# LEARNING CURVES OF LAPAROSCOPY – BARRIERS TO ADOPTION: A MNJIO EXPERIENCE!

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**ABSTRACT**

**BACKGROUND**

Laparoscopy has been a new entry in the field of surgery with an active history of around just two decades. Today, it is in a position to challenge the conventional surgery which is in use since ages. It is making rapid inroads into various disciplines of surgery. Rapid improvements in optics, along with improvements in energy devices and mechanical stapling devices gave a fillip to acceptance of laparoscopy by the majority of surgeons.

Also accumulating data and evidence has started influencing the sceptical, mobilising them to jump into the bandwagon.

Barriers to adoption of new techniques, resistance to learning are common to human nature and it is necessary to have a systematic overview of the issues that might crop, so as to be prepared to overcome the problems of accepting laparoscopy into established centres of surgery.

**AIMS**

This publication is a reflection of our experience, our trials and tribulations in taking forward the laparoscopy program at our institution.

This publication will give an overview of the steps involved in initiation of laparoscopy and aspires to be a source of answers, for day-to-day issues that crop during the process of learning laparoscopy.

**METHODS AND MATERIALS**

Just the way, executing laparoscopic surgery is a team effort, incorporating laparoscopy program in an institution is also a team effort where the members of team extend beyond the operating room. Involvement and co-operation of individuals across departments is a must along with benevolent seniors and a proactive administration.

So we collated data by interviewing all the stakeholders of laparoscopy program, analysed observations of the faculty from the operating room and reviewed literature on the world wide web. Opinions of the administrators about their perceptions and the issues faced by the junior staff of the department were taken into consideration. Patients were interviewed before and after laparoscopic surgery.

**CONCLUSIONS**

Success at incorporation of the laparoscopy program in an established centre of surgery needs tact and social skills. Awareness of potential barriers can help pre-empt problems in execution. The surgeon will be the team leader and his mind-set, personality and leadership abilities will influence the success of the program. Patience and perseverance are important virtues of a successful laparoscopic surgeon. Having thoughtful and considerate seniors and generous administrators is an added advantage for facilitation of program, as experienced by us in our institution.

**KEYWORDS**

Laparoscopy, Surgery, Minimally Invasive Surgery, Barriers to Learning, Laparoscopic Oncology, Incorporation, Progress and Adoption of Laparoscopy, Cancer Centre.

**HOW TO CITE THIS ARTICLE:** Maturi R, Makineni H, Dayakar, et al. Learning curves of laparoscopy – barriers to adoption: A MNJIO experience! J. Evid. Based Med. Healthc. 2016; 3(52), 2680-2689. DOI: 10.18410/jebmh/2016/588

**INTRODUCTION:** MNJ Institute of Oncology is one of the large cancer facilities in South India. The institute having started as a Radiation Facility has over the last two decades metamorphosed into a Comprehensive Cancer Facility in lines with the current standard of care - A multidisciplinary approach.

*Financial or Other, Competing Interest: None.*
*Submission 15-06-2016, Peer Review 16-06-2016,*
*Acceptance 18-06-2016, Published 30-06-2016.*
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*DOI: 10.18410/jebmh/2016/588*

The department of surgical oncology has to its credit a wide and exhaustive range of complex surgeries viz., Head & Neck, Upper GI, Lower GI, Thoracic, Hepatobiliary, Pancreatic, Paediatric to Urological and Gynaecological Oncology. The department services nearly 1200 - 1500 patients through complex surgeries per annum.

Subspecialties could not be created probably because of lack of enough trained staff, or a lack of driving force, viz., a pressing demand for ultra-specialised care from patients (who were mostly uneducated and economically compromised and hence willing to accept what is offered).

It could also be because of huge patient load that prevented us from looking laterally to visualise and spare efforts for creating specialised care. This sort of workload has pushed us against our conscious wishes, into a system geared for broad generalised work which over the years has become routine and repetitive and any attempt to bring a change needed lot of effort and support from the seniors and administrators. Fortunately, the required guidance and encouragement has been in abundance.

