



Fundamentals in Laparoscopic Surgery

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In an advancing world where there is a lot of innovations that are flooding the world on a daily basis, the field of surgery is also changing at the same pace. Until a few decades ago when surgery was synonymous with open surgery, now a days there is an endolaparoscopic or a hybrid approach to almost all thoraco-abdominal surgeries among others. This shift in paradigm has lead the surgeon - old and new- to adapt and incorporate many technologies in their daily work place for a better outcome. The benefits of laparoscopic surgery is multi fold in nature which can be divided with respect to-

- Patient: lesser pain, quicker recovery, lesser hospital stay, lesser chance of infection, cosmetically better, and quicker return to activity- implying less absent days from work.
- Surgeon: ergonomically better output, better productivity, work longevity.
- Hospital: lesser expenditure on many fronts including a higher patient turnover implying better hospital revenue.

Many surgeons breeze through the laparoscopic surgery very effortlessly, but the effort put in to make it look so seamless goes unnoticed. Being able to work in a 2D field with limited degree of freedom, loss of tactile sensation and good hand-eye coordination needs practice. Having said this, laparoscopy should not be pushed to the limits. This is an aid to make work simpler and not more complex. As a laparoscopic surgeon, one should identify when to advance and when to seek help and it should be remembered that conversion to open surgery is not a failure. In case of non-progression or any complication during surgery -open or laparoscopic- it is wiser to call for help or for a review and confirmation rather than create an avoidable complication. One has to know their own expertise and skill level to access themselves in all situations.

However this is not an overnight process for the hospital, the staff and the patient to achieve the best output on all facets. It takes years of training, investments and policies to be able to reach even at an appreciable extent. With considerable help and support of the hospital, a surgeon can attain a certain level of quality as well. This includes the presence of the modern facilities and equipments along with the proper use of ergonomics, which put simply is the science of best suiting the worker to his job. This leads to

increased quality with better productivity for the surgeon along with improved returns for the hospital in terms of better quality, quantity and revenue. Nevertheless it is a science which includes many factors starting foremost with proper surgeon and staff training, availability of good equipments and ergonomic factors. These ergonomic factors include the following but not limited to:

- Straight Line principle
- Triangulation
- Manipulation angle
- Elevation angle
- Gaze down view
- Height of operating surface (table)
- Position of visual display (monitor)
- Foot pedal location
- Proper selection of hand instruments
- Port placement
- Surgeons and team placement
- Technical advancement
- Dark room
- Clutter of equipments

Many of these appear insignificant but each plays a vital role for a better and improved outcome for the patient and the surgeon along with the operating team. As an operating room member these factors should be considered and incorporated for enhanced results and productivity. Along with the ergonomics, another aspect which is often neglected is endoscopic suturing. A lot many surgeons struggle with laparoscopically suturing and often tire out easily leading to verbal outbursts, intra-operative injury and complications. Endoscopic suturing needs training with extracorporeal and intracorporeal suturing along with handling the needle in the closed spaces. Proper use of sutures and needles in the form of mode of entry and exit, suture structure and composition, needle shape and size, and use of other methods to ease and support suturing - Hemolok, clips, stapling devices, advanced energy

devices- should be used cautiously and judiciously especially in a facility with limited resources.

As surgeons, adequate training in endoscopic suturing and ergonomic friendly approaches needs to be merged into daily practice. There are various training session and modules apart

from books and journal articles to follow to improve on these skills. Also available are various online courses which can help improve personal skills and knowledge, and one should remember it's never too late to learn.