Indian Journal of Gynaecological Endoscopy

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Conference Secretariat:
Delhi Gynaecological Endoscopists Society
BLK Super Speciality Hospital
Department of Gynaecology & Obstetrics
Pusa Road, New Delhi - 110005
Contact Us : 9999774988, 9873120509, 9910001711
Email: dgesblk2019@gmail.com Website: www.dges.in

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D G E S

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Contents

From the Desk of President

Dear Members,

Greetings of the day and a warm welcome as we once again board the scintillating journey of DGES.

It humbles me as I pen this message from the desk of the president. DGES is one of the most prestigious and the oldest endoscopic society of Delhi. I thank the office bearers for entrusting me with a post that carries so much significance.

Endoscopy has grown leaps and bounds and has come a long way overcoming roadblocks to becoming a more favoured modality of treatment. With a faster patient recovery and significantly less post operative pain the acceptance by people has been large. Newer avenues have opened up taking the zealous surgeon to areas once considered inoperable and unapproachable. This has been especially true for the oncology cases which were once a surgeon's nightmare.

Another recent advancement has been the introduction of robot making laparoscopic surgery more accurate and ergonomically sound. The use of robot and laparoscopy in oncology has revolutionalized cancer treatment and pelvic surgery. The versatile technology has broadened the horizon of the surgeon. My firm belief is that in the coming years surgeons shall get more confident with Robotic surgery. I am hopeful that it becomes more affordable and easily available, and its acceptance grows in both medical and public domain. DGES is a good platform to help our doctors by giving them exposure of the latest technology.

Knowledge shared is knowledge gained. DGES 2019 and the coming year will further help and enlighten us regarding the pearls and perils of endoscopy and encourage young gynaecologist to take up this technique.

Together we can make a difference. Let's all pledge to place endoscopy right at the centre and give it due recognition and rightful place in gynaecological teaching and treatment.

My best wishes to all who are striving to make a difference in the life of their patients

Regards

Dinesh Kansal
President, DGES

From the Honorary Secretary

Dear Members,

Greetings for yet another session of the DGES.

It is when I sit at the secretary's desk and write this message that the magnanimity of my position and my responsibility strikes me. Under the able leadership of our president, Dr Dinesh Kansal we move to another tenure of the DGES.

Endoscopy has become just as dynamic and fast paced as the present times that we are living in. It has transformed the life of our patients in many ways including increased quality of life due to shorter post-operative rehabilitation time and minimal scar. No wonder it has become the surgery of choice. It is the call of time that we become well versed with this modality so that no patient is bereft of it.

The advent of robotics has further transformed the imagination of endoscopic surgeon empowering us with a better tool promising more precision in pelvic surgery especially in gynae oncology.

With knowledge comes responsibility, that of sharing it with our colleagues and teaching our juniors the skills in endoscopy. DGES as a society has contributed a lot in the field of laparoscopy and the work done by the previous office bearers has been commendable. The present team is endowed with the task to take it to another level.

In our tenure for the next 2 years, we look forward to training our fellow doctors in this field. In association with other esteemed DGES members we have been holding workshops in various hospitals. I hope that we, as a society, help our fellow surgeons become proficient in this technique and thereby improve the quality of care given to our patients.

Delhi has the distinction of being the most happening place in India. It is witness to the most dynamic changes in the medical field. Let's herald a new era in the field of gynae endoscopy, of mutual learning and growth. The journal is a step in the right direction, showcasing the use of laparoscope and robots in the field of gynecology.

I wish every enthusiastic gynae endoscopist warm regards and best wishes. We shall look forward to your support and feedback at every step.

Pooja Gupta
Secretary, DGES

From the Editor's Desk

Dear Members,

It is when you go beyond the obvious that you discover the ambiguous.

Surgery is an art that is continuously evolving and endoscopic surgery is where a surgeon explores his/her own amazement with surgery. What was once just a figment of imagination is now an established technique, at times much superior than the conventional one. There is hardly anything 'impossible' to the determined endoscopist, who is everyday taking upon new challenges and pushing new boundaries.

Knowledge shared is knowledge gained. The DGES is committed to bringing the art of our revered seniors at the doorsteps of every aspiring one. Together we can overcome barriers and perfect our art with insights shared from our teachers.

It's a proud moment for us that our department shall be the organisers of the DGES for the next two years, It is equally prestigious that we shall present you yet another issue of the 'Indian Journal of Gynaecological Endoscopy.

After much deliberation, the theme of this issue was decided as 'Breaking Barriers, from Diagnostics to Therapeutics'. It's a roadmap to the road travelled and the distance covered over the past decades. It is an acknowledgment of the efforts of all the gynae endoscopists who have made minimally invasive surgery possible in gynaecology.

It begins with recognition of our stalwart Dr Sheila Mehra who brought Delhi on the forefront in the field of gynae endoscopy at a time when it was unheard of. Her contributions are multifold and we are immensely proud of her. We take this opportunity to thank her for being our teacher and guide.

We have included several review articles and case studies. We have included features on tissue retrieval techniques, singe port laparoscopy and many more interesting topics from our colleagues who have faced the challenges and are sharing their experiences so that we can learn. The latest to catch every one's fascination is the Robot. No wonder it has a special mention in the journal for its application in gynae surgery.

Laparoscopy is an art that tests your patience and determination. It has a much longer learning curve than conventional surgery yet we at BLK superspeciality hospital sincerely wish that laparoscopy becomes an integral part of surgical training in gynaecology. Let no patient be bereft of the advantages of laparoscopy because her surgeon was not trained in that modality.

Together we can make it possible!

Hope you enjoy reading the articles in the journal. We shall be happy to hear your feedback so that we can improve. Team BLK is committed in taking DGES to newer heights. Let the light of knowledge expand our minds and remove the darkness of fear and hesitation.

The editorial team wishes you a bright future and success in all your endeavours.

- The editorial team

Tripti Sharan

Keerti Khetan

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A Rendezvous with Dr Sheila Mehra
Legend of the Legends

From the Editor's Desk

There are some people who carry 'history' on their shoulders and do humanity proud by their endeavours

Delhi is a unique city, a true blend of culture and modernity. It does the nation proud not only by its history and contemporary architecture but also because of those who live here and create history.

Dr Sheila Mehra is one such stalwart who by her sheer diligence and perseverance created a niche for herself in the world of gyne endoscopy. At a time when endoscopy especially in gynaecology was largely unheard of, she not only crossed milestones but became a milestone herself.

It won't be an exaggeration to call her 'mother of gynae endoscopy.' She occupies a significant place in the list of those credited with establishing this field in India.

But the road has been long and the journey defining. Born at Bhadrwah, Jammu and Kashmir in 1937 Dr Sheila Mehra did her undergraduation in medicine from Lady hardings Medical college and there after worked for 1 year in Delhi before she moved to London in 1960 to broaden her horizon, She worked in some very good hospitals like Charing Cross, Hammersmith, Mount Vernon, Middlesex, Hastings and gained the prestigious degrees, DRCOG (1962) & MRCOG (1966).

She came back to India in 1966 and started working as a Pool Officer in Safdarjang Hospital, Delhi.

But a government job wasn't her calling and soon she joined Sir Ganga Ram Hospital. But her zeal to take care of poor and illiterate stayed with her. ShriMoolchand Hospital was located close to her home and had barely started functioning in those days. She and her husband, Dr. M. K. Mehra, who was also a General Surgeon trained in England along with some other doctors approached the management of the hospital, to allow them to render free service to the poor. Surprisingly they agreed and the enthusiastic doctors went on to collect donations to realise their dream. They later approached the Health Ministry to give them some grant and also managed a Post Partum Unit in the hospital.

It was at this time that she got in touch with Mr. Marcus Filshie, the one who invented Filshie Clips for female sterilization. Together they both did several hospital based camps for sterilization. This was 1975 and it led to her interest in laparoscopy. In those times the laparoscopic companies were also struggling to establish themselves and Dr Sheila Mehra chanced upon this opportunity and went on to hone her skills in endoscopy with their help. Soon she telecasted the first laparoscopic sterilization camp in India.

She later attended the first Conference on Gynaecological Operative Laparosocpy in Washington where Dr. Kurt Semm and his team demonstrated Laparoscopic Operation for tubal pregnancy. Luminaries like Dr. Yoon who developed Falope Ring for sterilization, also attended the workshop. It was here that she ordered the bipolar forceps even though she was warned by Dr. Motashaw who was a laparoscopic surgeon at Mumbai to not waste money. But she stuck to her belief.

The next few years saw them doing mainly diagnostics and sterilization with laparoscopy but then she crossed the next milestone. The hospital purchased a camera. She wobbled, had teething troubles but defied everything and started doing operative laparoscopy in the early 80s. Her persistence bore fruits and she is credited with doing the first Laparoscopic Hysterectomy in India by using Filshie Clip.

Encouraged by her success she dared to demonstrate her surgical feat in Calcutta in the RCOG Conference. But to her disappointment Dr. C S Dawn asked her to stop. At this time the audience came to her rescue and insisted on seeing the whole procedure in the video presentation.

Encouraged by the enthusiasm of her fellow gynaecologists in the late 80s, she went on to organise the First Conference of Laparoscopic IVF in Taj Palace Hotel. Dr. V. Hingorani, Prof. of AIIMS, Mr. Robert Winston, who was Obstetrician of Queen of England, Mr. Michael Witz from America, taught the finer nuances of laparoscopic surgery and its significance in IVF.

Her passion in familiarizing young gyanecologists with this new exciting skill made her come up with training course in endoscopy in her hospital. It served as a boon to budding gynaecologist and was highly looked up at by doctors who came from all over India to be trained by Dr Sheila Mehra. She even started an endoscopic journal and books on Gynaecological Endoscopy.

In 1993 at Hong Kong she proposed to hold the 3rd International Scientific Meeting of the RCOG, London, in Delhi. To her sheer delight it was approved and this prestigious conference in 1996 was a huge success attended by more then 2000 delegates from all over the world. It took meticulous planning for almost 3 years but after that there was no looking back. Dr Sheila Mehra had arrived and had carved her name as a pioneer in the field of gynae endoscopy.

Degrees & Qualifications

She did her MBBS (1959) from LHMC, DRCOG (1962). MRCOG (1966), FRCOG (1981), FICOG (1985).

She was awarded Honorary Professorship by Federation of Obstetricians & Gynaecological Societies of India.

Awards & Accomplishments

She trained in endoscopy in prestigious institutes in USA, UK and Germany. She is a life member of

most Indian gynae societies, like IMA DMA FOGSI and also a life member of American Association of Gynaecological Endoscopists, International Society of Gynaecological Endoscopists, International Association of Gynaecological Endoscopists, European society, Society of Laparoscopic Surgeons USA.

She has been an invited faculty for guest lectures in various parts of India and abroad.

She is credited for having conducted over 3000 cases with Diagnostic and Operative Endoscopy and over 6000 Laparoscopic Sterilizations.

She was the author of one of the first Indian books on endoscopy, 'Gynaecological Endoscopy'. She also has the distinction of writing a chapter on Laparoscopic Hysterectomy in 'Progress in Obstetrics & Gynaecology'.

She's been the author of a popular Book "Medical Guide for Woman" published by Vikas Publishing House Pvt, Ltd. in 1980. It has been edited thrice and is widely sold in India and abroad.

She is credited with publication of several scientific papers and has actively participated in various medical Conferences in India and abroad. She has also chaired most of the sessions in the Indian Endoscopists' Association Scientific Sessions.

Personal Life

Her husband, Dr M K Mehra was an accomplished surgeon and a partner in her journey. He was the power behind her every decision it was his support that made it possible for her to realise their dream. They had two sons. The elder one is a maxillofacial surgeon based in the USA and the younger son is a gynaecologist practicing at the St Guys Hospital, London as a gynae onco surgeon.

Her mother has always been her source of inspiration. Having lost her husband in 1947 as a martyr in the POK she continued with his dream of serving the nation. She was involved in lot of social work in Kashmir like rehabilitation of refugees along with Lady Mountbatten in Kashmir. Her 'Gandhi Sewa Sadan' that helps women lead healthy lives is now being managed by Dr Sheila Mehra's younger brother.

When she is not working Dr Sheila Mehra loves to walk, swim, read, write or simply walk into her garden and spend some time gardening the plants.

Over the decades she has stuck to her motto in life - serve people and care for the poor. This has carried her forwards and she credits this for all that she has achieved in life.

ARTICLE

Acquisition of Laparoscopic Surgical Skills in Gynaecology

Sanjivni Khanna[1], Sonal Sharma[2], Harshita Verma[3], Saideepashri[3], Janki Choudhary[3]
[1]Director and Head, [2]Consultant, [3]DNB Trainees, Department of Obstetrics and Gynaecology, Fortis hospital Shalimar Bagh, New Delhi-110088

"We were all born with a certain degree of power. The key to success is discovering this innate power and using it to deal with whatever challenges come our way."

Les Brown

Introduction

Laparoscopic surgery is not a superspecialty, rather it is a logical progress of surgery brought about by advanced technology in equipment, instrumentation and imaging. On account of the minimal invasiveness, reduced postoperative pain, shorter hospital stay, and improved wound cosmesis, patients tend to choose laparoscopic surgery over open surgery, and surgeons are thus required to learn the necessary skills.[1] Laparoscopic surgery has revolutionized medicine with greatly improved patient outcomes, but it requires surgeons to learn complex and challenging movement patterns. As compared to the surgical skills required for open surgery, laparoscopy demands specific laparoscopic psychomotor skills (LPS) additionally as the surgeon needs to work in a key-hole environment. The advancement in laparoscopic techniques has led to a new domain in surgical training, towards structured programs of teaching through advanced simulators, opportunities for observation in operating room and training with trained laparoscopic surgeons. Simulators range from simple task trainers to high-fidelity mock operating rooms. Surgical simulation provides deliberate practice, training, and assessment in a safe environment. A firm foundation of anatomical knowledge, basic surgical training, regular constructive feedback and ample surgical experience are essential components of training for all aspiring to provide safe laparoscopic surgical services targeted at perfection.

