



# **College of Physicians and Surgeons of Mumbai**

## **Syllabus for CPS-PG-Course**

### **DMA-DIPLOMA IN MINIMAL ACCESS SURGERY**

**College of Physicians and Surgeons of Mumbai**

**CPS House, Dr. E. Borges Marg, Parel, Mumbai – 400012.**

## **DMA-DIPLOMA IN MINIMAL ACCESS SURGERY**

### **AIM:**

Due to lack of adequate educational programs in MIAS and this programme is to adequately prepare general surgeons in the art of Minimal Access Surgery which will benefit the patients.

### **OBJECTIVES:**

To train a specialist to be capable of

Improving knowledge in MIAS

Aim to practice MIAS as an armaturium.

Teaching, research and auditing

Coordinating and promoting collaboration in organizing these services

Providing leadership in developing research within the specialty

### **COURSE DESCRIPTION**

#### Eligibility Criteria for Candidates:

i. A candidate should possess MBBS degree/ equivalent degree as per provisions of Indian Medical Council Act.

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ii. Candidates having a recognized 3 years degree Qualification (MD/MS/DNB) in Surgery or 2 years Diploma Qualification in Surgery specialty

Duration of the Course : 2 years

The practice patterns of General and GI Surgery has changed significantly in the last two decades as a result of the increasing use of rigid and flexible Endoscopes for both diagnostic and therapeutic techniques. These changes are occurring from time to time and continue rapidly with increasing the performance of Advanced Laparoscopic procedures. Residents and General Surgeons who have completed their training in conventional open surgeries and are entering the practice of general surgery must be familiar with and must be well trained and educated in these areas of surgery.

Laparoscopy should be significant part of their practice and with time will become more important and more widely used.

TRAINING OF MIAS :(Minimal Invasive Abdominal Surgery)

**DEFINITION:**

The training of general surgeon as a specialist in minimal access abdominal surgery programs which is more practical and evidence based. The development of educational programs that will adequately prepare residents, general surgeons and DNB candidates for the future of laparoscopic surgery practice.

**ORGANIZATION OF TRAINING:**

Training programs in MIAS should be in a multidisciplinary centre of minimally invasive surgery and should be organized by a qualified, accredited specialist in MIAS.

The Centre should use the guidelines and protocols by national professional bodies and are reviewed at regular intervals.

**THE MEANS OF TRAINING:**

Entry requirements:

MS /DNB/FCPS Surgery

The trainees should participate in all relevant activities of the training unit such as the care of Out - Patients and In - Patients, on call duties during both day and night, also participating in educational activities, including the teaching of other health professionals. Participation in audit and clinical or basic research is essential.

The duration of MIAS training should include a Minimum of two Years in an approved programme and should cover the clinical and research aspects of the following areas:

Good text books on MIAS written by leading and experienced Authors

Educational tools such as Video tapes /CD ROMS

Simulators for Endo –Training

Box trainers to master the skills

Endo trainer rooms with adequate space and good air-conditioning facility to work long hours in the simulators so the trainee can avoid fatigue.

Endo-cameras mounted on a special stands with the monitors Special hand instruments to learn the hand and eye-co-ordination

To learn depth perception

To learn tactile sensations

The training should be structured throughout with clearly defined targets to be met after specified intervals. An education plan should be drawn up in consultation with the trainees at the beginning of each attachment and progress should be monitored regularly, by means of logbook.

**ASSESSMENT OF TRAINING:**

Each student is evaluated every month by programme coordinator.

**COURSE EVALUATION:**

The trainee gets the opportunity to evaluate the course.

**LOG BOOKS:**

The log books are to be submitted for monthly evaluation of the progress and to evaluate the learning curve.

**EXIT EXAMS:**

The degree is awarded after a final exit examination, at the end of one year training period.

**TRAINING PROGRAMME SYLLABUS**

**MINIMAL INVASIVE ABDOMINAL SURGERY: (Laparoscopic Surgery)**

**General Principles:**

Equipment set up and troubleshooting

Patient preparation

Anaesthesia and Monitoring

Access to abdomen

Creating pneumoperitoneum

Abdominal wall lift devices

Principles of laparoscopic haemostasis

Principles of Electro surgery

**COURSE OBJECTIVES:**

Gaining laparoscopic skills is very important. Skill in conventional surgical procedure does not necessarily confer skills in Laparoscopic surgery. The course is aimed at bridging this gap and is formulated with the following objectives in mind.

To master the tactile sensation, altered hand and eye co-ordination due to the length and design of instruments and the absence of three dimensional depth perception due to two dimensional representation of the three dimensional abdominal cavity.

To learn about specialized Laparoscopic equipment and instrumentation.

To learn the principles of Laparoscopic surgery.

