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THEME: "GYNAECOLOGICAL ENDOSCOPY: WHATI IS NEW"

UPDATEKNOWLEDGEUPGRADESKILLSUPLIFTWOMEN'SHEALTH

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In this seemingly unsettled world driven by the fourth industrial revolution of artificial intelligence, civil aviation disasters, humanitarian crises and persisting conflict, wars, and ceasefire announcements, how do we, as care providers of one of the most essential health services, keep our minds uncluttered and get back on track? No matter how the world steers in 2025, continuing to learn the judicious use of cutting-edge technology and efforts to update our skills and knowledge will and should remain our focus as essential health service providers.

In the June 2025 issue of the NARCHI Delhi bulletin, we focus on Minimally Invasive Gynaecological Surgeries in the uncharted field of oncology, operating with the challenge of coexisting pregnancy, optimally excising the ill-defined adenomyosis, and treating the eternally incorrigible Asherman's syndrome. We also deal with the iatrogenic 21st-century evil, the isthmocele, and describe how and when best to handle it.

Most clinicians rightly recognise that the decision-making process is the most challenging part of case management. The decision to operate or not is a vital part of care-giving. Endometriosis, fibroids, adenomyosis, Asherman's, adnexal masses in pregnancy or the presence of an isthmocele do not always require surgical intervention. The indication, severity of symptoms and context should guide management. While this bulletin aims to present surgical management options to our readers, we, as editors, urge our readers to adopt an informed and nuanced stance when opting for surgery, resting reassured in the knowledge that our foremost intention remains patient well-being.

Signing off here, with thanks to our contributors: Dr Rahul Modi, Dr. Vaishali Paliwal & Usha Shree Das; Dr. Dinesh Kansal, Dr. Supriya Mahipal & Dr. Yamini Kansal; Dr. Shivani Sabharwal, Dr. Malvika Sabharwal, Dr. Kritika Rehani & Dr. Ritu Srivastav; Dr. Kanika Jain & Dr. Neha Jindal, Dr. B.B Dash, Dr. Jigyasa Singh & Dr. Garima Sinha; Dr. Rahul Manchanda & Dr. Ruchika Gupta; Dr. Nikita Trehan & Dr. Aarshika; and Dr. Swati Aggarwal & Dr. Kanika Chopra.

Sincerely,
The editorial team
Mamta Dagar, Ruma Satwik, Sakshi Nayar

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Warm greetings in these hot summer days !

Its our pleasure and privilege to present yet another bulletin loaded with hot topics and great debates.

The great invention in medical and surgical history is the invention of minimally invasive surgeries. The operative skill has been refined and re-refined, discovered and re-discovered. The controversy goes on and the debates are always live!

Surgeons since time immemorial have always strived to offer the best to their patients whether it is the type of surgery or the route of surgery.

As Gynaecologists we have the advantage of performing vaginal surgeries – the least invasive route of surgeries. Of course, we also excel in performing open surgeries, laparoscopic as well as Robotic surgeries.

Here we present this bulletin titled: "Gynaecological Endoscopy : What is New ?". The opening topic itself is a debate "MIS in Gynaecological oncology : Searching for White & Black in Gray" presented by three stalwarts in Gynae oncology Dr. Rahul D Modi, Dr. Vaishali Paliwal & Dr. Ushashree Das.

Dr. Dinesh Kansal has rightly explained "What not to do in Endometriosis ?."

Dr. Shivani Sabharwal has nicely discussed "Measures to improve Surgical Outcomes in Symptomatic Leiomyoma". "The Surgical Management of Isthmocele when & how ?" has been vividly described by Dr. Kanika Jain. The "Surgery for Adenomyosis when & how ?" extensively written by Dr. B. B. Dash. Asherman Syndrome is a difficult situation to tackle, Dr. Rahul Manchanda has described in details about "Measures to improve Fertility Outcomes in Asherman Syndrome". "The pros and cons of Laparoscopic Abdominal Cervical Cerclage" has been extensively explained by Dr. Nikita Trehen. The Adnexal masses have always presented management dilemma. Dr. Swati Agarwal has dealt with in details about the "When & how to Intervene in adnexal masses in pregnancy?". The bouquet of varied difficult, hot & controversial topics have been presented in this bulletin. Hope the young budding gynaecologists and aspiring endoscopic surgeons will highly benefit from the variety of topics and the discussions.

This bulletin will add to the knowledge armamentarium as well as widen the outlook of our readers.

The efforts of our editorial team should go a long way in enhancing the wisdom of our readers as well as broaden the arena of our students.

Reading should be a habit. "If you don't read – then you do not have an advantage over the person who can not read". So be a voracious reader. These bulletins give us an opportunity to read and re-read the important subjects.

Long Live NARCHI Delhi Chapter !!

Minimally Invasive Surgery In Gynaecological Cancers : Searching for 'Black and White' in Gray!

