repair
  - Primary Nasal Correction
  - Secondary Lip Deformities
  - Secondary Surgeries
  - Corrective Rhinoplasty

- Bilateral Cleft Lip Deformity:
  - Anatomy
  - Management
  - Presurgical Orthopaedics
  - Evolution of Surgery
  - Lip Adhesion
  - Techniques of Lip Repair
  - Management of Premaxilla
  - Primary Nasal Correction
  - Secondary Lip Deformities
  - Secondary Surgeries
  - Corrective Rhinoplasty
  
- Cleft Palate Deformity:
  - Anatomy
  - Feeding
  - Speech
  - Management
  - Timing of Surgery
  - Techniques of Repair
  - Prosthetic Obturation
  - Alveolar Bone Grafting
  
- Velopharyngeal Incompetence:
  - Assessment
  - Management
  - Pharyngeal Flaps
  - Pharyngoplasties
  
- Orthodontics in Cleft Lip and Palate:
  - Maxilla

Mandible

Dentition

Cephalometry

- Rare Craniofacial Clefts:

Incidence

Embryogenesis

Classification

Management

Principles of Craniofacial Surgery:

- Orbital Hypertelorism

Assessment and Planning

Surgical Correction

Craniosynostosis:

- Etiopathogenesis

- Evaluation

- Management:

Early Surgery

Late Surgery

**Craniofacial Microsomia:**

- Embryology

- Etiopathogenesis

- Clinical Spectrum

- Evaluation

- Management

**Craniofacial Syndromes:**

- Treacher Collins Syndrome (Mandibulofacial Dysostosis)

Dysmorphology

Evaluation

Management

- Pierre Robin Sequence

Dysmorphology

Evaluation

Management

- Romberg's Disease (Hemifacial Atrophy)

Etiopathogenesis

Clinical Aspects

Management

- Klippel Fiel Syndrome

Etiopathogenesis

Clinical Aspects

Management

### **Orthognathic Surgery:**

- Historical Perspectives
- Dental Occlusion
- Treatment planning

### **Cephalometry**

### **Radioimaging**

### **Model Surgery**

- Orthodontic Consideration
- Surgical Correction

### **Osteotomies:**

Maxillary

Mandibular

## Distraction Osteogenesis

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### **Schedule:**

A total of 48 working hours a week which will be distributed as follows

- Out Patient Department : 3 hrs twice a week
- Operative Sessions : 7 hrs thrice a week
- Inpatient work :

Regular rounds : 1 hr five days a week

Grand Round : 3 hrs once a week

- Academic Activities :

Seminar : 1.5 hrs twice a month

Case Discussion : 1.5 hrs twice a month

Journal Club : 1.5 hrs twice a month

Clinics with Orthodontics/ Speech Pathology : 1.5 hrs twice a month

- Research Activity : 4 hrs in a week
- Community Activity : 12 hrs in a month
- Case Planning, Modelling, Moulage, Model Surgery, Cephalometric

Analysis : 3 hrs in a week

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### **Log Book:**

Log Book to be maintained for evaluation of the following:

- Interpersonal and communication skills
- Medical Knowledge
- Patient Care
- Clinical Acumen

- Surgical Skills
- Practice based learning and improvement
- Professionalism
- Attendance and availability
- Enthusiasm and responsiveness

**Attendance:**

80% as per University Regulations.

**Scheme of Examination:**

**Theory Examination:**

Will comprise of two papers of 100 marks each. The first paper will be on Cleft Lip and Palate and the second paper will cover Craniofacial Surgery and allied subjects like Orthodontics, Otolaryngology, Speech and Language Pathology, Paediatrics, Genetics, General and Paediatric Dentistry.

**Subject**

Duration in hours

Long Questions Short Questions

Total number of

Marks

Paper I : Cleft Lip and

Palate 3 20X2=40 10X6=60 100

Paper II: Craniofacial

Surgery & Allied

Subjects

3 20X2=40 10X6=60 100

**Practical Examination:**

Will comprise of Case Presentations and Viva Voce

Duration



in hours

Distribution

Total number of

Marks

Case Presentation 3

Long Case (one) : 90

Short Cases (two) : 30X2

150

Viva Voce 1 Two tables : 25X2 50

**Examiners:**

Two Examiners: One Internal and One External.