Rasmussen Distinguishes Three Levels of Human Behaviour[2]:

1. Skill-based level: Instrument handling and dissection techniques require skill - based behaviour.
2. Rule-based level: These have been derived from previous experiences or communicated from other persons' expertise as instructions. Appropriate rules are selected according to their "success" in previous experiences. The recognition of surgical anatomy requires a great deal of rule-based behaviour.
3. Knowledge - based behaviour: Serious complications such as uncontrollable bleeding or unsuspected situations such as the encountering of aberrant anatomy that occasionally occur during surgery demand a great deal of knowledge-based behaviour from the surgeon.

Anatomy in Relation to Endoscopy and Gynaecological Surgery

The field of anatomy is a systematic discipline that involves observation, understanding, and experimentation to obtain knowledge of the functioning of the human body. Surgery then is the practical application of this knowledge to treat a disease, remove a tumour or simply minimize symptomatology, and improve function and quality of life. In gynaecology, just like in any other surgical field, an excellent knowledge of human anatomy is necessary and laparoscopy requires a thorough knowledge of all the relationships between anatomic structures. Training in anatomy that began with studies of cadavers transitioned to live and active anatomy lessons taught during surgery, moving from open surgery to the current status of learning anatomy via minimally invasive surgery. Gross anatomy of the pelvis namely the bladder, uterus, fallopian tubes, ovaries, rectum and the muscles has remained unchanged; however, the anatomy of other structures that surround these organs has evolved over time. Emphasis has been placed upon understanding the anatomy of the vicinity of these organs; for example, their precise

location and the approach to these locations, such as vessels, potential spaces, and nerves. Without perfect knowledge of these pelvic structures encountered during dissection, and particularly those which one would prefer not to encounter because of the dangers they may evoke, laparoscopy can become hazardous due to the surgeon's lack of awareness.

Present Training in Laparoscopy

The laparoscopic surgeon must effectively combine the three levels of behaviour mentioned above. In present times laparoscopy has become standard of surgical care Training modalities currently available in surgical skills are briefly mentioned in the underlying passages.

Box Trainer: Laparoscopic box trainers display a basic design which consists of a box with holes for trocars and a camera or mirror displaying an image from a closed space meant to simulate the insufflated abdominal cavity (Fig 1).

Figure 1: The simple pelvitrainer can be used for improving suturing skill (Source: Google Images)

Partial Task Trainers: These trainers simulate specific, individual maneuvers required to perform an operation and procedure-specific trainers feature a set of tasks in the chronological order of an operation. These trainers tend to utilize rubber or plastic parts to simulate tissues and anatomic relationships.

Hybrid Trainers: Hybrid trainers have a computerized visual interface with inanimate components, or organic parts combined with inanimate housing.

The Laparoscopic Skills Testing and Training (LASTT) Model[3]: This model aims to specifically train residents. It includes a box which simulates planes and angle of female pelvis. A comprehensive interactive DVD, including video chapters teaching the different exercises for the proper execution of LASTT exercises is implemented together with a printed manual, a stopwatch and the required profile and scoring forms. Each box contains the necessary tools to be able to test individuals for their proficiency (Fig 2).

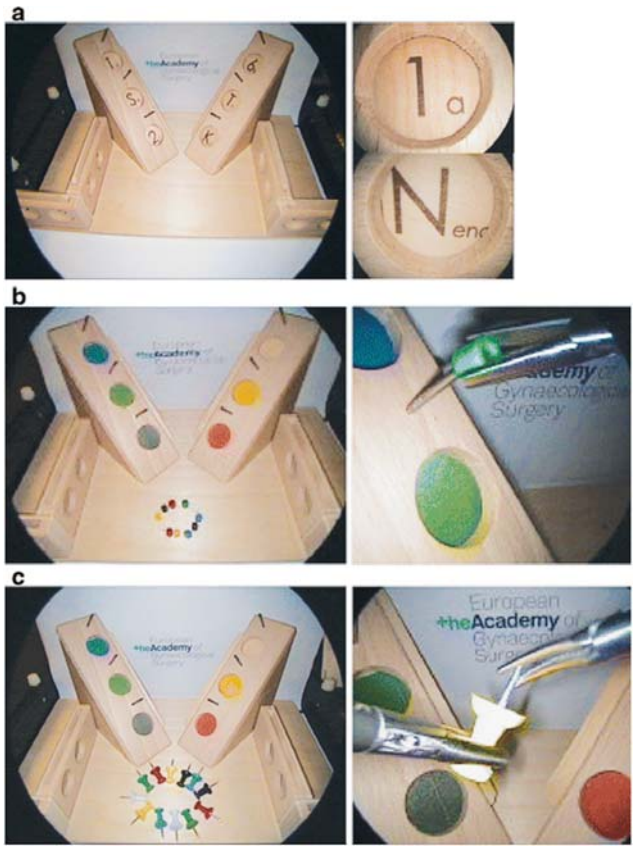

Figure 2: The Laparoscopic Skills Testing and Training (LASTT) Model (Source: European Academy of Gynaecological Surgery-Training tools)

LASTT model, representing the spatial distribution and orientation of the different planes and angles of a female pelvis.

Virtual Reality Simulator

These models consist of software that generate representations of laparoscopic exercises, from simple tasks to whole surgeries. The trainee manipulates instruments that mimic those used in real laparoscopy. Strengths of VRS include greater realism and the possibility of a wide range of procedures of different complexity. Furthermore, performance of an individual can be recorded, measured against objective standards and compared to other trainees (Fig 3).

However, low availability and high prices are limitations for the widespread use of these models.

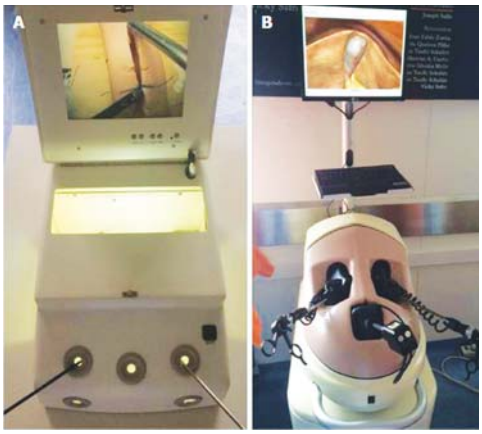

Figure 3: Laboratory tools for surgical training. A: BOX TRAINING; B: VIRTUAL REALITY SIMULATORS (Source: World J Gastrointest Surg. Nov 27, 2016; 8(11): 735-743 Published online Nov 27, 2016. doi: 10.4240/wjgs.v8.i11.735)

Cadavers

Human cadaveric dissection has a limited role in surgical teaching. The preserved human cadaver does not resemble living tissue in regards to elasticity thus only limited number of open surgical procedures can be usefully attempted. The Society of Clinical Gynaecologic Oncology (USA) and the American Association of Gynaecologic Laparoscopists and a few others have used thawed fresh-frozen cadavers for training in open and laparoscopic operations.

Animal Models

In North America, Australia and parts of Europe, live animal surgery has been popular as a method of teaching, developing and refining surgical techniques. Live animal laboratories have been developed for both open and laparoscopic procedures (Fig 4). It has been found that despite the interspecies variations in anatomy—the sheep model and porcine model are useful for simulation of hysterectomy, intestinal surgery and repair of vascular injury. Animal models seem ideal because they imitate the human clinical scenario in a very realistic way (e.g., pulsating vessels, pneumoperitoneum, etc.)

Figure 4: Porcine model for laparoscopic training (Source: Google Images)

Operative Room Training

A four-step procedure[4] for teaching a practical skill in OR has been developed by the Royal College of Surgeons in England. The steps are: (1) trainer demonstrates skill without commentary; (2) trainer demonstrates skill with commentary; (3) trainer demonstrates skill and learner commentates; and (4) learner demonstrates and learner commentates. This process provides immediate feedback on performance, which identifies strengths and weaknesses and enables improvement.

Other Training Methods

1. Video demonstration with commentary.
2. Live demonstration and commentary.
3. Learner performs the skill and assists, under intensive supervision.
4. Nontechnical skills are grouped as exercises, lectures, role play, seminars.

Learning Curve in Laproscopy

The learning curve may depend on the manual dexterity of the individual surgeon and the background knowledge of surgical anatomy. The slope of the curve depends on the nature of the procedure and frequency of procedures performed in specific time period. However, rapidity of learning is not significantly related to the surgeon's age, size of practice or hospital setting. Various factors affecting the learning curve are guidelines, institution, surgical team and cases that one has performed amongst other variables.

Assessment of Competence in Gynaecological Laparoscopic Surgery

1. The Imperial College Surgical Assessment Device

(ICSAD)[5] has sensors placed on the back of a surgeon's hands. This device is able to run from a standard laptop computer and data is analysed in terms of time taken, distance travelled and total number of movements for each hand thus assessing acquisition of psychomotor skills. Experienced laparoscopic surgeons made significantly fewer movements than occasional laparoscopists, who in turn were better than beginner's in this field.

2. The Advanced Dundee Endoscopic Psychomotor Tester (ADEPT)[5] is computer-controlled device, consisting of a static dome enclosing a defined workspace, with two standard laparoscopic graspers mounted on a gimble mechanism. Within the dome is a target plate containing spring-mounted sheet with apertures of varying shapes and sizes. Each task involves manipulation of the top plate with one instrument enabling the other instrument to negotiate the task on the back plate through the access hole. The system registers time taken, successful task completion, angular path length and instrument error score. Experienced surgeons exhibit significantly lower instrument error rates than trainees on the ADEPT system.
3. Objective structured assessment of technical skills (OSATS)[6] for obstetrics and gynaecology, the OSATS is a validated objective assessment tool to assess technical competency in specific techniques.
4. Global Operative Assessment of Laparoscopic Skills (GOALS)[7] score assesses proficiency in depth perception, bimanual dexterity, efficiency, tissue handling, and autonomy. Additional proficiency metrics of needle handling, knot tying, and vaginal mucosa incorporation can be assessed by means of the GOALS vaginal cuff metrics.
5. The European Academy of Gynaecological Surgery used the efficiency of suturing and knot tying training and testing (SUTT) model[7] by laparoscopy to evaluate the suturing skill acquisition at the beginning and at the end of a teaching course, which has three different experience levels in laparoscopy (minor, intermediate, and major). SUTT includes four skills: both hands stitching and continuous suturing; right hand stitching and intracorporeal knotting; left-hand stitching and intracorporeal knotting; dominant hand stitching, tissue approximation and intracorporeal knotting. The time needed to perform the exercises is recorded for each trainee, and group and statistical analysis is used to note the differences. It is noted that there was significant improvement in suturing with the course.
6. MISTELS (McGill Inanimate System for Training and Evaluation of Laparoscopic Skills)[8] assesses laparoscopic technical skills through a series of tasks taking into account precision and speed of forehand movements.
7. Gynaecological Endoscopic Surgical Education and Assessment (GESEA)[8] program offers a structured approach and implements two separate stages in its learning strategy. In the first stage, a skill certificate on theoretical knowledge and specific practical psychomotor skills is acquired through a high-stake examination without restriction in time to accomplish the various tasks, in the second stage, a clinical program is completed to achieve surgical competence and receive the corresponding diploma.

   There is absence of a universally accepted validated system of certification despite the promising data available about evaluation and training in laparoscopic skills, validated and well-structured programs including the pre-clinical training.

Curriculum for Laparoscopic Training for Residents

FOGSI Training Programme

In India 85 centres are authorized to provide endoscopic training under FOGSI. The course aims for the development of basic endoscopic skills in a seven-day programme that focuses on providing an introduction to basic laparoscopy & hysteroscopy and operative gynaecological endoscopy. The course provides opportunities to learn operative techniques, indications, contraindications and limitations of endoscopic surgery, required skills and potential complications with preventive strategies for the benefit & safe outcome of our patient. Basic endoscopic training includes endoscopy OT set-up & endoscopy instrumentation, pelvic endo-trainer exercises for hand-eye co-ordination skills development & orientation to different skills, pre-operative & post-operative care, principals of infection prevention in O.T., principals of electrocautery, diagnostic laparoscopy & hysteroscopy, laparoscopic management of ectopic pregnancy, mild

to moderate endometriosis, adhesiolysis, PCOD drilling, hysteroscopic tubal cannulation, uterine septum excision, removal of intrauterine device among other procedures. The training course also allows assisting different endoscopic surgeries as second assistant and vaginal-end assistant. Advanced endoscopic training is a fourteen days programme and that focuses on providing advanced operating room efficiency, newer advanced operative techniques and video surgical demonstration of diverse operative procedures of benign gynaecological surgeries. There is ample scope for case discussion & interaction for different operative techniques. Advanced endoscopic training is recommended to gynaecologist who has already performed greater than 100 basic laparoscopic & hysteroscopic surgeries in her/ his career thus far. Training includes teaching the indications, pre-operative & postoperative care concerns, operative safety guidelines for various laparoscopic and hysteroscopic surgeries such as laparoscopic hysterectomy, laparoscopic surgeries for fibroids and severe endometriosis, operations for pelvic organ prolapse and pelvic floor defects, benign ovarian tumors, re-do surgeries and tubal surgeries, and, hysteroscopic surgeries for submucus fibroid removal, Asherman's syndrome, transcervical resection of endometrium (TCRE) and various other procedures.

The Current Scenario

The emergence of laparoscopy as an incredible therapeutic intervention has heralded a new surgical age and today it is rapidly replacing most of the traditional gynaecological abdominal operations.[9,10,11] Over the past 10 years, laparoscopic surgery has advanced rapidly, and indications have expanded. Technical development in optics, illumination, video technology and instrumentation have further extended the frontiers from diagnostic to operative hysteroscopy and laparoscopy.[12] The latest technologies in laparoscopic procedures not only handle the cosmetic aesthetics of women but also offer great comfort and reduce hospital stay. High definition (HD) cameras had brought a revolution in the imaging system. Further modification of HD are the 4K cameras which provide a 4 times better image than the HD cameras and provide high resolution and brilliant picture of the organs so that the gynaecologist can identify even micro-pathology through precise pictures and treat it. To make this advance available to the entire Indian population irrespective of socio-economic status, it is imperative to spread training and the advancements to every gynaecologic surgeon in India - a goal which can only be achieved if teaching hospitals impart training in minimal access surgery and every university incorporates it as an essential element in its curriculum.