In comparison to other teaching facilities in this region, this institution being relatively small in size, a close bonding existed within the faculty and with the administration, which turned out to be a boon in disguise.

This institution is a public funded hospital that offers comprehensive cancer services, completely free of cost and in the face of an un-ending demand for service, finances are always closely monitored. So it is not surprising one needs to make an extra effort to convince administration and peers to introduce new thoughts that involve expenditure.[1]

It is in this background, we made an attempt to introduce the thought of laparoscopy and later executed it. Establishing laparoscopic surgery in this setting has been an experience and we share in this publication our ups and downs and the strategies we chose to overcome issues from the simplest and silly to the most complex.

**DISCUSSION:** Barriers to introduction and implementation of laparoscopy can be many. These barriers can be experienced at various levels of a medical Institution. For ensuring success of new learning, barriers and challenges need to be identified and overcome.[2]

As a matter of fact, the barriers encountered are not specific for laparoscopy and they are inherent to any new learning process for humans. It has already been observed that barriers to learning and development can be within the Learner, within the Centre of Learning, or in the Educational System and in a broader concept in the specific Socio Economic and Political Context.[3]

The adult learner has many responsibilities that must be balanced against the demands of learning. Because of these responsibilities, adults may have barriers against participating in learning. Some of these barriers include (a) lack of time, (b) lack of confidence, (c) lack of information about opportunities to learn, (d) scheduling problems, (e) lack of motivation, and (f) "red tape" (Lieb, 1991).[4]

The learner needs to see a reason for this new learning which needs a change in his behaviour and he or she should be able to apply this learning to make this learning voluntary and willing. If these cannot be met, a barrier develops. It is the team leader who has to identify and overcome such barriers. One can identify existing factors for motivation like Cognitive interests, Personal advancement and sometimes even the desire to be an instrument in ensuring social welfare in the mind-set of stakeholders, like nursing, paramedical staff, doctors, etc. which can be used for promotion of laparoscopy.

Facilitation of new learning also involves creating a right environment as adult learners are relatively more sensitive to discomforts of physical environment. The stress of learning will amplify the discomfort. Controlling the surroundings, by modulating room temperature, noise and lighting, etc., will facilitate the goals.

The team leader meaning the Laparoscopic Surgeon needs to develop a relationship with the team members, connect emotionally and create a sense of positivity. He should motivate and enhance the confidence of the members that they are capable and equipped to learn. One of the best methods would be to encourage the sister and cameraman to participate actively during the surgery by describing the steps of the procedure, informing ahead the next step and doing loud thinking. In fact, such encouragement will actually safeguard the surgeon from causing collateral damage to vital structures which might happen at the periphery of his vision and also speeds up the surgery due to proactive assisting.[5]

**Other Factors influencing Learning:**

- Personality issues though appear trivial, will force the learners raise defences against learning. Learners are put off if the teacher or leader is arrogant, or too timid or quirky. Specific biases against individuals like the status of the teacher will influence our learning. We tend to dismiss these people on the assumptions about their experience, wisdom and expertise!
- Lack of belief in the learning message will prevent us from learning.

The following tables collate the pros and cons expressed by the various stakeholders, the methods we chose to tackle obstacles and shortcomings and our opinions about an ideal situation.

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| **Nurses** | Selected nurses were interested<br><br>Showed enthusiasm to learn and were willing to change<br>- step out of comfort zone | Many were not willing to change<br><br>Not willing to put effort to learn<br><br>Found it complex to learn assembling instruments which were fine and can easily be damaged<br><br>Found it tedious to assist<br><br>Cleaning instruments is a hassle<br><br>Setting up instruments takes long<br><br>Worried about the long hours of assisting in Laparoscopic procedures<br><br>Also worried about damage to instruments - financial repercussions |
| **Improvement in Nursing Participation:** Ensure access to learning by on-site workshops, ensuring visits to other busy centres allows peer to peer interaction and learning.<br>• Visual teaching and didactic lectures, hands on guidance in handling, assembling and cleaning of instruments.<br>• Frequent supervision, reinforcement of training by repeat training sessions.<br>• Acknowledging and recognition of their participation in promoting Laparoscopy program. | | |