**Examination results:**

- The fellow has to satisfy the examiners and score at least fifty percent of the marks in the theory and practical individually.
- The fellow who shows exceptional merit will be awarded distinction.

(More than 75% marks)

**Potential of the Course:**

With advent of Multidisciplinary approach and rapid developments and refinements the management of Cleft and Craniofacial Anomalies various centres of excellence are coming up all over the world. In the last couple of years this trend has become more evident in India. Many non-profit organizations are coming forward to aid the management of these deformities and also finance researches in this field. This development has opened up several avenues for professionals who are specifically trained in the field of Cleft and Craniofacial Surgery.

The Cleft Surgeon being the key person in the management of these deformities has to shoulder the responsibility of developing and running these centres of excellence. Training Surgeons in this specialty in a centre like ours which is

already catering to vast number patients in this field will go a long way in helping this happen.

### **The Detailed Curriculum for Cleft Lip and Palate Surgery**

This is presented in two sections. The first outlines the key objectives and competencies to be achieved in the first six months of training and the second outlines the complete syllabus for the special interest training program .

#### Section 1: Key objectives and competencies to be achieved in the first 6 months

##### B – Patient/parent management

	Subject	Knowledge	Skills	Attitudes
1	History taking	Symptom patterns, pregnancy and family history	Elicit relevant history, elicit pregnancy history, elicit family history, take history in difficult circumstances (English not first language, parents with psychological or social problems, confrontational parents)	Consider the impact of cleft problems on family dynamics, parental apprehension, cultural problems
2	Clinical Examination	Patterns of clinical signs in clefting Signs of appropriate development	Appropriate explanation of procedure to parents, ability to examine without causing undue discomfort, elicit signs and use appropriate equipment	Be aware of patient dignity and comfort, be aware of needs of parents, be aware of the need for assistance in certain cases
3	Peri-operative management	Appropriate health for undergoing anaesthesia and operation, basic knowledge of anaesthesia for cleft infants, post-operative management, including introduction of feeding	Appropriate pre-operative examination, communication with anaesthetists, post-operative fluid management (intravenous and oral), use of prophylactic antibiotics	Address parents' concerns, reporting immediate outcome of operation, explaining normal range of post-operative condition
4	Surgical technique	Principles and techniques of primary cleft surgery of lip and palate, principles and techniques of secondary cleft surgery, including unilateral alveolar bone graft	Demonstrate appropriate knowledge of surgical anatomy, demonstrate appropriate knowledge of operation rationale, appropriate tissue handling, appropriate selection of instruments, appropriate selection of suture material	Attention to detail, interest in surgical economy and elegance
5	Speech investigations	Indications for speech investigations, methods and limitations, radiation protection	Assessing appropriateness of referral for speech investigations, assessing likely co-operation of patient, basic interpretation of results	Positive approach for parents, willingness to interpret results in simple terms for parents and older patients

Section 1: Key objectives and competencies to be achieved in the first 6 months

C – Multi-disciplinary management

	Subject	Knowledge	Skills	Attitudes
1	Team working ability	Understanding the expertise and role of other disciplines in cleft management	Effective communication with other disciplines, presentation of clinical cases	Concern to seek appropriate expertise and opinion from others, respect for other professionals' viewpoints
2	Communication	Methods and timing of involvement of other disciplines in cleft care	Appropriate involvement of other professionals	Awareness of needs of other disciplines to know patients' clinical course and concern to seek appropriate expertise and opinion from others
3	Empathy and sensitivity, ethics, consent	Range of patient and parent reaction to cleft deformity and its consequences, knowledge of ethical issues in cleft management	Identifying patients and parents concerns, take consent effectively for primary cleft operations, ability to discuss ethical issues and potential complications	Respect for parents' view, awareness of cultural differences
4	Antenatal diagnosis	Possibilities and limitations of antenatal diagnosis, likelihood of undiagnosed coexistent abnormalities	Ability to ascertain details of antenatal diagnosis, ability to prioritise information, ability to use simple language in discussing diagnoses	Awareness of Fetal Medicine views, awareness of parents concerns and attitudes, awareness of interaction of parents and professionals at counselling
5	Organisation and planning	Systematic approach to patient management	Starting with important tasks, improvement of efficiency, discussing prioritisation with colleagues in the team	Realistic expectation of tasks to be completed by self and by other team members, willingness to consult other opinions
6	Data and record management	Understand how data are recorded by different specialties in cleft management	Contribute accurate records, understand significance of data recorded by others	Attention to details, awareness of other professionals' written priorities
7	Audit/Evidence based medicine	Principles of EBM, important clinical trials in cleft management, ongoing audit in cleft management	Critically appraise evidence, competent use of paper and electronic data sources, ability to discuss evidence with parents and patients at appropriate level, ability to carry out audit project	Willing to use evidence to support patient care
8	Research	Place of research in aiding patient management, different methods of research and application of these	Involvement in departmental research project, using critical analysis skills to determine research questions	Awareness of the relevance of research, awareness of ethical aspects of research on children