"Key-hole" surgery of the past may have been around for more than a century but it has evolved radically and is here to stay. However, there are still a lot of areas which need perfection with the help of further research and technical advancement. The need of the hour is to provide training to and assessment of gynaecologists, provision of expert guidance and also to make available the equipment and instrumentation at hospitals and centres deemed appropriate to carry out laparoscopic and hysteroscopic surgical procedures.

Conclusion

Training and practice during residency and at any professional learning stage has been shown to be the most important predictor of optimal performance of laparoscopic procedures in independent practice. Training should be designed and conducted under constant objective evaluation of the acquired skills in combination with independent feedback from experienced laparoscopic surgeons. Developing a standardized curriculum will optimize resources and help to overcome the barriers in training such as financial pressures, time constraints, medicolegal concerns and lack of qualified gynaecologic surgeons available to teach residents and other gynaecologists undergoing the training.

Prospective studies show that even short well-guided training course models improve significantly the surgeon's laparoscopic skills including suturing ability, but this proficiency could deteriorate over time when it is only learned and not practiced on a regular basis. Structured curriculum including theory, simulation, live-surgery and continued commitment seem to be the best option for trainees.

"Peeping Toms are Condemned; but Peeping Surgeons are Hailed"

References

1. Takeda J, et al., Efficacy of short-term training for acquisition of basic laparoscopic skills, Gynecology and Minimally Invasive Therapy (2015), http://dx.doi.org/10.1016/j.gmit.2015.06.001.
2. Role of Training in minimal Access Surgery page 532, Textbook of Practical Laparoscopic Surgery, Third edition, Japyee publications.
3. Campo R, Wattiez A, De Wilde RL, Molinas CR. Training in laparoscopic surgery: from the lab to the OR. Zdrav Var 2012; 51: 285-298doi 10.2478/v10152-012-0032-x.
4. I. Hammond and K. Karthigasu Training, assessment and competency in gynaecologic surgery Best Practice & Research Clinical Obstetrics and Gynaecology Vol. 20, No. 1, pp. 173–187, 2006 doi:10.1016/j.bpobgyn.2005.09.006.
5. R. Aggarwal, K. Moorthy and A. Darzi Laparoscopic skills training and assessment British Journal of Surgery 2004; 91: 1549–1558.
6. Reznick R, Regehr G, Mac Rae H, Martin J, McCullochW(1997) Testing technical skill via an innovative “bench station” examination. Am J Surg 173:226-230.
7. Torres-de la Roche LA et al., Training and qualification in gynecological minimal access surgery: A systematic review, Best Practice & Research Clinical Obstetrics and Gynaecology, https://doi.org/10.1016/j.bpobgyn.2019.01.016
8. Derossis AM, Antoniuk M, Fried GM(1999) Evaluation of laparoscopic skills: a 2 year follow up during residency training. Can J Surg 42:293-296
9. Togas T, Ahmed S. Surgical Management of Ectopic Pregnancy. Clinical Obstetrics & Gynecology 1999, 42(1):31-38.
10. Berci G, Sackier JM, Paz-Partlow M: Emergency laparoscopy. Am J Surg 1991, 161(3):332-335.
11. Warren O, Kinross J, Parasceva P, Darzi A. Emergency laparoscopy - Current Best Practice. World Journal of Emergency Surgery 2006, 1:24.
12. Semm K, Mettler L. Technical progress in pelvic surgery via operative laparoscopy. Am. J. Obstet. Gynecol 1980, 138: 121–7

ARTICLE

Robotics in Gynecological Surgery

Dinesh Kansal[1], Pooja Gupta[2]
[1]HOD at BLK Hospital, Laparoscopic and Robotic Surgeon, [2]Consultant at BLK Hospital

The field of robotic surgery has developed rapidly, and its use for gynecologic conditions has grown exponentially[1,2]. Robotic surgery was initially developed for Urology and cardiac procedure in 1999 and it was first used for gynecological surgery in 2005 at University of Michigan, USA.

Robotics have an edge in highly complicated procedures when extensive dissection and proper anatomy reestablishment is required. Today applications of robotics in gynecology include hysterectomy, myomectomy, oophorectomy, ovarian cystectomy, resection of endometriosis, sacrocolpopexy, lymphadenectomy and with an increasing role in gynecological oncology.

Robotic System

All this was possible due to the invention of Da Vinci Surgical System (Fig.1) which came as a big breakthrough. It comprises of three components: A surgeon's console, a patient-side cart with four robotic arms manipulated by the surgeon (one to control the camera and three to manipulate instruments), and a high-definition three-dimensional (3D) vision system[3]. Fig.2

Figure 1: Da Vinci Robot

To begin the procedure, the surgeon must establish a pneumoperitoneum and insert the ports. Then the theatre team 'dock' the robot platform by correctly positioning the platform relative to the patient and inserting the instruments into the ports. A bedside assistant is also utilised for supplemental actions such as suction, retraction and uterine manipulation. Newer systems such as the da Vinci Si and the da Vinci Xi include features such as dual-console capability, enhanced high-definition 3D vision and extensibility for digital operating room integration and the ability to detect indocyanine green dyed lymphatics using near-infrared (NIR) fluorescence imaging.

Figure 2: Surgeon Operating comfortably through Robot

Scope of Robotic in Gynaecology

Benign Hysterectomy

Hysterectomy is the one of the most common Gynaecologicalsurgical procedure in India. Previously hysterectomies were commonly performed abdominally, but now there is an increasing trend towards minimally invasive approaches.

A large cohort study analyzed 264,758 women who underwent hysterectomy for benign gynecologic disorders at 441 hospitals across the United States from 2007 to 2010[4]. Compared with conventional laparoscopy, robot-assisted hysterectomy was associated with a significantly lower risk of hospitalization longer than 2 days (24.9% versus

19.6%, although the study did not provide data regarding overall average length of stay) but a significantly higher total cost. No other differences in rates of transfusion, overall in hospital complications, or discharges to nursing facilities were found.

Sacrocolpopexy

Sacrocolpopexy is gold standard treatment of apical vaginal vault prolapse. It is commonly performed with an abdominal or laparoscopic approach. Robothasmade this technically difficult procedure easy with short learning curve and allow more surgeons to offer aminimally invasive approach. However, in the two RCTs that compared robot-assisted sacrocolpopexy with laparoscopicsacrocolpopexy, operating time, postoperativepain, and cost were found to be significantly greater inthe robot-assisted group[5,6]. A retrospective cohort studythat compared robot-assisted sacrocolpopexy with theabdominal approach found longer operating times butshorter lengths of stay and less blood loss with the robotassistedgroup[7].

Myomectomy

Myomectomy is procedure to remove uterine leiomyoma in women who desire continued fertility or who decline hysterectomy. The robotic system may help overcome limitations, such as unfavorable myoma location or patient obesity. Robot-assisted laparoscopic myomectomies have shorter post-operative stay but longer operative times and significantly higher cost than abdominal and laparoscopic approaches[8-15]. Overall, there was no difference in blood loss, length of stay, and complication profiles for robot-assisted laparoscopic myomectomy compared with either abdominal or laparoscopic procedures.

Gynecologic Malignancies

Robot-assisted surgery is currently being utilized in the management of endometrial, cervical, and ovarian cancers, and its implementation in more complex procedures is expanding at a rapid pace.

Endometrial cancer is one of the most common gynecological cancers. Surgeons found robotic hysterectomy with lymphadenectomy had a faster learning curve with comparable adequacy of surgical staging as compared to traditional laparoscopic surgery. The largest series to date was a systemic review that included eight comparative studies with a combined total of 1591 patients. The authors found that estimated blood loss was lower for robotic than for laparoscopy or laparotomy. Operative time for robotic hysterectomy was similar to that for laparoscopic but longer than that for laparotomy. The rate of conversion to laparotomy was 4.9% for robotic hysterectomy and 9.9% for laparoscopic hysterectomy.[16] Studies have also shown robotic surgery to yield higher number of lymph nodes, increasing the adequacy of lymphadenectomy[17,18,19].

Cervical Cancer

Traditional laparoscopy has not been widely accepted for this type of cancer due to its complexity. However robotic-assisted radical hysterectomy has been gaining popularity. Retrospective studies to date have shown that minimally invasive radical hysterectomy is not inferior to traditional open radical hysterectomy. It was associated with less blood loss, fewer operative complications, higher lymph node yields and a shorter length of hospital stay. No significant difference in operative time and length of the excised parametrial tissue. Post-operative complications are also fewer, such as lymphocysts, lymphoceles, wound infections and ileus[20].

In Laparoscopic surgery for Cervical Cancer (LACC) trial by M Tamura MD etal, minimally invasive radical hysterectomy was associated with lower rates of disease-free survival and overall survival than open abdominal radical hysterectomy among women with early-stage cervical cancer[21].

Ovarian Cancer

It is important to note that robotic assisted surgery is unlikely to replace laparotomy for primary debulking surgery with ovarian cancer. Nevertheless, it still has a role in early stage ovarian cancer or small volume disease and fertility sparing surgery. Limited studies have been published regarding its feasibility in ovarian cancer

Various retrospective trials comparing role of robotic assisted surgeries in endometrial carcinoma with conventional laparoscopic or abdominal hysterectomy conclude that there is benefit of reduced per operative blood loss & fast post-op recovery with robotic assisted surgery.

Advantages of Robotic Surgery

It was observed that learning curve was faster when surgeon develop laparoscopic skills via robot as compared to traditional laparoscopy[22-25]. Enabling less experienced surgeon to perform minimal invasive surgery.

Robotic assisted surgery has also shown to decrease fatigue and muscle strain, therefore increases precision and potentially may decrease the number of medical errorsas the surgeon sits in an ergonomically at the console separate from the patient.[1]

1. Shorter stays in the hospital
2. Faster recovery
3. Reduced pain and discomfort
4. Fewer complication
5. Lower levels of blood loss and transfusions
6. Minimal scarring
7. An enhanced visual field: Surgeon has superior view of the operating area leading to a more precise surgery.
8. Superior dexterity: The robotic instrument exceeds the dexterity and range of motion of the human hand. The arms can rotate a full 360 degrees. Endo wrist movement of robotic instrument allows better and precise suturing than conventional straight stick laparoscopy. This allows the surgeon to operate in a way that would be impossible without the robot.
9. Access to hard-to-reach places: The enhanced flexibility and precision of the robot allows the surgeon to access hard-to-reach areas.

Disadvantage of Robotic Surgery

1. The Expense of Surgery: initial cost of installation is too high and also the disposables used add up to the cost of surgery. Cost of the machine and its maintenance is very high and increased operative time also adds up to the cost of surgery, making it not the 1st choice for minimal invasive gynae surgery.
2. Movement Latency: Its biggest concern is latency of movement in case any problem arises during surgery. Although this doesn't happen in routine cases but in unexpected per operative complication this can be an issue.
3. Duration of surgery: it generally has an increased duration of surgery as compared to laparoscopic surgery, but as the surgeon gains experience it is expected to take lesser time.
4. Bulky machine habitus & need for additional staff and training.

Conclusion

Robotic surgery is the next big thing in minimal invasive gynaecological surgery. Its advantage includes lower blood loss and a low conversion rate to laparotomy and faster post-op recovery. The robotic platform is a logical step forward to laparoscopy and if cost considerations are addressed it may become more popular among gynecological surgeons.

Bibliography

1. Advincula AP, Wang K. Evolving role and current state of robotics in minimally invasive gynecologic surgery. J Minim Invasive Gynecol2009;16:291–301.[].
2. Nieboer TE, Johnson N, Lethaby A, Tavender E, Curr E, Garry R, et al. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database of Systematic Reviews 2009, Issue 3. Art. No.: CD003677. DOI: 10.1002/14651858.CD003677.pub4.
3. Intuitive Surgical company website. [Last accessed on 2014 Apr]. Available from:http://www.intuitivesurgical.com/company/media/publications/da-vinci-surgery-high-LOE-publications-en-031114.pdf.
4. Wright JD, Ananth CV, Lewin SN, Burke WM, Lu YS, Neugut AI, et al. Robotically assisted vs laparoscopic hysterectomy among women with benign gynecologic disease. JAMA 2013;309:689–98.
5. Paraiso MF, Jelovsek JE, Frick A, Chen CC, Barber MD. Laparoscopic compared with robotic sacrocolpopexy for vaginal prolapse: a randomized controlled trial. ObstetGynecol2011;118:1005–13.
6. Anger JT, Mueller ER, Tarnay C, Smith B, Stroupe K, Rosenman A, et al. Robotic compared with laparoscopic sacrocolpopexy: a randomized controlled trial [published erratum appears in ObstetGynecol 2014;124:165]. ObstetGynecol2014;123:5–12. [] ^
7. Geller EJ, Parnell BA, Dunivan GC. Robotic vs abdominal sacrocolpopexy: 44-month pelvic floor outcomes. Urology 2012;79:532–6.
8. Nezhat C, Lavie O, Hsu S, Watson J, Barnett O, Lemyre M. Robotic - assisted laparoscopic myomectomy compared with standard laparoscopic myomectomy—a retrospective matched control study. FertilSteril2009;91:556–9.
9. Bedient CE, Magrina JF, Noble BN, Kho RM. Comparison of robotic and laparoscopic myomectomy. Am J Obstet Gynecol2009;201:566.e1–566.e5.
10. Gargiulo AR, Srouji SS, Missmer SA, Correia KF, Vellinga TT, Einarsson JI. Robot - assisted laparoscopic myomectomy compared with standard laparoscopic myomectomy [published erratum appears in

ObstetGynecol2013;122:698]. Obstet Gynecol 2012; 120:284–91.