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| **Doctors** | Those who participated are<br><br>Willing to learn<br><br>Open to new methods<br><br>See the benefits for patients<br><br>Visualised the future direction of surgery | The common barriers identified were<br><br>Needs lot of effort to learn.<br><br>Need a Proctor to learn.<br><br>Difficult and time consuming to do even small steps in comparison to open surgery.<br><br>Needs lot of perseverance.<br><br>Need to relearn anatomy-<br>A new perspective for the same anatomy!<br><br>Need to spare more time for each surgery- Pressure of routine work - Time constraints to accommodate a longer lap procedure.<br><br>It is physically demanding.<br><br>Need to change too many instruments - in and out repeatedly.<br><br>Need to understand electrical equipment, their application and learn appropriate settings. |

**Improvement in Doctor Participation:** Prioritise your learning goals from "least obstacles" to "most difficult obstacles". Break up the surgery into small steps or stages. This will simplify the goal and make it surmountable. Avoid attempting to complete the procedure in one go.

**Videos:** Repeated watching of videos of other surgeons helps us learn the steps and movements. Helps us orient anatomy in laparoscopic perspective and 3 dimensional conceptualisation.

Reviewing our own videos allows self-appraisal, allows redesign of our own tactics in the next attempt.

Unlike Open surgery, dissection in laparoscopic surgery will be predominantly by electrical energy. A focused attempt to understand the electrical dissection and vessel sealing equipment in a wet lab, would help reduce the anxiety to use the equipment.

Ergonomics vary from individual to individual. Flexibility in positioning the surgeon, monitor and the trocars would be helpful and the best plan is for you to devise over time. Learning and relearning happens over many cases and an incomplete procedure still teaches us. Hospital patient volume will make learning faster and easier.

**Operative Field:** A constricted and telescopic field of view is a big challenge for the surgeon. Transition from Open to laparoscopic surgery involves a high degree of 3 dimensional conceptualisation. This capability allows surgeon to operate based on the mental picture he generates to complete the rest of the invisible operative field.

**Mind-set:** Patience and perseverance are important virtues and more so for a well-trained and proficient open surgeon. The slow pace of learning, the small tipped instruments and their restricted range of movements will be an unending source of intense frustration. Inability and inefficiency of supporting staff in a new laparoscopy program viz., cameraman, assisting nurse can also be a source of annoyance.[6]

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| **Equipment** | | Lack of dedicated laparoscopy table - height of table issues.<br>Lack of Supports to prevent patient from falling in extreme positioning<br>Lack of Roof mounted monitors. |

**Equipment:** Having the equipment of choice may not be always feasible, especially in a setting like ours (Public funded charity institution) and we should be innovative to improvise if possible or amend to shortcomings that cannot be modified or modulated. We tend to gain crucial information of what and how we like our equipment and fine tuning happens over few months.

A specifically designed Laparoscopy table will be of low operating height. (favourable ergonomics, reduces the strain on the shoulders.)

Laparoscopy requires extreme positioning to compensate for lack of means for effective retraction. Good patient supports at shoulders, lumbar area are important.

Pelvic surgeries are better performed with a bolster under the sacrum which splits the mid body allowing the bowels to fall away. Allen stirrups allow safe positioning of the legs without causing morbidity to patient. These stirrups also allow the surgeon to reposition during surgery.

**Hand Instruments:** Surprisingly with maturity, the number of instruments needed is very few and instruments become multifunctional, with almost every instrument used as a dissector in addition to its primary function.

**Electrical Equipment:** Vessel sealers can just help seal and have a role only after the vessel has been dissected out. Ultrasonic equipment is useful as a dissector and with maturity a well-handled monopolar spatula or scissors can give better dissection planes than ultrasonic equipment.

Restricting to one or two brands gives familiarity and significant comfort levels.7,8

On-site biomedical engineer ensures quality and precision of the electrical equipment. Can be useful to readjust the equipment as needed and supervise repositioning of equipment.

