

FELLOWSHIP IN MINIMAL ACCESS SURGERY (MAS):-

INTRODUCTION :-

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.

AIM OF THE TRAINING:-

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 OF THE TRAINING :-

To train a specialist to be capable of

- A. Improving knowledge in MIAS
- B. Aim to practice MIAS as an armatarium.
- C. Teaching, research and auditing
- D. Coordinating and promoting collaboration in organizing the services
- E. Providing leadership in developing research within the specialty

ORGANIZATION OF TRAINING:-

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

THE MEANS OF TRAINING :-

1. Entry requirements:
 - MS in General Surgery from an Institute or Medical College recognized by Medical Council of India or Indian Medical Council.
2. 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.
3. The duration of MIAS training should include a Minimum of One Year in an approved programme and should cover the clinical and research aspects of the following areas:

A. Good text books on MIAS written by leading and experienced Authors

B. 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
4. 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 log book.

ASSESMENT 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)

A. General Principles :

1. Equipment set up and trouble shooting
2. Patient preparation
3. Anesthesia and Monitoring
4. Access to abdomen
5. Creating pneumoperitoneum
6. Abdominal wall lift devices
7. Principles of laparoscopic haemostasis
8. Principles of Electosurgery

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.

- A. 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.
- B. To learn about specialized Laparoscopic equipments and instrumentation.
- C. To learn the principles of Laparoscopic surgery.
- D. To learn the indications, contra-indications and limitations of MIAS and various procedures.
- E. To perform abdominal insufflation using Veress needle
- F. To perform laparoscopic procedures on live animal models in the purposeful, wet laboratory in association with J&J Ethicon Lab.
- G. Learn to perform on human patients.
- H. Sterilization and maintenance of instruments and video equipments.
- I. Documentation, storage data and presentation.
- J. Anesthesia in laparoscopic surgery.
- K. Trouble shooting in MIAS.
- L. Electro surgery and other newer energy sources.
- M. Learning about prosthetic meshes and fixation devices.

- N. To learn about tissue marcellators and organ retrieval systems.
- O. To know about the complications and its managements in MIAS.
- P.** Basic and advanced skills in Endo-knotting and intracorporeal suturing techniques.

SETTING UP OF A LAPAROSCOPIC UNIT

A. ROOM LAYOUT AND EQUIPMENT POSITION :

- General considerations include the size of operating room space, location of doors, outlets for electrical and anesthetic equipments.
- 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 check list helps to ensure that all items are available and minimize delays in MIAS.

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

1. Electrical table with leg separation facility.
2. Two video monitors. One for the surgeon and another for the assistants and team (optional).
3. Suction and irrigation apparatus.

4. Electrosurgical unit with proper grounding.
5. Pad equipped with current monitoring system.
6. Cart to house the laparoscopic equipments or pendants.
7. Light sources (Halogen or Xenon).
8. Electronic insufflator or Pneumoflator.
9. Fibro-optic cable.
10. Camera Systems
 1. Single chip camera system
 2. Three chip camera system
 3. High definition camera systems
11. 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
12. Colour printer for documentation.
13. X-Ray Unit for advance intra operative Cholangiography
14. CO2 Cylinders

15. Laparoscopic accessory instruments for basic and advanced surgeries.

1. Atraumatic graspers
2. Locking toothed and jawed graspers
3. Needle holders
4. Dissectors - curved and right angle
5. Bowel grasping forceps
6. Babcock clamp
7. Veress needle
8. Trocars – 5mm and 10 mm
9. Metzenbaum scissors and Straight scissors
10. Hook with diathermy attachment (L-Shaped)
11. Fan retractors - 10 mm and 5mm
12. Specialized retractors (optional) (Cusheri liver retractor)

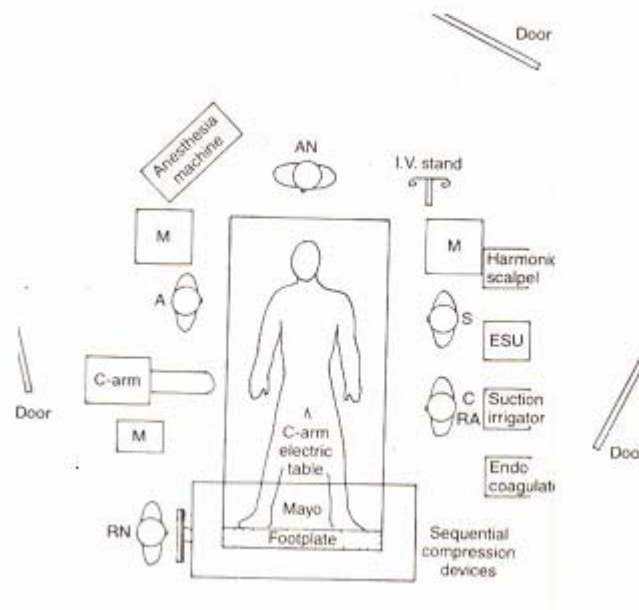
Vessel Sealing Systems

- o Monopolar electrocautery dissection tools.
- o Bipolar dissection and coagulation tools
- o Harmonic scalpel
- o Ligasure (optional)
- o Basket containing
 - Clip appliers
 - Endoscopic stapling devices
 - Endoloops