11. Barakat EE, Bedaiwy MA, Zimberg S, Nutter B, NosseirM, Falcone T. Robotic-assisted, laparoscopic, and abdominalmyomectomy: a comparison of surgical outcomes.ObstetGynecol 2011;117:256–65.
12. Hsiao SM, Lin HH, Peng FS, Jen PJ, Hsiao CF, TuFC. Comparison of robot-assisted laparoscopic myomectomyand traditional laparoscopic myomectomy. J Obstet Gynaecol Res 2013;39:1024–9.
13. Nash K, Feinglass J, Zei C, Lu G, Mengesha B, Lewicky-Gaupp C, et al. Robotic-assisted laparoscopic myomectomyversus abdominal myomectomy: a comparative analysis of surgical outcomes and costs. Arch GynecolObstet2012;285:435–40.
14. Advincula AP, Xu X, Goudeau S 4th, Ransom SB. Robot assisted laparoscopic myomectomy versus abdominal myomectomy: a comparison of short-term surgical outcomesand immediate costs. J Minim Invasive Gynecol2007;14:698–705.
15. Ascher-Walsh CJ, Capes TL. Robot-assisted laparoscopic myomectomy is an improvement over laparotomy inwomen with a limited number of myomas. J MinimInvasiveGynecol2010;17:306–10.
16. Gaia G, Holloway RW et al Robotic assisted hysterectomy for endometrial cancer compared with traditional laparoscopic and laparotomy approaches: a systemic review. ObstetGynecol 2010;116:1422-31
17. Bush, S and Apte, S. Robotic-Assisted Surgery in Gynecological Oncology. Cancer Control 2015: vol 22, no 3:307-313.
18. Manchana T et al. Comparison of Perioperative and Oncologic Outcomes with Laparotomy, and Laparoscopic or Robotic Surgery for Women with Endometrial Cancer. Asian Pacific J of Cancer Prevention 2015; 16:5483-5488.
19. Mendivil AA et al. A Comparison of Open Surgery, Robotic - Assisted Surgery and Conventional Laparoscopic Surgery in the Treatment of Morbidly Obese Endometrial Cancer Patients. J of Society of Laparoendoscopic Surgeons 2015; 19:1-5.
20. Lowe MP, Chamberlain DH et al A Multi-institutional experience with robotic assisted radical hysterectomy for early stage cervical cancer GynecolOncol 2009 ; 113: 191-4
21. Minimally Invasive versus Abdominal Radical Hysterectomy for Cervical Cancer. N Engl J Med. 2018 Nov 15;379(20):1895-1904. doi: 10.1056/NEJMoa1806395. Epub 2018 Oct 31.
22. Pedro T. Ramirez, M.D., Michael Frumovitz, M.D., Rene Pareja, M.D., Aldo Lopez, M.D., Marcelo Vieira, M.D., Reitan Ribeiro, M.D., Alessandro Buda, M.D., Xiaojian Yan, M.D., Yao Shuzhong, M.D., NavenChetty, M.D., David Isla, M.D., Mariano Tamura, M.D., et al.
23. Akl MN, Long JB, Giles DL, Cornella JL, Pettit PD, Chen AH, Magtibay PM. Robotic-assisted sacrocolpopexy: technique and learning curve. Surg Endosc 2009; 23: 2390–4.
24. Sandadi S, Gadzinski JA, Lee S, Chi DS, Sonoda Y, Jewell EL, et al. Fellowship learning curve associated with completing a robotic assisted total laparoscopic hysterectomy. GynecolOncol2014;132:102–6.
25. Yohannes P, Rotariu P, Pinto P, Smith AD, Lee BR. Comparison of robotic versus laparoscopic skills: is there a difference in the learning curve? Urology 2002;60:39–45.
26. Rashid TG, Kini M, Ind TE. Comparing the learning curve for robotically assisted and straight stick laparoscopic procedures in surgical novices. Int J Med Robot 2010;6:306–10.

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ARTICLE

Single Incision Laparoscopic Surgery (SILS) in Gynecology - Our approach

Sunita Varma
Director, Department of Obstetrics & Gynaecology, Fortis Hospital, Shalimar Bagh, New Delhi

Over the last two decades we have witnessed a change from open surgery to multiport MAS (Minimal Access Surgery) which has become the gold standard for most procedures across surgical specialties. SILS is the newly introduced variant of MAS, aiming to reduce the number of incisions and hence reduce postoperative pain, hasten recovery with almost no visible surgical scar.

Anecdotally, SILS was started by gynecologists for tubal ligation[1], but over last several years, with refinement of access ports, optics and instrument technology, there is a recent surge in interest for performing various other procedures, for benign and malignant disease[2].

Pelosi[3] performed the first single incision hysterectomy with bilateral salpingo - oophorectomy in 1991. However, it was not until 2010 that these procedures were described in literature[4].

Literature regarding SILS is limited but growing, on whether the increased cost, difficult instrumentation and theoretically increased chance of intra operative complications are a worthy cost to pay for the scar less effect and possible reduced morbidity.

Techniques of SILS

1. **Single incision multiple puncture laparo endoscopy - SIMPLE technique** (Fig 1) – In this technique, a 2 cm skin incision is made at the umbilicus and a flap is raised thereby allowing 2-3 separate sheath incisions (Mickey mouse configuration). Through these sheath incisions trocars can be inserted, permitting one optic and 2 working instruments to be used. The disadvantage of this technique is the Swiss cheese defects left behind in the sheath, which are difficult to close securely.

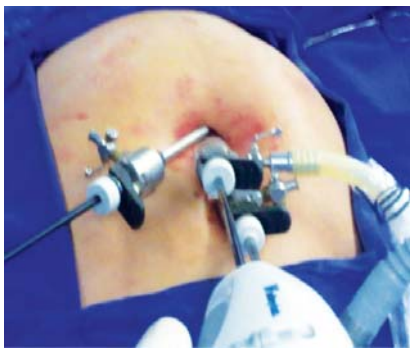


Figure 1:

2. **Singular Access Devices** - inserted by open access technique through a 2 cm incision in the umbilicus.
   a. **Covidien soft port** (Fig 2) – it is a soft port that has 3 separate flexible channels which allow three 5 mm cannulas or two 5 mm and one 12 mm cannula. There is a separate channel for CO2 insufflation. The cannula positions can be adjusted within the flexible port.

Figure 2:

   b. **Glove port** (Fig 3) – This is the most cost-effective technique, described by Khiangte E et al (5) in 2011. Easily available materials like surgical gloves and flexible rings are used to fabricate this port (Fig 3). It provides up to 4 working channels through which one 10mm and three 5 mm cannulas can be inserted (Fig 4, 5, 6).

Equipment and Instruments used with the glove port: 5 mm, 30-degree rigid bariatric telescope (its length reduced the clashing of instruments externally and the sword fighting effect internally) is used along with conventional laparoscopic instruments. Energy devices like diathermy, harmonic ultrasonic

and advanced bipolar (Ligasure) can be used as in conventional laparoscopy.

Insertion of port: A semi lunar 2 cm incision is made in the umbilical scar. A flap is raised, and dissection done up to the rectus sheath, which is then incised to facilitate insertion of the port. In patients where the specimen retrieval requires the use of an endobag, it is inserted into the abdomen before port insertion.

Closure of wound: The wound is meticulously closed using Vicryl 1-0 for the rectus sheath and subcuticular Monocryl 3-0 for skin closure (Fig 7, 8).

Figure 3: Materials required to make the glove port

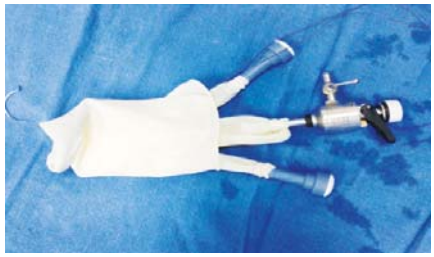


Figure 4: Glove port

Figure 5: Glove port inserted into the abdomen and insufflation done

Figure 6: Performing surgery through the glove port

Figure 7: Umbilical incision before closure

Figure 8: Abdominal incision after closure

Results of Using Glove Port

Over 100 cases have been done by our team using the glove port. Procedures included hysterectomy, ovarian cystectomy, parovarian cystectomy, endometrioma excision, salpingectomy, myomectomy, diagnostic laparoscopy for infertility evaluation and tubal ligation. Various outcome variables were evaluated - time taken for surgery, intra operative blood loss, recovery in terms of postoperative pain and analgesic requirement, ambulation, hospital stay, return to work and complications. The patients were evaluated after one month for cosmetic result.

1. All the above variables were comparable to conventional laparoscopic surgery with no intra or postoperative complications.
2. Rescue ports were required in 5 cases.
3. Specimen retrieval was through the umbilical port (Fig 9) or the vagina (in cases where hysterectomy was done). Large specimens were brought out of the umbilical incision in an endobag and then extracted (Fig 10)

Figure 9: SILS offers the advantage of specimen retrieval without any wound contamination

Figure 10: Extraction of large ovarian cyst through umbilical incision in an indigenously made endobag

4. Intracorporeal endo suturing was also feasible in cases of myomectomy and hysterectomy with conventional laparoscopic instruments.
5. One-month post-surgery all patients had no visible scar (Fig 11).

Figure 11: Extraction of large ovarian cyst through umbilical incision in an indigenously made endobag

6. There was no incidence of umbilical hernia in any patient on follow up so far.

Advantages of Using Glove Port

1. Cost effective
2. Better cosmesis
3. Offers the use of up to 4 ports
4. Provides a flexible fulcrum with decreased trocar collisions.
5. Easy intact specimen retrieval of even large masses without wound contamination.
6. Single incision platform can be rotated in a 360-degree manner, allowing the surgeon to operate in all quadrants of the abdomen
7. Even if rescue ports are used, it offers the advantage of additional working ports.

Limitations of SILS

1. Loss of triangulation (chopstick effect) making instrument maneuverability difficult and extra corporeal clashing of instruments (sword fighting effect).
2. Higher learning curve for beginners - learning this ergonomically challenging technique may be less technically demanding if starting out with simple cases, use of low profile trocars and telescopes with coaxial cables.
3. Risk of umbilical hernia.

Discussion and Review of Literature

With an emphasis on increasingly smaller and fewer surgical incisions and refinement in patient satisfaction and clinical outcomes, SILS represents the latest innovation in laparoscopic surgery. It is an approach that aims at using a natural scar (umbilicus) to perform intra abdominal procedures, thus giving a virtually scar less effect.

Available literature on SILS describes use of single port devices such as the R port, X cone, Covidien soft port etc, with articulating instruments, and most case series include a small number of patients. In terms of complications, there is a meta-analysis showing that SILS has equivalent complication rate as compared to multiport surgery[6]. However, this report included a small number of participants and used a composite outcome measure. Postoperative hernia remains a concern with SILS – however, a recent meta-analysis in cholecystectomy cases reported no increased incidence as compared to multiple port surgery[7]. Literature regarding hernia in gynecological cases is lacking.

Benign disease treated by SILS has been described in various studies. Brandao AHF et al, in a retrospective study of treatment of endometriomas by SILS concluded that it is a feasible minimally invasive approach[8]. SILS has also been described as advantageous in retrieval of ovarian tissue for cryopreservation in cancer patients enabling higher tissue volume extraction without compression in an endobag.[9]

Intracorporeal knot tying and suturing has been a limiting factor in the performance of SILS. Toshiaki Endo et al have used roticulating instruments to devise a simple intracorporeal knot tying technique in SILS[10]. Likewise, Ekci et al developed a “side winding” technique of intracorporeal suturing[11].

There is limited but growing data on use of SILS in gynecological oncology. Fagotti A et al described 100 early endometrial cancer patients treated with SILS, showing a low conversion rate and minimal complications[12]. There is also a case series looking at lymph node dissection and ovarian cancer[13]. A

recent study by Ashley J Jennings et al, in their series, concluded that SILS provides a feasible, safe and promising minimally invasive modality for treating gynecologic oncology patients[2].

All this advancement has led to significant increase in the cost of surgery, which in our country is mostly unaffordable. In an endeavor to offer the benefits of SILS to patients at no added cost, glove port has been used along with conventional laparoscopic instruments.

Studies using the glove port are also limited. The first series of general surgery cases in India was described by Khiangte et al[5] showing results comparable with conventional multiport surgery. Szu-Yu Chen et al[14] have described a series of 109 cases of myomestomy using the glove port and conventional laparoscopic instruments with good results. Yun Seok Yang et al[15] have performed various gynecological procedures including endometriosis excision, adhesiolysis, neosalpingostomy, myomectomy and fimbrioplasty using glove port, with good results in 120 patients.

Conclusion

SILS is a safe and feasible technique for almost all gynecological procedures. With proper patient selection, complication and conversion rates are low. Outcomes in short term appear comparable to conventional laparoscopy. Prospective studies comparing outcomes of SILS with conventional laparoscopy will be needed to determine the future direction of this novel surgical approach. Despite gaining experience with several SILS procedures, this approach remains more technically challenging compared to conventional laparoscopy. Although we have successfully performed various SILS procedures with no complication and low conversion rate, it is far from being a routine standard of care. Given that the current benefits of SILS are largely cosmetic, we recommend a low threshold for conversion to standard laparoscopy. Given the technical difficulties of doing SILS, a trans umbilical SILS port can be used along with multiport laparoscopy to enable more number of working ports with fewer incisions and extraction of even large specimens through the umbilical port.