**Monitors:** Roof mounted monitors allow positioning close to the surgeon and can be repositioned by the surgeon himself with suitable sterile sleeves.

Two monitors can facilitate oncological laparoscopic surgery as the surgical fields, often can be in upper and lower abdomen for the same patient. It is ergonomical for assistant and camera holder too.

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| **Training** | | No formal fellowship training.<br>No Proctor or superior to supervise and guide.<br>No formal institutional support in finances and logistics to attend conferences and workshops.<br>No Lap simulators/ Endo trainers in house. |

**Training:** Learning becomes easy by watching and safe with continuous supervision by an experienced faculty.[9]

Visits to other centres helps avoid reinventing the wheel. Issues about usage of equipment, information about newer equipment and solutions for problems in surgical progression could be answered.[10]

We overcame the shortcomings by visiting almost every major centre of laparoscopy across the country for short periods of 2- 3 days. Each centre/surgeon had a specific interest and if necessary we repeated the contact with the said surgeon for reinforcement as in the case of Radical Hysterectomy.

These interactions reinforced our confidence and inspired us to push further.

Industry support could have been leveraged for our advantage.

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| **Trainees** | | No laparoscopy fellowship program. |
| **Trainee:** A Laparoscopy Fellowship programme will allow exponential growth of department of minimally invasive surgery. It will increase the efficiency of the primary surgeon by having focussed and trained assistants.<br>Trainees can gain from staged learning in the presence of seniors and also the overall quality of patient care will improve starting from pre-operative counselling to intraoperative and postoperative care.[13,14]<br>Data accumulation, documentation and analysis will be possible with available additional help of dedicated trainees. | | |

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| **Paramedical staff – floor staff** | Surprisingly, it was the person with most reticence and with severe handicap in communication skills who would have been our last choice, took up the challenge.<br><br>This taught us to be open and not form assumptions about interests and skills of the staff based on initial impressions. | Setting up the Laparoscopy table, Positioning of patient, Leg supports for Lloyd-Davies position, Shoulder and body supports needs an active and involved OT helpers.<br><br>Absence of biomedical engineer forced dependence on the ill-equipped OT helpers to set up and adjust the settings before and during surgery. |

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| **Administrative** | An understanding and co-operative administration<br><br>Allowed the necessary leniency in organising surgeries, and longer operating times.<br><br>Agreed for exclusive nursing and floor staff.<br><br>Provision of Uninterrupted power supply. | Upfront costs taken care of but no ongoing funding for Annual maintenance Contracts and Upgradation of equipment. |
| **Administration:** Administrators are concerned about Costs, turnover and complications.<br>Benefits of short stays, less antibiotic use and less readmissions (incisional hernias, wound infections) will translate into lower per patient costs and offset the initial upfront costs of equipment and costs of disposables.[11]<br>Also the shorter stays allow more patients being serviced by each hospital bed per month increasing the revenue. This will offset the longer operating hours per patient.[12]<br>Cost analysis as shown above ensured administrative support for uninterrupted supply of disposables and quick attention to occasional maintenance issues with the precision laparoscopy equipment<br>Frequent power outages not only damage equipment but are an irritant as the entire equipment restarts necessitating readjustments in settings, and resuming gas flow from the insufflator. Also power outage reduces the number of uses available on the ultrasonic equipment which is number locked. Ensure uninterrupted power supply. | | |

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| **Camera man** | | Initially, no consistent assistant to hold camera.<br>Junior surgeons were more focussed on open/conventional surgery based on presumption Laparoscopy is difficult.<br><br>Operation Theatre technician used as a substitute Camera Man. Needed training to handle 30-degree scope. Laparoscopic camera navigation skills. |

**Camera Holding person** is like a Navigator. He is as important as the surgeon. He is the eyes of the surgeon. Knowledge of anatomy, surgical technique and exact steps of surgery needed to give the best of vision possible.