Section 2: The full curriculum is outlined for the whole (1 year maximum) training; including key objectives and surgical competencies.

The training interface group recognises that training in Cleft Lip and Palate Surgery should take place with the full facilities of a Paediatric environment. A trainee with a special interest in Cleft Lip and Palate Surgery must be able to demonstrate that he/she can function as part of a multi-disciplinary team. He/she must also demonstrate an appropriate relationship, directly or by correspondence, with all other relevant Paediatric Departments and Specialists, including: Fetal Medicine, Clinical Genetics, Nutrition and Dietetics, Anaesthetics, General Paediatrics, Community Paediatrics.

The training will cover the full range of primary and secondary cleft surgical procedures. Some of the related procedures that the advanced trainee (and later the consultant) will undertake will depend on their parent speciality (e.g. insertion of grommets, aspects of dental surgery management).

This outline of the full curriculum assumes the completion of the objectives and competencies of the first 6 months (Section 1).

#### A- Core Knowledge

	Subject	Knowledge	Skills	Attitudes
1	Embryology	Process and timing of facial, branchial arch and otological development Teratogenic effects	Ability to relate deformity/anomaly to embryology	Sensitivity to pregnancy events
2	Genetics, syndromes	Genetics of cleft lip and palate, cleft syndromes, common cranio-facial syndromes, cleft syndromes with risk of disability in other systems	Sensitive discussion of new findings, use of clinical genetics inputs	Sensitivity to parents of patients with genetic disorder, awareness of own limitations in genetics counselling
3	Growth and development in infant/child nutrition	Cardio-respiratory physiology of newborn, energy requirements, growth, development milestones in the first year of life, IV fluid management, principles of resuscitation (APLS/PALS)  Feeding mechanisms, swallowing, relation of infant feeding and later epoch mechanisms, nasal and Eustachian tube and middle ear physiology	Use of growth charts, recognising growth/development exceptions in syndromic patients, appropriate referral of developmental delay, learning difficulties, childhood disability	Willingness to liaise with other professionals for childhood feeding, nutrition and developmental difficulties

		Feeding pathology and solutions, cleft related feeding and diet management, development milestones after age 1		
4	Speech development	Feeding mechanisms, swallowing, relation of infant feeding and later speech mechanisms, nasal and Eustachian tube and middle ear physiology  Range of normal speech development mechanisms at risk in cleft, effect of otitis media with effusion, speech skills at school entry	Effective liaison with Speech Therapists, effective liaison with ENT, appropriate interventions in pre-school child and school child	Awareness of parents' concerns, awareness of school requirements, contributions of other medical professionals, Community Paediatrics
5	Peri-operative management	Range of normal pre-operative parameters in children, significant dangers for anaesthetics and operation, principles of post-operative fluid management, antibiotic policy	Appropriate examination, liaison with Anaesthetics and Ward Staff, counselling of parents, post-operative fluids and feeding management, thresholds for Intensive Care interventions	Primacy of patient safety, understanding of parents' anxieties, willingness to communicate and to seek advice of other professionals