References

1. Wheeless CR Jr, Thompson BH. Laparoscopic sterilization: review of 3600 cases. Obstet Gynecol. 1973;42:751–758.
2. J Minim Invasive Gynecol. 2016 Mar-Apr;23(3):358-63. doi: 10.1016/j.jmig.2015.11.002.
3. Pelosi MA, Pelosi MA 3rd. Laparoscopic hysterectomy with bilateral salpingo-oophorectomy using a single umbilical puncture. N Engl J Med. 1991;88:721–726.
4. Fagotti A, Rossitto C, Marocco F, et al. Perioperative outcomes of laparoendoscopic single-site surgery (LESS) versus conventional laparoscopy for adnexal disease: a case-control study. Surg Innov. 2011;18:29–33.
5. Khiangte E, Iheule N, Phukan P, Medhi S. Improvised transumbilical glove port: a cost effective method for single port laparoscopic surgery. Indian J Surg. 2011;3:142-145.
6. Song T, Kim ML, Jung YW, Yoon BS, Joo WD, Seong SJ. Laparo- endoscopic single-site versus conventional laparoscopic gynaecologic surgery: a meta-analysis of randomized controlled trials. Am J Obstet Gynecol. 2013;209:317.e1–317.e9.
7. Trastulli S, Cirocchi R, Desiderio J, et al. Systematic review and meta- analysis of randomized clinical trials comparing single-incision versus conventional laparoscopic cholecystectomy. Br J Surg. 2013;100: 191–208.
8. Management of Ovarian Endometrioma by Single Incision Laparoscopic Surgery: Case Series Brandao AHF et al. Gynecologic Surgery, Hospital da Baleia, Belo Horizonte, MG, Brazil Abstracts / Journal of Minimally Invasive Gynecology 23 (2016) S1–S252
9. Single-incision laparoscopic surgery (SILS) for ovarian tissue cryopreservation enables higher tissue volume extraction and earlier chemotherapy initiation compared to standard multiport laparoscopy. A. Revel et al.fertster.org Vol. 108, No. 3, Supplement, September 2017
10. Toshiaki Endo et al, J Minim Invasive Gynecol. 2011 Jul-Aug;18(4):500-2. doi: 10.1016/j.jmig.2011.03.014.
11. Ekci B. A simple technique for knot tying in single incision laparoscopic surgery (SILS). Clinics. 2010;55:1055–1057.
12. Fagotti A, Boruta DM 2nd, Scambia G, Fanfani F, Paglia A, Escobar PF. First 100 early endometrial cancer cases treated with laparoendoscopic single site surgery: a multicentric retrospective study. Am J Obstet Gy- necol. 2011;206:353.e1–353.e6.
13. Escobar PF, Fader AN, Rasool N, Espalliat LR. Single-port laparo- scopic pelvic and para-aortic lymph node sampling or lymphadenec- tomy. Int J Gynecol Cancer. 2010;20:1268–1273.
14. Laparoendoscopic single-site myomectomy using conventional laparoscopic instruments and glove port technique: Four years experience in 109 cases.Chen SY, et al. Taiwan J Obstet Gynecol. 2017. Taiwan J Obstet Gynecol. 2017 Aug;56(4):467-471.doi:10.1016/j.tjog.2016.07.016.
15. Di Saverio S, et al. J Am Coll Surg. 2016. J Am Coll Surg. 2016 Mar;222(3):e15-30. doi: 10.1016/j.jamcollsurg.2015.11.019.

ARTICLE

Tissue Retrieval Techniques in Laparoscopic Surgeries

BB Dash, Sonia Chawla
Rejoice infertility & Gyne Endoscopy Training Centre, New Delhi

Introduction

Laparoscopic surgery or minimally invasive surgery (MIS) has transformed the current surgical approach. The advantages of laparoscopic surgery in treating a variety of gynaecological conditions have been well documented in a number of studies.[1,2] Although it has revolutionized the treatment options and surgical techniques, one of the biggest challenges still remains that is the safe and complete surgical specimen removal with minimal spillage.

The risk of spillage of contents is associated with many complications such as pseudomyxoma peritonei (mucinous cystadenoma), chemical peritonitis (dermoid cyst) and the potential dissemination of malignancy (Leiomyosarcoma). Different techniques have been described to facilitate the retrieval of excised masses without needing to enlarge the abdominal incision.

Different Techniques of Specimen Retrieval

1. Specimen retrieval bags
2. Morcellation
3. Mini□laparotomy
4. Colpotomy

Specimen Retrieval Bags

Laparoscopic specimen retrieval bags have been used for many years. Initially, these bags were used to remove adnexal cysts and masses to avoid spillage of contents in the abdominal cavity. In these cases, the cyst or adnexal masses are placed within the bag and fluid is suctioned in a contained manner. This practice was advocated due to concerns regarding spillage of a malignant cyst, which may be associated with dissemination of malignancy and upstaging of the disease [3]. The use of endobag also has the advantage of avoiding contamination of the port site. These bags generally require a 10–12 mm port, although the site can be enlarged for specimen removal. The various types of tissue retrieval bags basically differ in their size and in the technique used to open and close the bag. Some specimen bags open automatically after introducing them into the abdomen (Fig 1) but they are costly while others require manual opening by graspers (Fig 2).The diameter of these bags ranges from 10 to 15 cm. Once the cyst is placed securely in the bag, it can be decompressed to facilitate removal. If the mass is solid, semi□solid or large, it can be removed in piece□meal with in the endobag.

Figure 1: Specimen bag with automatic opening

Figure 2: Specimen bag with manual opening

Commercial bags can be costly, difficult to manipulate and available only in standard sizes. Several authors have described 'easy□to□make' bags from surgical gloves, condoms and plastic bags[4]. These are cheap, simple to make and can be made in a choice of sizes (Fig 3,4,5). But the disadvantage of these home□made bags is that they are not subjected to quality control and can tear while giving traction through the abdominal wall.

Figure 3: Endobag made of glove

Figure 4: Polythene endobag

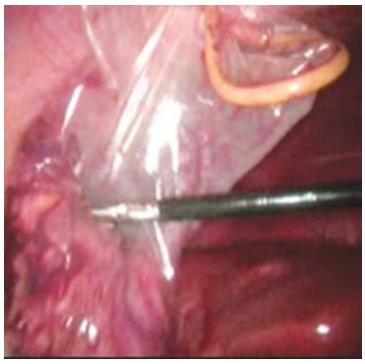


Figure 5: Condom endobag

The endoscopic bag is usually introduced and removed through a 10 mm port site. Many surgeons prefer to use a 5 mm laparoscope for visualisation through an ancillary port while retrieving the specimen in a bag through the umbilical 10 mm one .Exteriorising the endoscopic bag opening on the anterior abdominal wall before removal of the specimen avoids leakage or spillage into the peritoneal cavity.

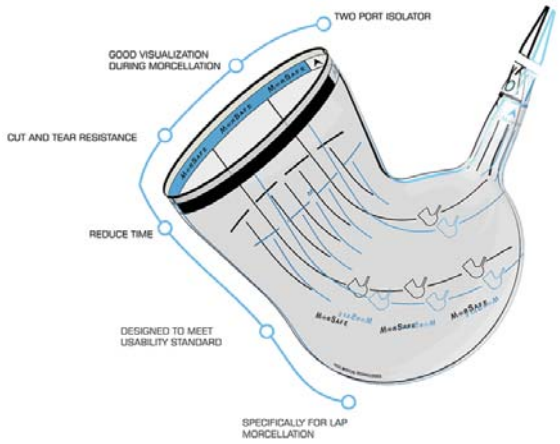
Morcellation

Morcellation is cutting of tissue into small pieces. This is performed to remove a large tissue specimen through a small incision. Electromechanical morcellation is morcellation of tissue with an electric device. Electromechanical morcellators use rapidly rotating blades to quickly remove cores of the specimen through small abdominal incisions. Power morcellation (PM), was introduced to the modern surgical practice in 1993 after the US Food and Drug Administration (FDA approval in 1995[5,6]. Currently, many companies manufacture morcellators, each with some differences in design, size, technique and cost. Morcellators decrease the operative time[7] and the risk of port site herniationas the fascia is not torn or stretched[8].

Severe complications mostly involved bowels and vascular structures caused by the spinning blade of the morcellator were reported[9]. Also, performing intracorporeal PM can lead scattering of benign tissues such as leiomyoma and endometriosis. Dispersed tissue fragments may implant on abdominal organ surfaces leading to inflammation, infection, and intestinal obstruction, which require additional surgical interventions and treatments[10-12]. However, among the concerns the most formidable one that brought this technology under scrutiny is unintentional dissemination of malignant cells, which can lead severe consequences such as worsening the prognosis by upstaging the occult cancer. Considering the risk, FDA released a warning statement On April 17, 2014 discouraging the use of PM in women undergoing hysterectomy and myomectomy based on the safety concerns[13].

After the FDA statement warning he use of power morcellation, there have been many studies demonstrating the different types and techniques of contained morcellation. In 2014, Dr Danny Chou, proposed a new method for in bag morcellation also called as the Sydney contained in bag morcellation. In this method an Endo Catch bag (Endo Catch II Auto Suture Specimen Retrieval Pouch; Covidien, Mansfield, MA) is inserted into the abdomen and myoma is placed into the bag. The mouth of the bag is then exteriorized, and a 12-mm trocar is introduced within the bag from one end and it is insufflated with gas. An optical balloon tip port and the power morcellator device is introduced in the bag and morcellation is done under direct vision. After completing the morcellation, all the aerosolized particles of myoma are also suctioned out so as to further minimize the risk of possible spread[14]. Recently, Paul et al. have also described the use of a similar isolation bag (Mor Safe; Veol Technologies, Mumbai, India) for morcellation via two ports (Fig 6).[15] In 2014 Cohen et al. described the safety and feasibility of power morcellation within a large insufflated containment bag, and then in a follow-up study demonstrated negative cytologic washings after morcellation in vitro.[16,17] In 2015, Winner et al. found that morcellation

within an insufflated bag took twenty minutes longer than uncontained morcellation, with no increase in complications[18]. And in 2016, Cohen et al. published a prospective in vivo study in which uterine tissue was stained with dye before morcellation, and the pelvis was inspected after morcellation[19]. Dye/tissue leakage was noted in 7 out of 76 cases, although the authors noted that most of the dye leakage was likely due to the method of introduction; actually spillage of tissue fragments was only noted in one case. Together, these studies indicate that power morcellation within a containment bag is feasible and effective, although efforts should be made to improve the technique. In 2016, the FDA approved the first bag for contained morcellation[20].



Mini laparotomy

Minilaparotomy is giving a small incision and removing specimen through the incision. Usually the site for the mini laparotomy is chosen at a suprapubic level. Randomised trials have shown that, while mini laparotomy is associated with significant increase in minor postoperative discomfort and recovery time, and more pain and need for analgesia as well as more aesthetic concerns[21].

Colpotomy

Posterior colpotomy has been extensively documented in the past but has fallen out of favour because of the perceived technical difficulties. Through vagina even bulky or slightly enlarged uterus can be removed intact. However, removal of tissue can pose a challenge in cases when there is severe vaginal atrophy, or short calibre vagina as in nulliparous female or in cases of grossly enlarged uterus or big fibroids and these instances may require vaginal morcellation. Vaginal morcellation is a relatively faster and easier technique to learn and perform. But because vagina is in close proximity to the bladder and rectum, there is always a risk of bladder and rectum injury[22]. Commonly used vaginal morcellation techniques include bivalving, wedge resection, coring, myoma enucleation, and paper roll method[23,24].

To avoid spillage, a laparoscopic assisted modification using an endoscopic bag has been described. In this technique large solid specimens to be removed are kept in endobag which is then placed into the pouch of Douglas under direct laparoscopic view. The vagina is incised and the 'specimen in bag' is removed through the posterior colpotomy, after which the incision is sutured[25].

Conclusion

Tissue retrieval in laparoscopy is an important issue. Various methods are being used and new technologies are coming to make the procedure safe and effective. For removal of smaller specimen, use of endobag is a feasible and safe approach. In case of large specimens, in bag power morcellation is a novel an effective approach but the technique requires a learning curve. And further prospective research is needed to confirm the safety of electromechanical morcellators.

References

1. Wright KN, Jonsdottir GM, Jorgensen S, Shah N, Einarsson JI. Costs and outcomes of abdominal,vaginal, laparoscopic and robotic hysterectomies. J Soc Laparoendosc Surg. 2012;16(4): 519–524.
2. Nieboer TE, Hendriks JC, Bongers MY, Vierhout ME, Kluivers KB. Quality of life after laparoscopic and abdominal hysterectomy: a randomized controlled trial. Obstet Gynecol 2012;119(1):85-91.
3. Mayer C, Miller DM, Ehlen TG. Peritoneal implantation of squamous cell carcinoma following rupture of a dermoid cyst during laparoscopic removal. Gynecol Oncol. 2002 Jan;84(1):180-3.
4. Yao CC, Wong HH, Yang CC, Lin CS, Liu JC. Liberal use of a bag made from a surgical glove during laparoscopic surgery for specimens retrieval. Surg Laparosc Endosc Percutan Tech 2000;10:261–3.
5. Steiner RA, Wight E, Tadir Y, Haller U. Electrical cutting device for laparoscopic removal of tissue from the abdominal cavity. Obstet Gynecol. 1993 Mar;81(3):471-4.
6. Driessen SR, Arkenbout EA, Thurkow AL, Jansen FW. Electromechanical morcellators in minimally invasive gynecologic surgery: an update. J Minim Invasive Gynecol. 2014 May-Jun;21(3):377-83. doi: 10.1016/j.jmig.2013.12.121.