Surgeon should have a high degree of emotional and professional connect with the camera man who should be able to read the mind of the surgeon to avoid clash in actions and delay in showing the anatomy. The vocabulary of communication should be understood by both and improvised as needed for the best outcome.

We preferred to use much of non-technical terms to ensure comprehension and speed of reaction from the nurse and non-medical camera man. Terms like right of patient and left of patient to guide twisting the 30-degree scope, "come back" to withdraw camera and "go forward" to push in were used. Zoom in and Zoom out were again self-explanatory. Non-technical terms were necessary to ensure ease of understanding for the nursing staff and the other support staff.

**Peer Pressure:** Conforming to the trends and traditions of our working environment ensures least resistance. Any attempt to modify this can create a degree of turbulence and with it stress.

The high degree of conversions needed in the initial phases, occasional complications can be a source of pressure from peers.

Maintaining cordial relations with your peers, accepting guidance from your colleagues and ensuring uninterrupted communication channels with the selected peers, seniors and administration about the progress being made will ensure their support which in turn will modulate the peer pressure.

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| **Anaesthesia** | Highly supportive and Encouraging Anaesthetist. | Lack of E2 CO2 Monitor in the initial few months.<br><br>Lack of flexometallic endotracheal tube as desired by anaesthetist for selected cases.<br><br>In house ABG not available.<br><br>Lack of institutional support to send Anaesthesia team to other centres for experience and interaction. |

**Anaesthesia:** A supportive, understanding anaesthetist creates a favourable environment.

Steep Trendelenburg or other extreme positions need active cooperation from anaesthetist.

Hypotensive anaesthesia helps keep the operative fields less stained by reducing capillary bleed, which facilitates dissection in Laparoscopy as it is entirely on visual cues since there are no tactile cues to identify anatomy.

Usage of epidural anaesthesia to ensure lower blood pressures and also keep the bowel contracted was a method used frequently.

**Surgeon & Leadership:** Surgeon is the team leader and his leadership skills come into forefront, maximally in Laparoscopic surgery.[15]

Open surgery can be done with relatively minimal dependence on the assistants with most of the retraction and field display taken up by packing and mechanical retractors. An equal level of efficiency is not required from the assisting team.

Progression in laparoscopic surgery is only feasible with efficient and understandable communication between the team leader and rest of the team.[16]

Long periods of surgery can cause tiredness and boredom in assistants and can result in poor co-operation from the team. Progression is dependent on the ability of the leader to inspire, hold attention of the members. He can maintain his credibility by accepting his faults and inadequacies and this will help during times of surgical crises.

Maintain composure and steer clear of frustration to avoid demotivating the team.

We developed this habit of loud thinking during surgery, describing the anatomy and steps of surgery at various phases. This creates an informal situation allowing the assistants and nursing staff to open up and participate. Encouraging the team members to identify structures and explaining changes in tactics is another way of ensuring participation.[17]

Always encourage and acknowledge positive suggestions, actions and recognise improvements in assisting and performance. This is the best way of bonding and building a cohesive team.

**Patients:** In the initial phases of the laparoscopy program there will be a high degree of conversion and the process can be misconstrued as failed surgery. Preoperative counselling will counter such misunderstanding and will also avoid litigation. Written consents and clear documentation of counselling is a must.

Lack of information can also result in patients assuming that laparoscopic surgeries can be incomplete due to small sized incisions especially in oncology.

Conversions are bound to happen and surgeon should have a low threshold to convert. Appropriate conversions are a sign of maturity as a laparoscopic surgeon and not a failure of technique.

**Academics:** Maturity of data available about suitability of Laparoscopy in the literature has made introduction and application of laparoscopy in the Oncology setting easy.

In hospital meetings, Morbidity and mortality meets and Tumour boards are the best platforms to showcase and educate the nonsurgical oncology colleagues and other specialists about Laparoscopy to ensure all round support.