To learn the indications, contra-indications and limitations of MIAS and various procedures.

To perform abdominal insufflation using Veress needle

To perform laparoscopic procedures on live animal models in the purposeful, wet laboratory in association with J&J Ethicon Lab.

Learn to perform on human patients.

Sterilization and maintenance of instruments and video equipment.

Documentation, storage data and presentation.

Anaesthesia in laparoscopic surgery.

Trouble shooting in MIAS.

Electro surgery and other newer energy sources.

Learning about prosthetic meshes and fixation devices.

To learn about tissue marcellators and organ retrieval systems.

To know about the complications and its managements in MIAS.

Basic and advanced skills in Endo-knotting and intracorporeal suturing techniques.

#### SETTING UP OF A LAPAROSCOPIC UNIT

##### ROOM LAYOUT AND EQUIPMENT POSITION:

General considerations include the size of operating room space, location of doors, outlets for electrical and aesthetic equipment.

To determine the optimum position and orientation for the monitor placement.

If the room is large, the normal position for the operating table will work well for laparoscopy (30/30).

Small operating rooms will require diagonal placement of the operating table and proper positioning of laparoscopic accessory instrumentation around the operating table.

All equipment checklist help to ensure that all items are available and minimized delays in MIAS.

##### THE BASIC INSTRUMENTS NEEDED FOR SETTING UP THE UNIT IS AS FOLLOWS:

Electrical table with leg separation facility.

Two video monitors. One for the surgeon and another for the assistants and team(optional).

Suction and irrigation apparatus.

Electrosurgical unit with proper grounding.

Pad equipped with current monitoring system.

Cart to house the laparoscopic equipment orpendent.

Light sources (Halogen or Xenon).

Electronic insufflator or Pneumoflator.

Fibro-opticcable.

Camera Systems

Single chip camera system

Three chip camera system

High definition camera systems

Video recorder for Data (or) computer picture capturing systems connected to the monitors or camera consol.

•Telescopes

0° 10 mm

30° 10 mm

0° 5 mm

30° 5mm 45° 10 mm



Colour printer for documentation.

X-Ray Unit for advance intra operative Cholangiography

CO2 Cylinders

Laparoscopic accessory instruments for basic and advancedsurgeries.

Atraumatic graspers

Locking toothed and jawed graspers

Needle holders

Dissectors - curved and rightangle

Bowel grasping forceps

Babcockclamp

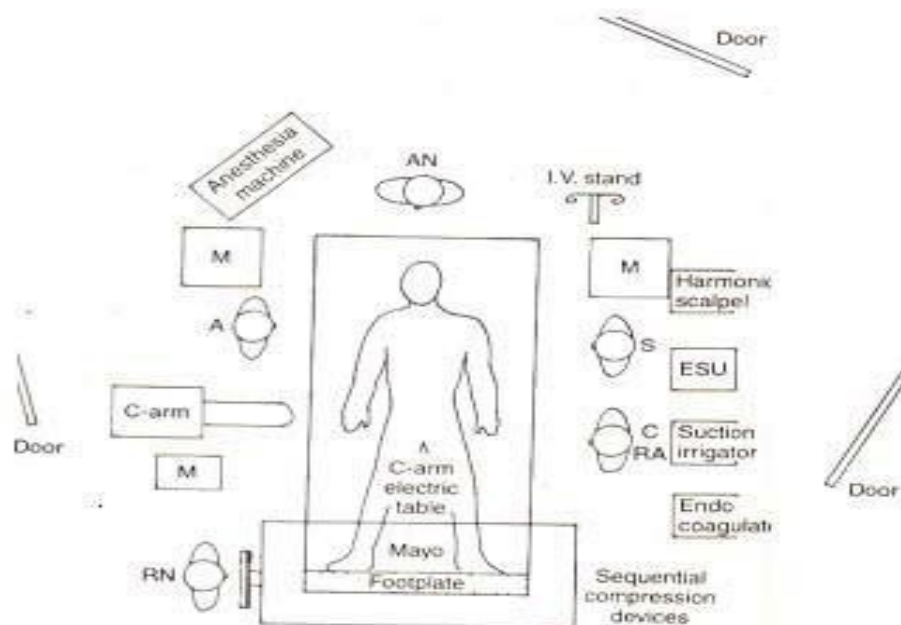
Veress needle

Trocars – 5mm and 10mm

Metzenbaum scissors and Straight scissors

Hook with diathermy attachment (L-Shaped)

- Fan retractors - 10 mm and 5mm
- Specialized retractors (optional) (Cusheri liver retractor)
- Vessel Sealing Systems
- Monopolar electrocautery dissection tools.
- Bipolar dissection and coagulation tools
- Harmonic scalpel or Ligasure (optional)
- Basket containing
- Clip appliers
- Endoscopic stapling devices
- Endoloops
- Endoscopic suture materials
- Extra trocars
- Additional tables should be available
- For hot saline
- Irrigating solutions



And open surgical instruments (Conventional surgery) for emergency conversion to open from laparoscopy, should be kept ready and separate from Lap. Instruments.