7. Carter JE, McCarus SD. Laparoscopic myomectomy. Time and cost analysis of power vs. manual morcellation. J Reprod Med 1997;42:383–8.
8. Miller CE. Myomectomy. Comparison of open and laparoscopic techniques. Obstet Gynecol Clin North Am 2000;27:407–20.
9. Milad MP, Milad EA. Laparoscopic morcellator-related complications. J Minim Invasive Gynecol. 2014;21:486–91
10. Kho KA, Nezhat C. Parasitic myomas. Obstet Gynecol 2009;114(3):611-615.
11. Donnez O, Squifflet J, Leconte I, Jadoul P, Donnez J. Posthysterectomy pelvic adenomyotic masses observed in 8 cases out of a series of 1405 laparoscopic subtotal hysterectomies. J Minim Invasive Gynecol 2007;14(2):156-160.
12. Sepilian V, Della Badia C. Iatrogenic endometriosis caused by uterine morcellation during a supracervical hysterectomy. Obstet Gynecol 2003;102:1125–7.
13. US Food and Drug Administration. Laparoscopic uterine power morcellation in hysterectomy and myomectomy: FDA Safety Communication. April 17, 2014. Washington, DC: US Food and Drug Administration. In: US Food and Drug Administration, ed. April 17, 2014.
14. Kanade TT, McKenna JB, Choi S, Tsai BP, Rosen DM, Cario GM, et al. Sydney contained in bag morcellation for laparoscopic myomectomy. J Minim Invasive Gynecol. 2014;21(6):981
15. Paul PG, Thomas M, Das T, Patil S, Garg R. Contained morcellation for laparoscopic myomectomy within a specially designed bag. J Minim Invasive Gynecol 2016;23:257-60
16. Cohen SL, Einarsson JI, Wang KC, Brown D, Boruta D, Scheib SA, Fader AN, Shibley T. Contained power morcellation within an insufflated isolation bag. Obstet Gynecol. 2014 Sep;124(3):491-7
17. Cohen SL, Greenberg JA, Wang KC, Srouji SS, Gargiulo AR, Pozner CN, Hoover N, Einarsson JI. Risk of leakage and tissue dissemination with various contained tissue extraction (CTE) techniques: an in vitro pilot study. J Minim Invasive Gynecol. 2014 Sep-Oct;21(5):935-9.
18. Winner B, Porter A, Velloze S, Biest S. Uncontained Compared With Contained Power Morcellation in Total Laparoscopic Hysterectomy. Obstet Gynecol. 2015 Oct;126(4):834-8.
19. Cohen SL, Morris SN, Brown DN, Greenberg JA, Walsh BW, Gargiulo AR, Isaacson KB, Wright KN, Srouji SS, Anchan RM, Vogell AB, Einarsson JI. Contained tissue extraction using power morcellation: prospective evaluation of leakage parameters. Am J Obstet Gynecol. 2016 Feb;214(2):257.e1-257.e
20. http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm494650.htm
21. Panici PB, Palaia I, Bellati F, Pernice M, Angioli R, Muzii L. Laparoscopy compared with laparoscopically guided minilaparotomy for large adnexal masses: a randomized controlled trial. Obstet Gynecol 2007;110:241–8
22. Favero G, Anton C, Silva e Silva A, Ribeiro A, Araújo MP, Miglino G, et al. Vaginal morcellation: a new strategy for large gynecological malignant tumor extraction: a pilot study.Gynecol Oncol 2012;126:443-7
23. Pelosi MA, III, Pelosi MA. The Pryor technique of uterine morcellation. Int J Gynaecol Obstet 1997;58:299-303.
24. Wong WS, Lee TC, Lim CE. Novel vaginal “paper roll” uterine morcellation technique for removal of large (>500 g) uterus. J Minim Invasive Gynecol 2010;17:374-8.
25. Pillai R, Yoong W. Posterior colpotomy revisited: a forgotten route for retrieving larger benign ovarian lesions following laparoscopic excision. Arch Gynecol Obstet 2010;281:609–11

CASE REPORT

Complete Uterine Septum with Double Cervix and Double Vagina

Poonam Khera, Kanika Garg, Laxmi Mantri

Introduction

The incidence of congenital uterine anomalies is between 0.5-1.9% in the general population, but it increases to as high as 10.5% in patients presenting with infertility and adverse pregnancy outcomes.[1-2]

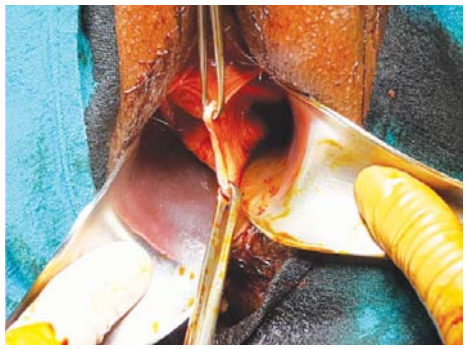
Septate uterus is the most common congenital uterine anomaly encountered clinically. A uterine septum develops as a result of failure of resorbtion of the tissue connecting the two mullerian ducts during embryogenesis. Depending on the extend of failure of resorption, the septum can involve only the superior part of the cavity resulting in an incomplete septum or the total length of the cavity causing complete septum. The septation can extend to the cervix causing double cervix and may also continue into vagina resulting in double vagina.[3]

This type of complete uterine septum with double cervix and vagina is a rare uterine malformation. It is often asymptomatic and is detected as an incidental finding while investigating for repeated pregnancy losses or infertility. These patients also have high risk for premature births and malpresentations. With the advances in minimal invasive surgery, the diagnosis and management of complete uterine septum has changed significantly.

Here, we present a case who came with recurrent abortions and on work up diagnosed to have complete vagino-uterine septum and its further management.

Case Report

A 28 yrs old female came to gynae OPD with complaints of two spontaneous miscarriages, dysparenuia and pain in lower abdomen. She had irregular menstrual cycles associated with dysmenorrhoea. On examination, she had thick longitudinal vaginal septum approximately 10 cm in length and 5 mm thick. It gave the appearance of double vagina and two cervices. Three - D ultrasound confirmed the findings of a septate uterus with septum extending from uterine fundus till lower 1/3 rd of vagina. Renal tract evaluation was done and was normal.

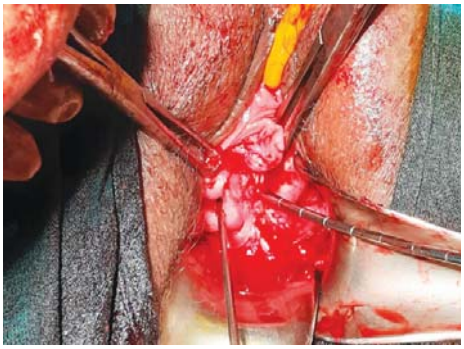


Intraoperatively, the resection of vaginal septum was done with scissors taking care of bladder anteriorly and rectum posteriorly. Laparoscopy was done to confirm the diagnosis of septate uterus. Hysteroscpic transcervical resection of cervical and uterine septum was done carefully using collin's knife. Laparoscopic dye test was also performed which showed patent tubes. An intrauterine contraceptive device was insered after the procedure to prevent the raw surfaces from adhering together. She was discharged in stable condition on 1st post operative day. She was given estradiol valerate 4 mg for 4 weeks to encourage endometrial growth over raw areas.

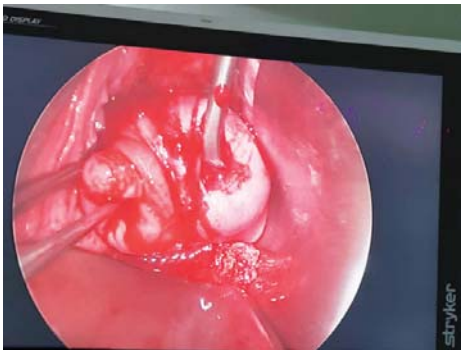
Discussion

A complete or partial septate uterus is the most common type of structural uterine anamoly. The

septate uterus with cervical and vaginal septum challenges the classical hypothesis of unidirectional (caudal to cranial) mullerian development and supports an alternative embryological hypothesis which states that fusion and resorption begins at isthmus and proceed simultaneously in both cranial and caudal directions.[4]



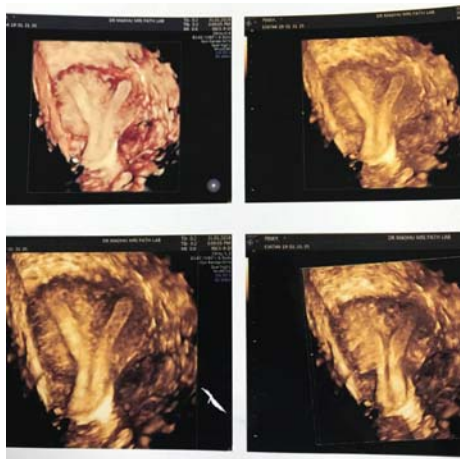
Uterine septa are often diagnosed while investigating the patient for infertility. In a case of complete uterine septum with extension into vagina, the pelvic examination of the patient reveals a double cervix and double vagina. The techniques such as transvaginal ultrasonography, hysterosalpingography, 3D ultrasound, MRI and hysteroscopy are used to confirm the diagnosis.



The diagnosis of complete uterine septum with duplication of cervix and vagina may be confused with uterus didelphys.[5] It is important to differentiate among the two conditions, as the management of both differs. MRI and 3D ultrasound are good non invasive methods to delineate the condition.[5] A combined laparoscopic and hysteroscopic approach is the best method to confirm the diagnosis.

Septate uterus is associated with infertility, recurrent pregnancy loss, pre-term deliveries and malpresentations. One of large studies evaluated 689 women with septate uterus. Their reproductive outcomes were compared with obstetric outcomes of 15,060 women in general population. The incidence of early miscarriage was 41.1% in patients with septate uterus compared to 12.1% in the control population. Also, the rate of late abortions and premature deliveries was higher in patients with septate uterus.[6]

The uterine septum may be repaired with laparotomy (Jones or modified Tompkons procedures) or with hysteroscopic techniques. However, due to higher risk of complications and longer stay with abdominal method, hysteroscopic metroplasty is the recommended treatment now.[7] Commonly used hysteroscopic techniques are incision of the septum cold scissors, unipolar or bipolar cautery and laser devices. Use of the distending media is dependent on the energy source used and include isotonic saline, glycine, glucose, sorbitol or mannitol. Laparascopy when used concurrently to confirm the uterine contour and decrease the risk of perforation.[8]



The reproductive outcomes with different hysteroscopic echniques are found to be comparable in various studies. Litta et al compared the reproductive outcomes of patients who have undergone hysteroscopic recsection of septum using unipolar resectoscope and bipolar cautery. The pregnancy rates were comparable in both the groups.[9]

Hysteroscopic resection of septum is indicated in patients with unexplained infertility, recurrent miscarriges and preterm delivery. It is shown to improve the reproductive outcomes significantly. Saygili et al showed that in women with history of miscarriages, the miscarriage rate decreased from 91.8% to 10.4% following septum incision.[10]

Although a causal relationship between the septate

uterus and infertility remains unproven, encouraging results from numerous studies support the use of hysterectoscopic resection of septum in ptients with unexplained infertility. In a study by Dalal et al, 72 women with septate uterus and no other cause of primary infertility were observed for reproductive outcomes within 1 year of septal resection. Out of 72 women, 33 (45.83%)conceived within 1 year.[11]

Thus, hysteroscopic resection of septum has enabled the management of uterine septum to be safer and less morbid than traditional abdominal approach.

Conclusion

Septate uterus has always posed a dilemma in diagnosis and treatment especially in patients with infertility and repeated miscarriages. With multimodality imaging and evolution in hysteroscopic techniques, the diagnosis and management of complete septate uterus has become more precise. Also, the concomitant use of laparoscopy and hysteroscopy has reduced the complication rates and improved the pregnancy outcomes significantly giving new hope to patient with septate uterus.

References

1. G. G. Nahum. Uterine ano, alies. How common arevthey, andwhat is their distribution among subtypes? J Reprod Med; 43(1998), PP 877-887
2. Y. Y. Chan, K. Jayaprakasan, J. Zamora, J. G. Thorton, N.Raine-Fenning, A.Coomarasamy. The prevalence of congenital uterine anomalies in unselected and high- risk populations: a systematic review. Hum Reprod Update, 17(2011), pp.761-771
3. R. F. Valle. Ekpo. Hysteroscopic metroplasty for the septate uterus: review and meta-analysis. J minim invasive gynecol; 20(2013), pp.22-42
4. Chang AS, Seigel CL, Moley KH, Ratts VS, Odem RR. Septate uterus with cervical duplication and longitudinal vaginal septum: A report of five new cases. Fertil Steril 2004;81: 1133-6
5. P. E. Patton, M. J. Novy, D. M. Lee, L. R. Hickok. The diagnosis and reproductive outcome after surgical treatment of the complete septate uterus, duplicated cervix and vaginal septum. Am J Obstet Gynecal; 190 (2004), pp. 1669-1675
6. Kupesic S, Kurjak A, Skenderovic S,Bjelos D. Screening for uterine abnormalities by three- dimentional ultrasound improves perinatal outcome. J Perinat Med 2002; 30:9-17
7. H. A. Homer, T. C. Li, I. D. Cooke. The septate uterus: a review of management and reproductive outcome. Fertil Steril; 73,PP 1-14
8. K. W. Lo, P. M. Yuen. Hysteroscopic metroplasty under laparoscopic ultrasound guidance. Acta Obstet Gynecol Scand; 77 (1998), pp 580-581
9. P. Litta, E. Spiller, C. Saccardi et al. Resectoscope or versapoint for hysteroscopic metroplasty. Int J Gynaecol Obstet; 101(2007), pp39-42
10. Saygili-Yilmaz,E.,Yildiz.S,Erman-Akar M, Akyuz G, Yilmaz Z. Reproductive outcome of septate uterus after hysteroscopic metroplasty. Arc Gynecol Obstet 2003; 268: 289-292
11. R.J.Dalal, H.D.Pai,N.P.Palshekar,M.takhtani,R.D.Pai,N. Saxena. Hysteroscopic metroplasty in women with primary infertility and septate uterus: reproductive performance after surgery. J Reprod Med :57(2012),pp 13-16

CASE REPORT

Omental Implantation of Gestational Tissue following Laparoscopic Salpingectomy for Ruptured Ectopic Pregnancy, with Large Bilateral Multiseptated Ovarian Cysts and Mesenteric Defect: A case report

Tripti Sharan, Keerti Khetan, Asmita Singh
Senior Consultant, Dept of Obst & Gynae, BLK Superspeciality Hospital, Pusa Road, New Delhi

Objective: To describe a case of omental implantation of gestational tissue following laparoscopic salpingectomy for ruptured tubal ectopic pregnancy, with large bilateral multiseptated clear ovarian cysts and a mesenteric defect in a segment of intestine.

Design: Case Report

Setting: Department of Obstetrics & Gynae, BLK Superspeciality Hospital, Pusa Road New Delhi

Patient: A 31 year old presenting 32 days after laparoscopic salpingectomy with acute abdomen

Intervention: Partial Omentectomy, Bilateral ovarian cystectomy, Segmental intestinal resection with side to side anastomosis

Main Outcome Measure: Serial Beta HCG measurement and partial omentectomy

Results: Histopathological examination confirmed omental pregnancy, serial beta HCG showed a rapid fall after surgery

Conclusion: Secondary omental pregnancy or implantation of trophoblastic tissue on omentum though rare can occur after laparoscopic salpingectomy. Hence caution in aspiration of blood products and tissue fragments, meticulous extraction of trophoblastic tissue preferably using a tissue retrieval bag, and careful follow up with serial beta HCG should be done.

Keywords: Trophoblastic tissue, Omental Implants, Ruptured ectopic pregnancy, Laparoscopic Salpingectomy, Ovarian cysts, & mesenteric defect.

Introduction

Ectopic pregnancy is an increasingly common clinical problem. The incidence of extrauterine pregnancies has increased from 0.5 %, 30 years ago to 1-2 % in recent years.