Presenting data from other centres to medical colleagues and extant guidelines from various authorities and bodies would ensure trust and uniformity of opinion expressed regarding Laparoscopic surgery in Doctor patient interactions in various departments.

| **BEHAVIOURAL FACTORS FACILITATING LEARNING - Leader Perspective** | |
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| Step 1 | Emotional Connect with the team members |
| Step 2 | Facilitate change of behaviour by showing reason |
| Step 3 | Facilitate learning by helping create a plan. |
| Step 4 | Facilitate learning by providing necessary resources for learning, modifying environment, reassurance and morale building and hand holding. |
| Step 5 | Acknowledging progression and recognition of commitment |

| **BEHAVIOURAL FACTORS STEPS IN LEARNING - Learner Perspective** | |
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| Step 1 | Decide to learn - Convinced by reason to change behaviour |
| Step 2 | Create a Plan of learning |
| Step 3 | Have Psychomotor skills and resources to learn |
| Step 3 | Retaining morale and motivation to follow through learning |
| Step 4 | Rejoicing improvement and success |

**Suggested Sequential & Practical Steps of Learning;**

- Re orientation and re learning the anatomy in the Laparoscopic Perspective (VIDEOS)
- Planning entry and trocar Placement (OBSERVATION).
- Learning handling instruments and understanding counter intuitive movements. (ENDO TRAINER)
- Learning to handle camera (PROACTIVE ASSISTING)
- Understanding and learning to use Energy Devices (WET LAB)
- Staged Surgery - Break up the surgery into definable steps. Aim at overcoming each hurdle sequentially.
- Learning to use the assistant to retract and position the organs to free the surgeons' left hand for active use. Using both hands simultaneously.
- Learning to apply instruments for dissection in addition to its primary use
- Always Review your Videos on a Daily Basis!

**Experience at MNJ Institute of Oncology:** Institute acquired laparoscopy equipment as part of an initiative from the Department of Surgical oncology. High Definition equipment is aptly suited for advanced procedures of surgical oncology.

A brief introductory course organized by the supplier of the equipment resulted in a short lived enthusiasm which slowly waned off in the wake of pressure of regular workload and perpetuated by an unmet need for replacement/repair of equipment.

This latency lasted for almost two years and to restart, it needed a huge effort at behavioural level and in logistics. Team members needed to be identified who were willing to stretch beyond the routine.

Two nurses were groomed by the equipment suppliers in handling instruments, cleaning and assembly and the faculty took interest in training the technician to handle camera.

We started with diagnostic laparoscopy and extended it to manage simple hysterectomies. Staged learning was applied to each type of surgery. At each phase the procedure was often converted to open form to reconfirm the quality and adequacy of surgery. With maturity, conversions for that particular surgery decreased and were completed unless there was a complication.

With increasing confidence, the duration of surgery decreased which occasionally resulted in two patients being operated on same day. Also the maturity in skills allowed increase in complexity of procedures being done towards the third year.

The initial group of nurses trained two more and now we have a dedicated team of four theatre nurses and three orderlies on the floor to support the laparoscopy program.

The extreme caution in progression even though resulted in a long gestation period, it paid in low complication rate. We had very few occasions of bleeding from partially sealed uterine arteries, and an occasion of bladder entry in post-caesarean section patient. A single incidence of injury to the ureter at its entry into bladder in a difficult case of vaginal vault soft tissue tumour was recovered by a ureteric re-implant. An unusual injury by the surgical blade reaching the retro peritoneum and causing bleeding in an extremely thin patient was noticed recently (Image 1).

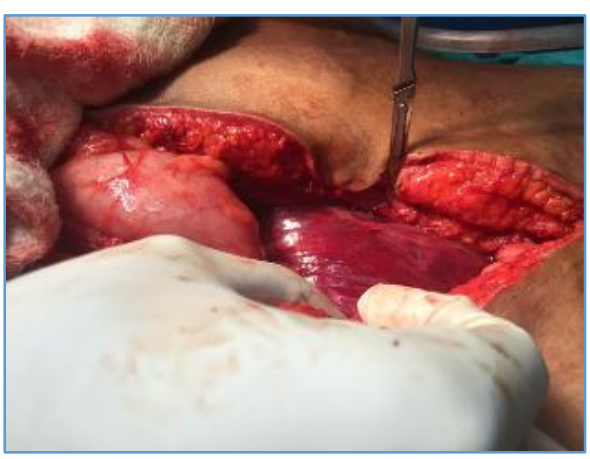

***Image 1: Injury by Blade – before Trocar Placement – Very Thin Patient***

In our experience, we rate the Radical hysterectomy as the most challenging followed by the right hemi-colectomy and then comes the low anterior resection. Inability to use myoma screw and a uterine manipulator in Carcinoma endometrium makes traction on uterus a challenge.