- Endoscopic suture materials
- Extra trocars

13. 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 equipments 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 equipments which can trouble shoot and to solve it. Common problems to be learnt are:

1. Cause of Poor insufflations
2. Reason for excessive pressure for insufflation
3. Reasons for inadequate lighting
4. Reasons for too bright lighting
5. Reasons for loss of picture on monitors
6. Reasons for poor quality pictures /fogging / haze
7. Reasons for flickering electrical interference
8. 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

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

Systems affected by Pneumoperitoneum

- Air way
- Respiratory system
- Cardiovascular System

Other Relevant systems

- Central nervous system
- Endocrine system
- Gastrointestinal system

Other relevant History

- Post anesthetic experience of the patient
- Post anesthetic family History of the patient
- Allergies to local anesthetics of the patient
- Medications taken in the past.

2. Monitoring and safety considerations which should include :

1. Breath sounds (Precardial or esophageal stethoscope)
2. Electrocardiogram (continuous)
3. Blood pressure, pulse (continuous, non invasive)
4. Continuous oxygen saturation (Pulse oximeter)
5. Expired carbon dioxide (Capnograph)
6. Temperature gauge
7. Ventilator and additional monitors (optional)

3. 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.

1. Research and audit

Counseling 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 :

1. Diagnostic Laparoscopy
2. Laparoscopic Appendectomy
3. Laparoscopic Cholecystectomy
4. Laparoscopic Adhesiolysis

Advanced module in MIAS FOR GENERAL SURGEONS :

1. Laparoscopic Hernioplasty
 - Direct – TEP REPAIR
 - Indirect – TAPP REPAIR
2. Laparoscopic Perforation Closure
3. Vagotomy and GJ (Stapling and Hand Suturing)
4. Nissen Fundoplication for GERD and Hiatus Hernia
5. CBD Exploration using C-Arm control

6. Laparoscopic Splenectomy
7. Assisted large and small bowel surgeries
8. Liver resections
9. Pancreatojejunostomy and Cystogastrostomy for Pseudocysts of pancreas.
10. Laparoscopic Rectopexy for prolapsed rectum.
11. Laparoscopic APR/Right and left colectomy
12. Trans – Hiatal Esophagectomy
13. Gastrectomy for Ca. Stomach
14. Meckels Diverticulectomy
15. Obesity surgery and Diabetic control surgery (optional)
 - Sleeve Gastrectomy
 - Gastric Banding
 - Gastric Bypass

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

1. Regular academic sessions
2. Case discussion and seminars
3. Paper presentation
4. Audit/ Project/Research
5. Thesis
6. 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:

1. Preferably airconditioned
2. A regular tilting table
3. A cart for keeping the following equipments
 - a. Camera
 - b. Light source
 - c. Fibro optic cables
 - d. Diathermy should be placed separately in another trolley to avoid electrical disturbances.
 - e. Suction /Irrigation Apparatus
 - f. CO₂ cylinders
 - g. CO₂ insufflators.
 - h. Mask anesthesia Equipments (Basic Boyle’s) for animal anesthesia
 - I. Pre-Medication chamber for animals
 - a. Drugs /Anesthetic agents
 - b. Post surgery - Recovery area

c. IV Fluid stands

d. Monitors

e. Helper's for washing the hand instruments

f. Disinfectants

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

LIBRARY:

1. Referring and reading laparoscopic text books

2. Reading journals

LIST OF LIBRARY BOOKS AVAILABLE

ALL GENERAL SURGERY BOOKS, INCLUDING ANATOMY, DICTIONARIES, ETC AND

LATEST MINIMAL INVASIVE SURGERY BOOKS ARE AVAILABLE

LAPAROSCOPIC ABDOMINAL SURGERY

BY JOHN .N.GRABER

COMPLICATION OF LAPAROSCOPIC SURGERY

BY ROBERT W.BAILEY

ATLAS OF SURGICAL ENDOSCOPY

BY JEFFREY L.PONSKY

LAPAROSCOPIC BILARY SURGERY

SECOND EDITION BY ALFRED CUSCHIERYE GEORGE BERCI

TIPS & TECHNIQUES IN LAPAROSCOPIC SURGERY

BY JEAN LOUIS DULACQ

LAPAROSCOPIC CHOLECYSTECTOMY DIFFICULT CASES AND
CREATIVE SOLUTIONS

BY AVRAN COOPAMAN

GASTRO INTERNATIONAL ENDOSCOPY CLINICS OF NORTH AMERICA

BY JACQUES VAN DOWN MD

LAPAROSCOPIC UROLOGIC SURGERY

BY LEONARD G.GOMELLA

LAPAROSCOPIC SURGERY

BY BALLANTYNE

BILEDUCT AND BILE DUCT STONES

BY GEORGE BERCI

OBESITY BARIATRIC SURGERY

BY DULOUQ

SURGICAL LAPAROSCOPY

BY KARL A.ZUCKER

LAPAROSCOPIC C SURGERY

ATLAS FOR GENERAL SURGERY

BY GARYC VITALE JOSEPHS SANFILLO

JACQUES PESISSAT

LAPAROSCOPIC SURGERY

BY EDDIE JOE REDDICT

OPERATIVE STRATEGIES IN LAPAROSCOPIC SURGERY

BY EDWARD .H.PHILLIPS

LAPAROSCOPIC CHOLECYSTECTOMY PROBLEM & SOLUTION

BY DAVID C DUNN

CURRENT TECHNIQUES IN LAPAROSCOPY

BY DAVID E BROOKS

PRINCIPLES OF SURGERY

SHWARTZ'S

ATLAS OF LAPAROSCOPIC SUGERY

THEODOREN.PAPPAS

EDWARD .G.CHEKAN

MASTERY OF SURGERY

By ROBERT J.BAKER

BAILEY AND LOVE'S SHORT PRACTICE OF SURGERY

25TH EDITION

BY NORMAN S WILLIAMS

SCHIFF'S DISEASES OF THE LIVER 10TH EDITION VOL1&2

BY EUGENE R.SCHIFF

TEXT BOOK OF SURGERY 18TH EDITION FOR MODERN SURGICAL PRACTICE
SABISTON

BY

ATLAS OF GENERAL SURGERY BY SIR DEVID CARTER VOLUME 1&2

SRB'S MANUAL OF SURGERY 3RD EDITION BY SRIRAM BHAT M

ATLAS OF BILIARY TRACT SURGERY BY JOHN L. CAMERON

MASTERY OF SURGERY FIFTH EDITION BY JOSEF E FISCHER VOLUME 1&2

MAINGOT'S ABDOMINAL OPERATIONS 11TH EDITION BY MICHAEL J. ZINNER

HAMILTON BAILEY'S EMERGENCY SURGERY 13TH EDITION BY BRIAN W ELLIS AND SIMON PATERSON-BROWN

TEXT BOOK OF OPERATIVE GENERAL SURGERY NINTH EDITION BY MARGARET FARQUARSON AND
BRENDEN MORAN

AN ATLAS OF GASTROENTEROLOGY BY CYRUS R.KAPADIA MD

ATLAS OF COLONOSCOPY BY HELMUT MESSMANN

LIVER A COMPLETE BOOK ON HEPATO-PANCREATO-BILIARY DISEASES BY STEPHANOS HADZIANNIS

ESSENTIAL SURGICAL PRACTICE FOURTH EDITION BY BUTTERWORTH-HEINEMANN

OPERATION SURGERY BY CHARCLE ROB

PANCREAS SECOND EDITION BY HANS BEGER

SURGERY OF PANCREATIC TUMOURS BY SHAILESH V SHRIKHANDE

THE WASHINGTON MANUAL OF SURGERY FIFTH EDITION

GENERAL AND VASCULAR SURGERY BY JAMAL J.HOBALLAH

PANCREATITIS: ADVANCES IN PATHOBIOLOGY, DIAGNOSIS AND TREATMENT BY R.W.AMMANN

THE ASCRS MANUAL OF COLON AND RECTAL SURGERY BY DEVID E. BECK

MANUAL OF SURGERY BY SCHWARTZ'S BY CHARLES BRUNICARDI

MANUAL ON CLINICAL SURGERY BY S.DAS 5TH EDITION

NETTER'S GASTROENTEROLOGY 2ND EDITION BY MARTIN H FLOCH

FRENCH'S INDEX OF SURGICAL DIFFERENTIAL DIAGNOSIS BY HEROLD ELLIS

DISEASES OF THE PANCREAS CURRENT SURGICAL THERAPY BY HANS G BEGER

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 GRAND ROUNDS
- BRITISH JOURNAL OF SURGERY
- INTERNATIONAL SURGERY OFFICIAL JOURNAL

NATIONAL JOURNAL:

- INDIAN JOURNAL OF SURGERY
- JOURNAL OF IAGES
- MEDICAL JOURNAL ARMED FORCES INDIA

PERIODICAL TESTS:

1 viva

2.Hands on training

Assisting basic Laparoscopic surgeries.

1.Laparoscopic cholecystectomy

2. Laparoscopic appendectomy

3.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

CODUCTING FREE CAMPS

CODUCTING 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.