- |    |                    |    |              |
|----|--------------------|----|--------------|
| AN | - Anesthesiologist | A  | - Assistants |
| S  | - Surgeon          | RN | - Mayo Nurse |
| C  | - Camera Holder    | M  | - Monitors   |
| RA | - Robotic Arm      |    |              |

A back up UPS for lap equipment for uninterrupted surgery is very essential.

#### TROUBLE SHOOTING:

Laparoscopic procedures are inherently complex. Many things can go wrong. The surgeon must learn sufficiently about all equipment which can trouble shoot and to solve it. Common problems to be learnt are:

Cause of Poor insufflations

Reason for excessive pressure for insufflation

Reasons for inadequate lighting

Reasons for too bright lighting

Reasons for loss of picture on monitors

Reasons for poor quality pictures /fogging /haze

Reasons for flickering electrical interference

Reasons for inadequate cauterization/inadequate irrigation and suction

Note: Once the surgeon is gowned and gloved, everything should work in MIAS procedures.

Otherwise it will lead to early conversion to open surgery.

#### PREOPERATIVE EVALUATION FOR LAPAROSCOPIC SURGERY

Before surgery, evaluation by qualified anaesthetist is mandatory. This should include:

Systems affected by Pneumoperitoneum

Airway

Respiratory system

Cardiovascular System

Other Relevant systems

Central nervous system

Endocrine system

Gastrointestinal system Other relevant History

Post anaesthetic experience of the patient

Post anaesthetic family History of the patient

Allergies to local anaesthetics of the patient

Medications taken in the past.

Monitoring and safety considerations which should include:

Breath sounds (Precardial or esophageal stethoscope)

Electrocardiogram (continuous)



Blood pressure, pulse (continuous, non invasive)

Continuous oxygen saturation (Pulse oximeter)

Expired carbon dioxide (Capnograph)

Temperature gauge

Ventilator and additional monitors (optional)

Fire prevention is a crucial safety consideration. The operating room is an oxygen rich environment. The ends of the fibro optic cables become extremely hot and can ignite drapes. Hence fire extinguisher should be placed just outside the laparoscopic theatre.

#### ADMINISTRATION:

Setting up the laparoscopic surgery unit, quality control and assurance, creating protocol for management and organizing and coordinating of clinical meetings.

Research and audit

counselling of the patients for MIAS, implications, approach and other complications and getting proper consent for conversion to open if necessary.

#### Basic Module In MIAS FOR GENERAL SURGEONS:

Diagnostic Laparoscopy

Laparoscopic Appendectomy

Laparoscopic Cholecystectomy

Laparoscopic Adhesiolysis

#### Advanced module in MIAS FOR GENERAL SURGEONS:

Laparoscopic Hernioplasty

Direct – TEP REPAIR

Indirect – TAPP REPAIR

Laparoscopic Perforation Closure

Vagotomy and GJ (Stapling and Hand Suturing)

Nissen Fundoplication for GERD and Hiatus Hernia

CBD Exploration using C-Arm control

Laparoscopic Splenectomy

Assisted large and small bowel surgeries

Liver resections

Pancreatojejunostomy and Cystogastrostomy for Pseudocysts of pancreas.

Laparoscopic Rectopexy for prolapsed rectum.

Laparoscopic APR/Right and left colectomy

Trans – Hiatal Esophagectomy

Gastrectomy for Ca. Stomach

Meckels Diverticulectomy

Obesity surgery and Diabetic control surgery (optional)

Sleeve Gastrectomy

Gastric Banding

Gastric Bypass

The academic activities of the program in the hospital should include :

Regular academic sessions

Case discussion and seminars

Paper presentation

Audit/ Project/Research

Thesis

Conferences/CME's/Live workshops

Fine tuning skills in the purpose built animal (wet) laboratory

The programme is organized to have maximum “Hands-on” practice sessions in the “Purpose Built” animal laboratory.

Lecture hall for CME, conference and live workshop transmission with good acoustics.

#### WET LAB

The live animal lab should be attached to the hospital which should have the following:

Preferably airconditioned

A regular tilting table

A cart for keeping the following equipment

Camera

Light source

Fibro optic cables

Diathermy should be placed separately in another trolley to avoid electrical disturbances.

Suction /Irrigation Apparatus

CO2 cylinders

CO2 insufflators.