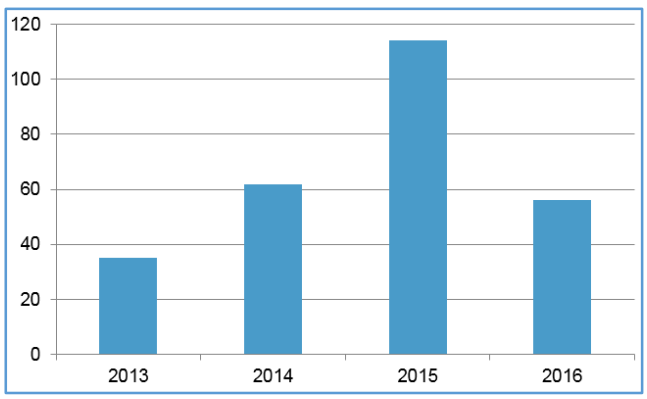


***Table 1: Surgeries per Annum***

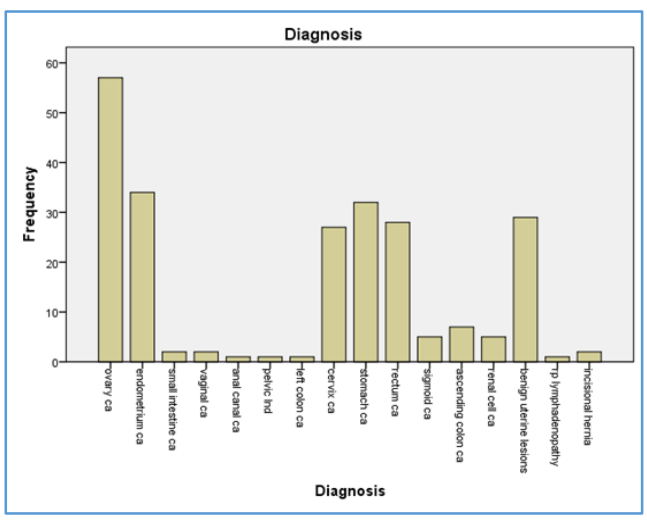


***Table 2: Type of Surgeries***

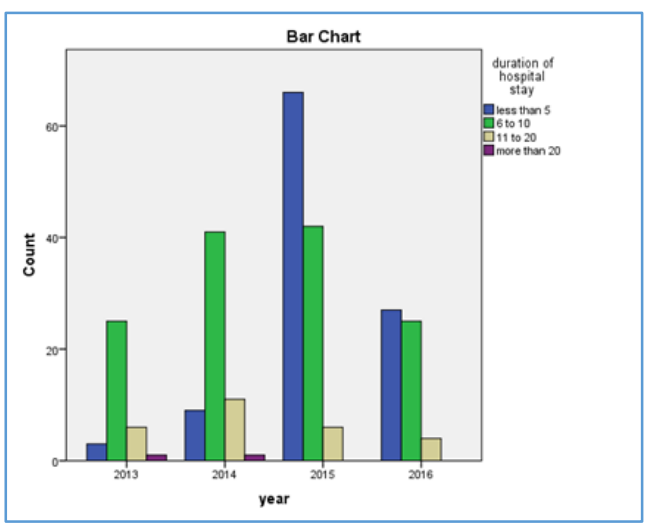


***Table 3: Duration of Stay-All Patients – Year wise***

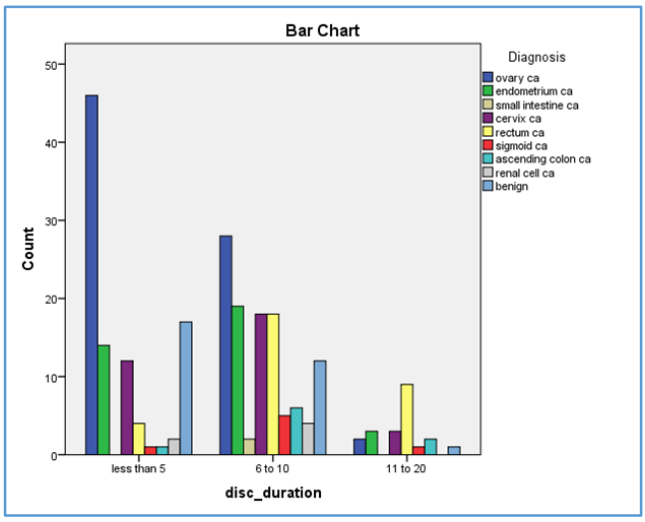


***Table 4: Duration of Stay -All Patients- Disease wise***

**CONCLUSION:** Introduction and practicing Laparoscopy requires abundance of emotional quotient, interpersonal skills, and leadership abilities in addition to technical and psychomotor skills.

Laparoscopy is a team game! Desire for recognition and acknowledgement is a basic human need and application of this knowledge will build cohesive and co-operative teams. Barriers to learning and adoption of new techniques by human beings are same in any field and laparoscopy and health care are no different. Understanding this human nature will help surmount the barriers.

Meaningful learning can be intrinsically motivating. Educating, convincing and modulating the belief systems of team members while identifying and encouraging the cognitive interests, desire for personal advancements, etc. are methods in ensuring co-operation.

Self-training is not adequate. Investing into the training of the team members like the cameraman, assisting sisters is mandatory as his or her inability can be a block for the progression of the laparoscopic surgeon at a later stage.

Goal appears insurmountable when it is too broad and varied. The easiest way to reach a goal is to break it up into smaller, more easily achievable goals. Success is addictive and one triumph will promote the next achievement.

One will be less motivated to complete a learning goal when we perceive it to involve a lot of stress compared to a goal we believe to be stress-free. Workshops and apprenticeships, observing other surgeons will simplify the apparently complex procedure and lowers the stress level we tend to associate with it allowing our progression.