#### B- Antenatal management

	Knowledge	Skills	Attitudes
1	Possibilities and limitations of antenatal diagnosis, likelihood of undiagnosed coexistent abnormalities	Ability to ascertain details of antenatal diagnosis, ability to prioritise information, ability to use simple language in discussing diagnoses  Ability to conduct ante-natal counselling, demonstrate appropriate liaison with Fetal Medicine Department	Awareness of Fetal Medicine views, awareness of parents concerns and attitudes, awareness of interaction of parents and professionals at counselling

### C- Post natal management

	Subject	Knowledge	Skills	Attitudes
1	Airway	Airway in Pierre Robin, choanal and laryngeal anomalies	Airway management in collaboration with other professionals	Awareness of potential complications, willing to address parents' concerns
2	Feeding	Energy requirements and preferred methods of feeding in clefts, feeding problems in syndromic and premature babies	Liaise with other professionals on optimisation of cleft patients' feeding	Respect parents' options on feeding, respect parents' skills
3	Counselling	Understanding of techniques and priorities of informing parents of new patients	Counselling parents of new patients, ability to use simple language, ability to demonstrate priorities to parents	Respect parents' difficulties, awareness of cultural problems
4	Principles of pre-surgical orthodontics	Awareness of orthodontic preferences, awareness of situations indicating pre-surgical orthodontics	Appropriate discussion with Orthodontic colleagues	Awareness of other professionals' views

### D- Primary surgery

	Subject	Knowledge	Skills	Attitudes
1	Primary lip repair	Surgical anatomy, pathological anatomy, techniques and timing, rationale of different sequences	Operative skill to repair the lip and appropriate other structures according to Unit protocol	Attention to detail, interest in surgical economy and elegance
2	Primary palate repair	Surgical anatomy, pathological anatomy, techniques and timing, rationale of different sequences	Operative skill to repair the palate and appropriate other structures according to Unit protocol	Attention to detail, interest in surgical economy and elegance

### E- Secondary surgery

	Subject	Knowledge	Skills	Attitudes
1	Lip revision and fistula closure	Appropriate assessment of lip/fistula disability, awareness of patient perceptions	Ability to make appropriate lip revision, ability to make appropriate fistula closure	Sensitive attitude to patients and parents, correct attitude to surgical skills
2	Investigation	Indications for speech investigations,	Assessing appropriateness of	Positive approach for parents,

	Subject	Knowledge	Skills	Attitudes
	of velo-pharyngeal function	methods and limitations, radiation protection	referral for speech investigations, assessing likely co-operation of patient, basic interpretation of results  Full interpretation of the results and formation of clinical plan	willingness to interpret results in simple terms for parents and older patients
3	Secondary palatal surgery, surgical management of VPI	Anatomy and physiology of palatal function and abnormalities after cleft closure, pathophysiology of VPI	Judgement on correct operations for secondary repair and control of VPI, skillful dissection of palate after previous repair, surgical skills in speech surgery, pharyngoplasty	Ability to balance risk of operation against benefits, correct approach to parents and patients
4	Alveolar bone graft	Preparation for bone grafting, correct assessment of evolution of secondary dentition, understanding of orthodontic investigations and treatment	Surgical skills in alveolar bone grafting, correct peri-operative management	Attention to detail, interest in surgical economy and neatness
5	Rhinoplasty	Anatomy and pathological anatomy of the cleft nose, understanding of corrective procedures	Demonstrate surgical skills in cleft rhinoplasty, management of cleft airway and nasal septum	Attention to detail, interest in surgical economy and neatness
6	Cleft related orthognathic surgery	Understanding of anatomy and pathological anatomy, understanding of planning, surgical principles in orthognathic surgery, understanding of orthognathic appliances and their usage, methods of distraction osteogenesis	Ability to perform orthognathic surgery under supervision	Correct attitude to the patient, ensuring patient understanding of what is to be achieved

#### F- Knowledge for multi-disciplinary team working

	Subject	Knowledge	Skills	Attitudes
1	Basic otology and hearing assessment	Interpretation of audiogram and tympanometry study, understanding the principles of brain stem evoked response audiometry	Ability to refer from appropriate history and audiogram	Awareness of speech and hearing relationship, timely liaison with ENT
2	Orthodontics	Understanding of orthodontic role in cleft care, planning ABG, planning	Appropriate liaison with Orthodontists	Awareness of Orthodontic input at different stages of cleft