Persistent trophoblastic tissue is a rare complication of laparoscopic salpingectomy with only two previously reported cases in literature (Thatcher et al, 1989; Doss et al, 1998). It is the result of incomplete removal of gestational tissue.[1,3,7]

Omental implants are rare after surgery to remove an EP, and can be hardly detected by ultrasound and may present with sudden onset of lower abdominal pain, with bleeding from implant sites. We report the rare case of persistent ectopic pregnancy in one patient with omental implants at the lateral port site who had previously undergone laparoscopic salpingectomy. Along with the omental implants patient had bilateral large ovarian masses and mesenteric defect in a segment of small intestine.[2,3]

This case illustrates one of the potential problems that may arise, especially with minimal access surgery for ectopic pregnancy.

Case Report

Patient Mrs. XYZ, 31 year old women, G5P0A4, with previous 4 spontaneous early abortions reported in gynae casualty with 5 weeks of amenorrhea and severe pain in abdomen for 1 day. She gave history of fainting, sweating and inability to sit for 1 day. There was tachycardia but her other vitals were stable. Her Beta HCG was 4303 mIU/ml. She was carrying a report that showed a haemoglobin of 13.2 gm% done

3 days back. After admission it showed a significant drop to 10.5 gm%. Ultrasound was suggestive of right sided adnexal mass with massive hemoperitoneum. The uterus showed thickened endometrium and no gestational sac. A diagnosis of ruptured ectopic pregnancy was made and patient prepared for surgery.

During laparoscopic surgery, around 1.5 litres of blood was removed from the abdomen. Left sided (not right as diagnosed on ultrasound) ruptured tubal ectopic pregnancy was seen. Left salpingectomy was done. Right tube and both ovaries were normal size and healthy. An intraabdominal drain was kept. 3 units of packed red cells transfused. Post-operative period was smooth and the patient was discharged on Day 3 of surgery. Her beta HCG on the day of discharge was 837.1 mIU/ml and Hb% was 10.3 gm%.

Patient reported in the outdoor clinic one week later with no significant complains for follow up. The histopathology report was consistent with ectopic gestation. Patient was counseled about further treatment especially in view of recurrent pregnancy losses and advised to come after 4 weeks.

One month after surgery she reported to the casualty again with similar type of pain, especially on the left side, towards drain port side. The port sites were healthy. Patient was admitted. CBC, Beta HCG and an ultrasound was done.

On day 0 of admission - Her Hb was 11.3 gm, TLC 12.3, Platelet 2.37 lakhs. Surprisingly the Beta HCG was 1171mIU/ml.

Ultrasound further showed Bilateral well defined multiloculated cystic lesion, 72x61mm in the right ovary and another anechoic cyst 41x40 mm with internal septations in the left ovary with significant free fluid and internal debris seen in Morrisons pouch & POD. An MRI was done that corroborated the same findings of bilateral multiseptated ovarian cysts plus mild to moderate ascitis . Ca125 was 19.3. However the source of Beta HCG could not be found out.

Patient was managed conservatively with analgesics and broad spectrum antibiotics. On day 1 the Beta HCG was repeated and found to be1117mIU/ml, Hb 11, TLC 9.5, showing no fall in HB or suggestive of bleeding and neither rise in TLC. The patient was not living with her husband. Keeping persistent chorionic activity in mind, Inj Methotrexate was given. On day 2, the Hb was 11.2 and TLC 10.29 showing no significant change. Ultrasound however showed slight regression in free fluid though the size of ovarian masses on both sides remained same. Patient was symptomatically better.

On day 3 although the pain was better, Hb 9.9 gm &TLC 11.3; the patient started developing fever. CRP was 67.59. Suspecting postoperative collection, that was getting infected the patient was taken up for surgery the same day.

On Diagnostic Laparoscopy

1. The omentum was pulled up & adherent towards the 10mm port on the left side lateral port (previous drain port)
2. No significant intra abdominal fluid collection was seen
3. Bilateral thin walled ovarian cysts were present. Right ovary 7x8cm (3-4 multicystic), left ovary 5x9cm with clear fluid
4. The right tube was healthy

The omentum was gently pulled down from the port side. Omental caking with hematoma was seen. Partial omentectomy was done and brought out through a tissue retrieval bag.

Bilateral ovarian cystectomy done. Both were clear cysts.

While exploration, a mesenteric defect in a segment of the small intestine was detected. Surgical opinion was taken. The segment was looking dusky and devascularised so segmental resection and side to side anastomosis done.

An intrabdominal drain was kept. The postoperative period was smooth. Beta HCG on Day 2 postop day dropped down to142.9 mIU/ml.

The drain was removed on Day 4 postop day and patient was discharged on Day 5. The beta HCG on day of discharge was 36.23 mIU/ml.

Patient had an uneventful recovery and has been followed till Beta HCG dropped below 10 and menses resumed.

In the histopathology report, omentum showed

trophoblastic proliferation with hydropic changes and products of conception. The ovarian tissue and bowel loop was unremarkable.

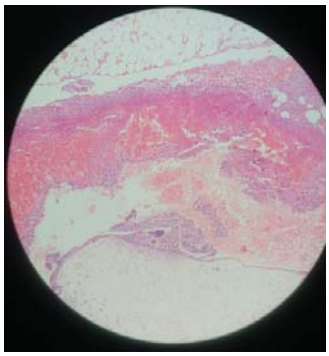


Fig 1: Section showing omental tissue with areas of heamorrhage, chorionic villi with hydropic changes and trophoblastic proliferation

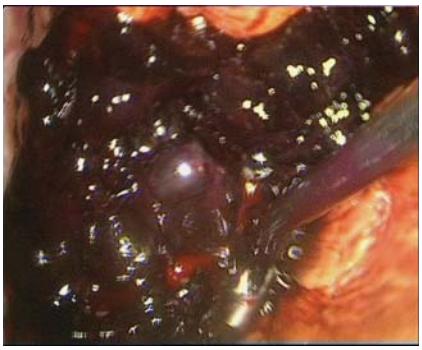


Fig 2: Picture showing secondary omental pregnancy

Fig 3: Picture showing Bilateral Ovarian Cysts

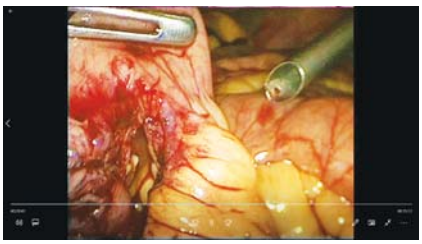


Fig 4: Picture showing the Mesenteric defect in an intestinal segment

Conclusion

1. It was concluded that patient had persistent trophoblastic activity due to secondary omental pregnancy. It is likely that the implantation of gestational tissue over the omentum occurred during salpingectomy or as a consequence of inadequate removal of gestational tissue especially in presence of massive hemoperitoneum following tubal rupture.
2. The mesenteric defect in the intestinal segment could not be explained. It was an old lesion and the mesenteric segment could have got weakened while getting pulled up alongside the omental ectopic tissue. Trauma during the first surgery was another theoretical possibility that couldn't be ruled out.
3. The bilateral ovarian cysts could represent continuous stimulation to the ovaries in view of persistent trophoblastic activity.

Discussion

Pelvic and omental trophoblastic implantation has never previously been reported as a complication of assisted reproduction. This case demonstrates the need for post-operative surveillance by serial serum β-HCG for ectopic pregnancies managed laparoscopically until complete resolution, as abdominal pregnancy, though rare, has a seven times higher mortality rate when compared with non-abdominal pregnancies (Atrash et al., 1987)[1]. Omental pregnancy is the least common form of abdominal pregnancy, and can be classified as primary or secondary. Secondary omental implants are diagnosed in the absence of histological evidence of neovascularization or growth of trophoblast into the supporting tissue (Berghella and Wolf, 1996)[2]. It is an unusual complication of laparoscopic procedures for ectopic pregnancy, and may result from a ruptured ectopic pregnancy, as in this case. These trophoblastic implants continue to secrete β-HCG, and hence presented with rising or plateauing β-HCG following removal of the ectopic pregnancy.[4]

Seventeen cases of omental ectopics, including the primary omental pregnancy reported by Onan et al., have been reported in the literature, (Onan et al., 2005)[5] and only two of these were following laparoscopic salpingectomy (Thatcher et al., 1989; Doss et al., 1998)[3]. In the case reported by Thatcher, the patient presented with pain and rising β-HCG concentrations following laparoscopic removal of an early unruptured ectopic pregnancy; subsequent laparotomy demonstrated multiple pelvic implants of

the trophoblastic tissue. In the second case, reported by Doss et al., the patient was found to have an unruptured ectopic on laparoscopy. The tube was removed laparoscopically, and in this case the patient was asymptomatic; however, the quantitative β-HCG plateaued 4 weeks after initial surgery. An ultrasound scan suggested the presence of a right adnexal mass (which was found to be a haemorrhagic corpus luteal cyst) and an exploratory laparotomy was performed on the suspicion of residual ectopic pregnancy. Multiple peritoneal implants and extensive omental deposits were found on laparotomy, and a partial omentectomy and excision of peritoneal implants was carried out without any complications.

The pneumoperitoneum, positive intra-abdominal pressure and Trendelenburg position adopted during laparoscopy along with the scavenging action of the omentum may predispose to omental implantation following laparoscopic surgery (Pal et al., 2003)[6]. The pelvis, paracolic gutters and the sub-diaphragmatic areas should be systematically assessed and copious irrigation should be used along with reverse Trendelenburg position to facilitate removal of any tissue that may have migrated to the upper abdomen (Pal et al., 2003). These secondary trophoblastic implants acquire a new blood supply and can present as secondary haemorrhage. The patients may or may not be symptomatic; most present with severe abdominal pain and intra-abdominal haemorrhage. Haemorrhagic shock is the commonest cause of mortality from omental pregnancy (Onan et al., 2005).[5]

Omental implantation of ectopic gestational tissue after laparoscopic salpingectomy though rare is a known entity, hence meticulous follow up of patient is recommended with serial beta HCG for at least 51 days. Though more common after conservative surgery like salpingostomy, in one study more than half the cases of omental implantation occurred after salpingectomy. These omental implants are usually not detected on ultrasound.[7]

Omentum with its rich and abundant blood supply is a favourable site for implantation of ectopic gestational tissue. Several precautions are proposed such as aspiration of blood products and tissue fragments, minimizing trendelenburg position, meticulous extraction of the trophoblastic tissue, using a tissue retrieval bag.

Positive intraabdominal pressure during laparoscopic surgery and the trendelenburg position may be contributory to cephalad migration of trophoblast remnants, with the scavenging action of the omentum and adherence to the site of trocar placement theoretically providing a mechanism of neovascularization and sustenance of parasitic trophoblast.[8]

Suction should be used carefully under vision especially in presence of hemoperitoneum to avoid any intestinal damage. The bowels should be handled carefully and a thorough exploration for any injury should be done at the end of surgery.

In summary, this case demonstrates an unusual complication of laparoscopic removal of ectopic pregnancy. This report emphasizes the importance of intra-operative care during laparoscopic management of ectopic pregnancy and raises the question of post-operative follow-up with serial HCG. A diagnosis of secondary implantation of trophoblastic tissue should be considered if a patient presents with signs of intraabdominal haemorrhage following removal of an ectopic pregnancy or a tubal abortion.

References

1. Atrash HK, Friede A, Hogue CJR 1987 Abdominal pregnancy in the United States: frequency and maternal mortality. Obstetrics and Gynaecology 69, 333–337.
2. Berghella V, Wolf SC 1996 Does primary omental pregnancy exist? Gynaecologic and Obstetric Investigation 42, 133–136.
3. Doss BJ, Jacques SM, Qureshi F et al. 1998 Extratubal secondary trophoblastic implants: clinicopathologic correlation and review of the literature. Human Pathology 29, 184–187.
4. Graczykowski JW, Mishell DR Jr 1997 Methotrexate prophylaxis for persistent ectopic pregnancy after conservative treatment by salpingostomy. Obstetrics and Gynecology 22, 118–122.
5. Onan MA, Turp A.B, Saltik A et al. 2005 Primary omental pregnancy: Case report Human Reproduction 20, 807–809.
6. Pal L, Parkash V, Rutherford TJ 2003 Omental trophoblastic implants and hemoperitoneum after laparoscopic salpingostomy for ectopic pregnancy. Journal of Reproductive Medicine 48, 57–59.
7. Thatcher SS, Grainer DA, True LD et al. 1989 Pelvic trophoblastic implants after laparoscopic removal of a tubal pregnancy Obstetrics and Gynaecology 74, 514–515.
8. Wong WC, Wong BPY, Kun KY 2004 Primary omental ectopic pregnancy. Journal of Obstetrics and Gynaecology Research 30, 226–229.

Abstracts

To Evaluate Cervical Function and Pregnancy Outcomes after Hysteroscopic Resection of the Complete Uterine Septum, Duplicate Cervix and Vaginal Septum with Metzenbaum Scissors

Dong Huang

Assisted Reproduction Unit, Department of Obstetrics and Gynecology, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine; Key Laboratory of Reproductive Dysfunction Management of Zhejiang Province, Hangzhou 310016, China

Methods: Between January 2010 and December 2016, 13 patients admitted to the Department of Obstetrics and Gynecology of Sir Run Run Shaw Hospital with complete uterine septum, duplicate cervix and vaginal septum, were enrolled into this study. The cervical and corporal septum was cut by Metzenbaum scissors, and residual septum was cut by micro scissors under hysteroscopy. The vaginal septum was cut with the unipolar electric knife.

Results: The operation time was about 10 ± 1.31 min. All the 13 patients present normal uterine cavities without scar formation under hysteroscopy at 3 months after operation, there was mild adhesions between anterior and posterior intrauterine wall on 2 cases. After operation, there were 13 pregnancies naturally conceived in 11 patients, 10 deliveries. The live birth rate was 76.92%, the early miscarriage rate was 23.08%. The cesarean section rate was 30%, the vaginal delivery rate was 70%, and all were term births.

Conclusion: The operation was simple, convenient, and fast, without any complications and cervical insufficiency. It was easy to have vaginal deliveries.