A good database is the best document to project the work done, and gives an understanding of the general direction in which the surgical program is progressing. This data can be used to convince the administration regarding financial implications and most importantly the benefits to patients. A well-documented progress of the laparoscopy program will ensure continued support from the administration and an investment into upgradation of equipment when necessary!

Laparoscopy has become an important milestone in the history of surgery. It has brought a wave of change in the thinking of the surgeon. It has forced him to look at the anatomy in a new perspective. It has facilitated the surgeon to do better surgeries through better visibility. It has helped improvise surgeries by allowing nerve sparing techniques.

The early recovery, less pain and improved mobility of laparoscopy was also instrumental in bringing quality of life issues again to the forefront of surgeons thinking.

And it is laparoscopy that gave the fillip to the robotics and application of technology to improve upon and overcome the shortcomings of an aging surgeon. Most importantly laparoscopy has demystified surgery and made distant learning possible and remote teaching feasible! Visual teaching is the best method and laparoscopy has made learning surgery accessible to all.

Reassurance and encouragement from your senior colleagues softens the stress of learning new. An administration sensitive to the extra needs and teething problems of laparoscopy in an established surgical centre is a must.

Lastly, it is the mind-set of the surgeon that paves the way for the success in incorporation of laparoscopy program. Patience is an important virtue in Laparoscopy and should be in extreme abundance while learning the ropes!

**ACKNOWLEDGEMENTS:** All the patients who willingly subjected themselves, Dr (Prof.) Srinivasulu Mukta, HOD Surgical Oncology; Dr Jayalatha, Director MNJIO; Dr Kenny Thomas, Anaesthesia team and The Laparoscopy Team, MNJIO.

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