	Subject	Knowledge	Skills	Attitudes
		orthognathic surgery, orthodontic measurement of mid-facial growth		management
3	Speech and language therapy	Speech and language therapy input into cleft management, tools for examining speech development, surgical and orthodontic assistance to speech therapy	Appropriate liaison with Speech and Language Therapists, partaking in policy formation for patients concerning speech management	Awareness of parents' and patients' sensitivities, awareness of social and educational difficulties
4	Paediatric and restorative dentistry	Understanding of the role of Paediatric Dentists, understanding basics of oral and dental hygiene, understanding principles of restorative dentistry	Appropriate referral to Paediatric and Restorative Dentist	Awareness of cleft patients' difficulties with oral hygiene
5	Child and adolescent psychology	Awareness of the role of Psychologists in childhood and adolescence, understanding of situations requiring psychology therapy	Care in selection of appropriate patients/families for referral	Sensitivity of parents to discussion of psychology, avoidance of appearing critical
6	Children with disabilities	Understanding the role of Community Paediatrics and associated professionals, special needs teaching, awareness of communication disorders	Appropriate liaison with community agencies, ability to write relevant reports	Awareness of parental concerns and difficulties
7	Ethical issues	Understanding of consent in older children and adolescents, Gillick competence, ethics of new procedures	Ability to take consent from older children and adolescents, ability to communicate medical ethics to parents and older children	Sensitivity to family preferences and sensitivity to family fears
8	General paediatric issues	Understanding resuscitation of children Understanding issues of non accidental injury and child protection	Maintenance of APLS/PALS skills Ability to recognise signs of NAI, risk factors, family pathology, awareness of NAI referral pathways to child protection	Willingness to maintain skills, awareness of risk factors for NAI, sensitivity to child's needs
9	Management of residual cleft deformity in adults	Understanding of situation at cessation of facial growth, basic understanding of nasal septal deformity, understanding of adult self-image problems, understanding of adult communication problems	Ability to assemble appropriate professionals to solve adults' concerns	Sensitivity to adult problems, awareness of psychological difficulties



### Surgical Work:

Surgery	O	A	PA	P	PI
Lip Repair	30	30	20	10	-
Palate Repair	30	30	10	5	-
Alveolar Bone Grafting	5	5	2	-	-
Lip Revisions	15	15	5	2	-
Fistula Closure	10	10	2	-	-
Rhinoplasty	5	5	1	-	-
VPI Surgery	3	3	1	-	-
Orthognathic Surgery	3	3	-	-	2

O : Observed  
P : Performed

A : Assisted  
PI : Planned

PA : Performed Assisted

### Reference Books:

1. Cleft Craft: Volumes 1,2&3 : D. Ralph Millard, Jr.
2. Plastic Surgery, 2nd Ed.: Volume IV: Paediatric Plastic Surgery:  
Mathes S.J.
3. Plastic Surgery, 2nd Ed.: Volume II: The Head and Neck, Part 1:  
Stephen J. Mathes
4. Multidisciplinary approach for management of Cleft Lip-  
Palate: Kenneth E Salyer, Janusz Bardach
5. Atlas of Craniofacial and Cleft Surgery: Kenneth E Salyer,  
Janusz Bardach
6. Grabb and Smith's Plastic Surgery: 5th Ed.:
7. Oral and Maxillofacial Surgery: Cleft, Craniofacial and Cosmetic:  
Volume VI: Raymond Fonseca
8. Radiographic Cephalometry – From Basic to Videoimaging:  
Alexander Jacobson
9. The Surgical Technique for the Unilateral Cleft Lip-Nasal Deformity:  
M. Samuel Noordhoff
10. Cleft Lip and Palate-Diagnosis and Management : 2nd Ed. :Berkowitz
11. Management of Cleft Lip and Palate: Watson C.H.
12. Cleft Palate and Speech: Muriel & Morley
13. Cleft Palate- The Nature and Remediation of Communication  
Problems: Jackie Stengelhofen