References

1. J.H. Yang, M.J. Chen, J.C. Shih, et al. Light-guided Hysteroscopic resection of complete septate uterus with preservation of duplicated cervix J Minim Invasive Gynecol, 21 (5) (2014), pp. 940-944 ArticleDownload PDFView Record in ScopusGoogle Scholar
2. A. Rock, C.P. Roberts, J.S. Hesla Hysteroscopic metroplasty of the Class Va uterus with preservation of the cervical septum. Fertil Steril, 72 (5) (1999), pp. 942-945 ArticleDownload PDFView Record in ScopusGoogle Scholar
3. S.Q. Chen, N. Deng, H.Y. Jiang, et al. Management and reproductive outcome of complete septate uterus with duplicated cervix and vaginal septum: review of 21 cases. Arch Gynecol Obstet, 287 (4) (2013), pp. 709-714. CrossRefView Record in ScopusGoogle Scholar
4. B. Karadag, B. Dilbaz, B. Demir, et al. Reproductive performance after hysteroscopic metroplasty in infertile women: complete versus partial uterine septum. Clin Exp Obstet Gynecol, 43 (4) (2016), pp. 584-587. View Record in ScopusGoogle Scholar
5. P.E. Patton, M.J. Novy, D.M. Lee, et al. The diagnosis and reproductive outcome after surgical treatment of the complete septate uterus, duplicated cervix and vaginal septum. Am J Obstet Gynecol, 190 (6) (2004), pp. 1669-1678. View Record in ScopusGoogle Scholar

To Retrospectively Estimate The Impact of Modified Laparoscopic Salpingectomy on the Ovarian Reserve in Infertile Women

Jianmin Chen

Assisted Reproduction Unit, Department of Obstetrics and Gynecology, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine; Key Laboratory of Reproductive Dysfunction Management of Zhejiang Province, Hangzhou 310016, China

Methods: There were 74 infertile women undergone modified laparoscopic salpingectomy from June 2016 to January 2017, and their levels of serum antimüllerian hormone, basal follicle-stimulating hormone and estradiol were reviewed retrospectively.

Results: No significant change was detected in serum antimüllerian hormone at 3 months after surgery compared to preoperative level ($p = 0.857$). Similar changes were observed for the basal follicle-stimulating hormone ($p = 0.102$) and estradiol ($p = 0.233$) level.

Conclusions: Our results revealed that modified laparoscopic salpingectomy might be a valuable treatment for hydrosalpinx before in vitro fertilization.

References

1. American College of Obstetricians and Gynecologists Committee opinion no. 618: ovarian reserve testing. Obstet Gynecol, 125 (1) (2015), pp. 268-273. View Record in ScopusGoogle Scholar.
2. L. Mettler, J. Hucke, B. Bojahr, et al. A safety and efficacy study of a resorbable hydrogel for reduction of post-operative adhesions following myomectomy. Hum Reprod, 23 (5) (2008), pp. 1093-1100. CrossRefView Record in ScopusGoogle Scholar.
3. N. Johnson, S. van Voorst, M.C. Sowter, et al. Surgical treatment for tubal disease in women due to undergo in vitro fertilization. Cochrane Database Syst Rev, 20 (1) (2010), p. CD002125. View Record in ScopusGoogle Scholar.
4. N.P. Johnson, W. Mak, M.C. Sowter, Laparoscopic salpingectomy for women with hydrosalpinges enhances the success of IVF: a cochrane review. Hum Reprod, 17 (2002), pp. 543-548, View Record in ScopusGoogle Scholar
5. M.W. Barbosa, A. Sotiriadis, S.I. Papatheodorou, V. Mijatovic, C.O. Nastri, W.P. Martins, High miscarriage rate in women treated with Essure® for hydrosalpinx before embryo transfer: a systematic review and meta-analysis, Ultrasound Obstet Gynecol, 48 (2016), pp. 556-565, CrossRefView Record in ScopusGoogle Scholar

To Evaluate The Safety and Efficacy of Conservative Laparoscopic Surgery for Adnexal Torsion and The Feasibility of Secondary Operation

Guanghui Song
Department of Gynecology and Obstetrics, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Qingchun East Road 3, Hangzhou 310016, China.

Methods: This is a retrospective study that consists of 17 patients with clinically diagnosed adnexal torsion who have a desire for pregnancy in the future. We performed conservative laparoscopic adnexal detorsion operations from January 2014 to June 2016 in Sir Run Run Shaw Hospital. The collected data, including age, onset time, maximum diameter of adnexal lesion, local blood flow signal, torsion degree, and recovery of local blood supply after detorsions, were analyzed. The blood flow of the lesion side, the antral follicles development, the basal endocrine hormone levels and the menstrual cycle were examined one-month and three-month post operation. Future fertility was investigated postoperatively.

Results: All cases had no obvious clinical postoperative complications. There were no significant changes on menstrual cycle and ovarian function during the follow-up period.

Conclusions: Adnexal torsion in young patients should be carefully treated and fertility reservation should be thoroughly considered. The decision to remove adnexa needs careful consideration. Conservative laparoscopic surgery is safe and does not increase the occurrence of serious complications. There is a higher possibility of a long delay between surgery and onset necrosis, but this is not always the case. Even if there is adnex thromboembolic infarction it does not result in serious complications such as pulmonary infarction. Conservative laparoscopic surgery can be performed first unless the clinician is certain it is already necrotic. We should do our best to reserve patients' fertility as much as possible. If necessary, a secondary surKeywords

References

1. J.J. Robertson, B. Long, A. Koyfman, Myths in the evaluation and management of ovarian torsion. J Emerg Med, 52 (4) (2017), pp. 449-456, ArticleDownload PDFView Record in ScopusGoogle Scholar
2. Y.J. Feng, K. Shen, D. Ma, B.H. Kong, L. Li, Obstetrics and Gynecology, (2nd ed.), People's Medical Publishing House, Beijing, China (2010), Google Scholar
3. B. Zhang, Y. Guo, J. Li, Laparoscopic ovarian-conserving surgery for ovarian cyst pedicle torsion: report of 62 cases, Chin J Minim Invasive Surg, 14 (7) (2014), pp. 600-602, View Record in ScopusGoogle Scholar
4. P.G. McGovern, R. Noah, R. Koenigsberg, A.B. Little, Adnexal torsion and pulmonary embolism: case report and review of the literature, Obstet Gynecol Surv, 54 (9) (1999), pp. 601-608, CrossRefView Record in ScopusGoogle Scholar
5. G. Oelsner, S.B. Cohen, D. Soriano, D. Admon, S. Mashiach, H. Carp, Minimal surgery for the twisted ischaemic adnexa can preserve ovarian function, Hum Reprod, 18 (12) (2003), pp. 2599-2602, CrossRefView Record in ScopusGoogle Scholar
6. R. Mashiach, M. Canis, K. Jardon, G. Mage, J.L. Pouly, A. Wattiez, Adnexal torsion after laparoscopic hysterectomy: description of seven cases, J Am Assoc Gynecol Laparosc, 11 (3) (2014), pp. 336-339, Google Scholar

Uterine Myoma; Rudimentary Horn; Unicornuate Uterus Pregnancies; Amenorrhea; Dysmenorrhea; Hematometra; Hematosalpinx; Intrauterine Growth Restriction; Placental Abruption; Laparoscopic Resection; Retroperitoneal Cord

Edoardo Taddei[1*], Midwife SE[2]
Filippakos F[1] and Norbert Gyr T[1]
[1]Department of Obstetrics and Gynecology, Civil Hospital of Lugano, Lugano, Switzerland, [2]Department of Obstetrics and Gynecology, Medical Center Lugano, Lugano, Switzerland

Introduction: The prevalence of this anomalies in unselected population is 5.5%, 13.3% in those with history of miscarriage, 8% in infertile women and highest than 24.5% in infertile women who also had a history of miscarriage[1,2]. A unicornuate uterus presents the 0.1% of women[3] and it constitutes approximately 20% of Müllerian ducts anomalies[4]. The rudimentary horn is recognized in about 74%-90% of these cases[5]. Anomalies are more common in infertile women as in women with repeated miscarriage and obstetric adverse outcomes[6,7]. True prevalence is difficult to assess, partly because different classification systems are used and partly because best diagnostic techniques are invasive and rarely applied to low-risk population[1,2,8].

Müllerian anomalies are frequently asymptomatic and are often missed in routine gynecological examination[9]. Methods for the assessment of uterine morphology are threedimensional ultrasound, hysterosalpingography, hysteroscopy, laparoscopy and RMI[10]. In most cases, unicornuate uterus is incidentally discovered when pelvis is imaged but sometimes it can even be missed at time of laparotomy or laparoscopy by inexperienced surgeons.

Various classification systems have been developed; the latest is ESHRE-ESGE system that includes anatomical variation of uterus, vagina and cervix in different classes[11]. This classification is not in widespread use and does not allow comparison, the most common classification of American Fertility Society[12,13] AFS classification defines seven classes, unicornuate uterus is represented in class II divided in four subclasses: with communicating rudimentary horn, noncommunicating, no cavity horn and no horn (Figure 1). gynecology-obstetrics-terminology

Figure 1: New classification and terminology of uterine malformations & contribution of the frontal view Echographic.

Clinical presentations for Müllerian anomalies are different; when symptoms are present, range from amenorrhea, dysmenorrhea, pelvic pain, hematometra, hematosalpinx and adverse reproductive and obstetric outcomes as infertility, spontaneous abortion, preterm delivery, malpresentation, intrauterine growth restriction, placental abruption and intrauterine fetal demise[14,15].

It is theorized it is due to diminished muscle mass abnormal uterine blood flow and cervical incompetence[6,7].

Diagnosis and management of such types of anomalies are often a challenge for the gynecologist.

We present a case report of a successful delivery in an undiagnosed unicornuate uterus after laparoscopic resection of a rudimentary horn at 14+5 weeks' gestation thought to be an ovarian neoplasm.

Discussion: In case of unicornuate uterus pregnancies can be either in the primary uterine cavity or in the rudimentary horn. Pregnancies developing in the rudimentary horn have to be removed. This is the first report of laparoscopic resection of rudimentary horn, during ongoing pregnancy in the main horn; several case reports described laparoscopic approach for removal of the rudimentary horn, but no one during pregnancy in unicornuate uterus.

Uterine anomalies should therefore be suspected in pregnancies with atypical ultrasonographic features and more investigations done to confirm the diagnosis, with a view to improving management of clinical care. The first trimester screening scan has not to focus only on fetus, it is also important to observe thoroughly adnexal region and to investigate possible unclear or suspected images in order to reduce associated morbidity and mortality. Prophylactic resection of a noncommunicating uterine horn with a cavity should be considered in an asymptomatic, reproductive-age patient with this rare Mullerian anomaly.

It would be safer to remove the rudimental horn outside pregnancy to better manage future pregnancy, but this clinical presentation did not allow us to make the proper diagnosis. As a fast-increasing ovarian mass can represent a harmful event for a young girl, it was mandatory to proceed with the surgery in order to exclude ovarian cancer. It is interesting that an accurate first trimester screening scan allow the clinician to diagnose the high-risk cohort for intrauterine growth restriction and preeclampsia. Moreover, the absence of the left uterine artery during the scan should have brought our attention toward the presence of uterine anomalies. The balance of risks and benefits of results of serial ultrasound, cervical length, blood pressure and urine protein follow-up guided us to the choice of 37 weeks 'gestation caesarean section.

Conclusion: Unicornuate uterus is present in only 0.1% of population, facing such challenging cases of anomaly, physician skills and decisions are very important to manage pregnancy complications at time of appearance because of a lack of literature for evidence-based decision making. Though rare, uterine Müllerian anomalies as unicornuate uterus should be included in differential diagnosis facing pelvic unrecognised mass, dysmenorrhea, and first trimester miscarriage: that is essential to provide better care to patients. Prophylactic resection should be considered in an asymptomatic, reproductive-age, because surgical resection of rudimental horn may improve obstetric outcomes in selected cases such as ours. Future reports will define optimal management approach.

References

1. Chan YY, Jayaprakasan K, Tan A, Thornton JG, Coomarasamy A, et al. (2011) Reproductive outcomes in women with congenital uterine anomalies: a systematic review. Ultrasound Obstet Gynecol 38: 371-382.
2. Chan YY, Jayaprakasan K, Zamora J, Thornton JG, Raine-Fenning N, et al. (2011) The prevalence of congenital uterine anomalies in unselected and high-risk population: a systematic review. Hum Reprod Update 17: 761-771.
3. Al Qarni AA, Al-Braikan N, Al-Hanbali MM, Alharmaly AH (2017) Rupture rudimentary horn pregnancy at 31 week. Saudi Med J 38: 201-203.
4. Khati NJ, Frazier AA, Brindle KA (2012) The unicornuate uterus and its variants. J Ultrasound Med 31: 319-331.
5. Kanno Y, Suzuki T, Nakamura E, Goya K, Nishijama Y, et al. (2014) Successful term delivery after laparoscopic resection of a non-communicating rudimentary horn in a patient with a unicornuate uterus: A case report. Tokai J Exp Clin Med 39: 59-63.
6. Reichman D, Laufer MR, Robinson BK (2009) Pregnancy outcomes in unicornuate uteri: a review. Fertil Steril 91: 1886-1894.
7. Hua M, Odibo AO, Longman RE, Macones GA, Roehl KA, et al. (2011) Congenital uterine anomalies and adverse pregnancy outcomes. Am J Obstet Gynecol 205: 558.e1-558.e5.
8. Caserta D, Mallozzi M, Meldolesi C, Bianchi P, Moscarini M (2014) Pregnancy in a unicornuate uterus: A case report. J Med Case Rep 8: 130.
9. Nahum GG (2005) Uterine anomalies, induction of labor, and uterine rupture. Obstet Gynecol 106: 1150-1152.
10. Salim R, Woelfer B, Backos M, Regan L, Jurkovic D (2003) Reproducibility of three-dimensional ultrasound diagnosis of congenital uterine anomalies. Ultrasound Obstet Gynecol 21: 578-582.
11. Grimbizis GF, Gordts S, Di Spiezio Sardo A, Brucker S, De Angelis C, et al. (2013) The ESHRE/ESGE consensus on the classification of female genital tract congenital anomalies. Hum Reprod 28: 2032-2044.
12. Prior M, Richardson A, Asif S, Polanski L, Parris-Larkin M, et al. (2018) Outcome of assisted reproduction in women with congenital uterine anomalies: a prospective observational study. Ultrasound Obstet Gynecol 51: 11gery can be performed

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Delhi Gynaecological Endoscopists Society

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