Mask anaesthesia Equipment (Basic Boyle's) for animal anaesthesia

Pre-Medication chamber for animals

Drugs /Aesthetic agents

Post surgery - Recovery area

IV Fluid stands

Monitors

Helper's for washing the hand instruments

Disinfectants

A qualified Vet. Anaesthetist / Surgeon should be included for the programme

LIBRARY:

Referring and reading laparoscopic textbooks

Reading journals

JOURNALS:

INTERNATIONAL JOURNALS:

THE INTERNATIONAL COLLEGE OF SURGEONS:

ELSA AMERICAN JOURNAL

THE JOURNAL OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH

THE SURGEON: THE JOURNAL OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH AND IRELAND

THE JOURNAL OF COLON AND RECTAL SURGEONS OF INDIA

SAGES JOURNAL GRANDROUNDS

BRITISH JOURNAL OF SURGERY

INTERNATIONAL SURGERY OFFICIAL JOURNAL

NATIONAL JOURNAL:

INDIAN JOURNAL OF SURGERY

JOURNAL OF IAGES

MEDICAL JOURNAL ARMED FORCES INDIA

PERIODICAL TESTS:

viva

Hands on training

Assisting basic Laparoscopic surgeries.

Laparoscopic cholecystectomy Laparoscopic appendectomy Laparoscopic inguinal hernia

Assisting advanced laparoscopic surgeries

Laparoscopic nissen fundoplication Laparoscopic toupet fundoplication Laparoscopic Splenectomy

Laparoscopic Nephrectomy Laparoscopic ovarian cystectomy Laparoscopic hemicolectomy

Laparoscopic abdomino perineal resection

CONDUCTING FREE CAMPS

CONDUCTING WORKSHOP

ATTENDING CONFERENCES

PRESENTATION AND PUBLICATION OF SCIENTIFIC PAPERS ON LAPAROSCOPIC SURGERY AND

RESEARCH WORK

FINAL APPRAISAL AND EVALUATION OF CANDIDATE ACCORDING TO

UNIVERSITY GUIDELINES.

#### SUMMARY

Advances in MIAS has carved out for itself in irreplaceable Niche in the field of general surgery. This is a fascinating frontier of medical science. Learning the art of MIAS is not easy. It is also expensive to majority of Indians. This requires considerable technical expertise and good infrastructure. Therefore, with the rapidly increasing need for learning laparoscopic surgery, it has become imperative to ensure safety and safe guard the possible mishaps. Thus the need of the hour is a proper structured, thorough, logical and effective training programme to train the surgical specialists in this ever expanding field and to ensure high standards of quality.

**DMA-DIPLOMA IN MINIMAL ACCESS SURGERY****EXAMINATION PATTERN****Theory Examination:**

<b>PAPER I</b>	<b>PAPER II</b>	<b>PAPER III</b>
ANATOMY PHYSIOLOGY	THERAPEUTICS	APPLIED SCIENCES
<b>Section I</b>	<b>Section I</b>	<b>Section I</b>
Q.1. 10 Marks	Q.1. 10 Marks	Q.1. 10 Marks
Q.2. 10 Marks	Q.2. 10 Marks	Q.2. 10 Marks
Q.3. 10 Marks	Q.3. 10 Marks	Q.3. 10 Marks
Q.4. 10 Marks	Q.4. 10 Marks	Q.4. 10 Marks
Q.5. 10 Marks	Q.5. 10 Marks	Q.5. 10 Marks
<b>Total 50 Marks</b>	<b>Total 50 Marks</b>	<b>Total 50 Marks</b>
<b>Section II</b>	<b>Section II</b>	<b>Section II</b>
Q.6. 10 Marks	Q.6. 10 Marks	Q.6. 10 Marks
Q.7. 10 Marks	Q.7. 10 Marks	Q.7. 10 Marks
Q.8. 10 Marks	Q.8. 10 Marks	Q.8. 10 Marks
Q.9. 10 Marks	Q.9. 10 Marks	Q.9. 10 Marks
Q.10. 10 Marks	Q.10. 10 Marks	Q.10. 10 Marks
<b>Total 50 Marks</b>	<b>Total 50 Marks</b>	<b>Total 50 Marks</b>
Section I + II = 100 Marks	Section I + II = 100 Marks	Section I + II = 100 Marks
<b>Total Theory = 300 Marks, Passing = 150 (i.e. 50%) Marks in aggregate</b>		

<b>Practical Examination:</b>		<b>Marks</b>
Paper - IV	Clinical Practical	100
Paper - V	Oral & Viva	100
Paper - VI	Case	100
<b>Total Marks</b>	<b>[Passing = 150 (i.e. 50%) Marks in aggregate]</b>	<b>300</b>