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Introduction

Gynaecological cancers are a heterogeneous group of malignancies with different etiologies, pathophysiology and treatment options. Traditionally, surgery for gynaecological cancers was via open approach i.e. laparotomy which has the advantage of direct access with quick and thorough assessment. The introduction of minimally invasive surgery (MIS) i.e. laparoscopy and robotic assisted – offered a newer option of approach with an end-goal to minimize tissue trauma, physiologic stress and postoperative pain. This was coupled with faster recovery, shorter hospital stays and improved cosmesis. Advantages of open surgery over MIS include shorter length of surgery and lower cost while the advantages of MIS over open surgery include lower intra-operative blood loss, lower rates of post-operative complications like wound infections, fever, and ileus. Robotic surgery has the added advantage of greater range of motion for the surgeon, better exposure of the surgical field and better camera control resulting in flatter learning curve and a lower rate of conversion to laparotomy. The disadvantages of MIS are longer operative time, higher costs and variable visibility of certain anatomic locations.[1] We would discuss the role of MIS according to organ-systems in gynaecological cancers.

MIS in Ovarian Cancer (OC)

Epithelial Ovarian cancer is a peritoneal surface malignancy; the abnormal cancer cells arise either from the distal end of the fallopian tube or the surface of the ovary and then spread to the peritoneal lining of the abdominal organs.

Early OC

Around one third of the ovarian cancer patients are Stage I-II. Laparoscopic surgery in ovarian cancer was first described in the mid 1990s.[2] There have been numerous studies to evaluate the role of laparoscopy in early-stage ovarian cancers.[3-6] In early-stage ovarian cancers, the most important concern is to avoid rupture of the ovarian mass or cyst thereby upstaging the disease. Available evidence has shown increased risk of rupture and spill with MIS.[7] The capsular rupture rate has been reported between 11.4% - 30.3%; associated with decreased OS (overall survival) when compared with patients with non-ruptured tumors [8]. A retrospective study with a secondary aim to develop a score system to be able to estimate the risk of tumor rupture found tumor diameter and adhesion of the tumor to the surrounding structures were important parameters increasing chance of rupture.[9] The second important issue is the risk of port site metastasis, incidence of which is reported to be around 0.18 - 0.4% in literature, with overall risk being quite low [8]. We also have to take into account extraction of the tumor mass and alteration of pathological assessment when specimen integrity is compromised. Third aspect to be considered is CO_2 gas diffusion in MIS and specimen manipulation which has the potential for tumour spread. The last obvious issue would be to

ensure the adequacy of surgical staging. Despite potential pitfalls - MIS can be a feasible option in a selected few but careful selection of cases is of utmost importance.

Advanced OC

In advanced ovarian cancer, the main utility of MIS in the operating room is where we have to decide whether complete cytoreduction i.e. R0 or a CC0 resection can be achieved in the primary setting. There are multiple predictive scoring systems devised, the most commonly used is the Fagotti's score. Predictive score is calculated after assessing the disease in crucial areas - the diaphragm, massive unresectable peritoneal carcinomatosis, stomach infiltration, liver surface lesions and most importantly large infiltrating lesions in the mesenteric root. A predictive index score of more than 8, means the disease burden is large and chance of achieving R0 resection very low; thereby decision for neo-adjuvant chemotherapy is taken.[10] Recent studies have evaluated the feasibility of MIS in interval debulking surgeries in a selected group of patients with low burden disease.[11-14] However, the standard of care as of today is the open approach. There are smaller series of studies demonstrating feasibility role of MIS in recurrent ovarian cancers particularly single site disease or oligometastatic settings such as isolated lymph nodes or localized peritoneal disease.[15]

MIS in Endometrial cancer (EC)

Of all gynaecological cancers at present, MIS has established itself as a 'standard of care' in early-stage endometrial cancers. There is overwhelming evidence for both laparoscopic and robotic procedures in uterus-confined endometrial cancers. MIS is well established in the management of early endometrial cancer with long term follow up ensuring oncological safety.[16,17] The largest evidence to date is the GOG-LAP 2 trial. A total of 2616 patients (Stage I) were prospectively randomised in 2:1 ratio to undergo laparoscopy vs laparotomy. MIS was found to be associated with shorter length of hospital stay and lower rates of postoperative complications. MIS came to be suggested as the new standard of care. In a follow of study of same group of patients, similar survival was reported between the two groups[16] Another study is the LACE trial (Laparoscopic Approach to Endometrium), randomised trial which enrolled Stage I endometroid endometrial cancer patients into MIS vs open surgery. Similar OS of around 81% was reported in both the groups emphasizing long term safety with the laparoscopic approach.[17] Majority of the patients in both the studies were low-grade disease with uterus-confined status. For early-stage, high grade disease – there are no prospective datasets available; evidence is mostly retrospective.[18-22] These studies have suggested outcomes are similar in MIS & open approach. Post hoc analysis of LAP_2 trial showed that patients with high grade uterine cancers undergoing MIS had similar rates of recurrence & survival. Koskas et al. found a trend towards improved survival in laparotomy group for Stage III patients[19]

Role of Sentinel lymph nodes (SLN) in EC

Sentinel lymph node (SLN) is the first node in the pelvic lymphatic basin; if positive for metastasis – it is assumed that the rest of the chain is involved. SLN mapping is an established management option for early-stage endometrial cancers. Minimising the complications of lymphadenectomy while at the same time improving the detection of nodal metastasis is the prime advantage. The procedure is to be done according to a specified algorithm and the nodes are subjected to pathological ultrastaging. The other important benefit of the sentinel lymph node procedure is the detection of alternative lymphatic pathways, which sometimes can light up unusual areas (eg. presacral node) which we do not conventionally address in lymphadenectomy template.[23] Indocyanine green (ICG) is the preferred dye for SLN mapping. The FIRES trial, largest prospective study for SLN mapping in early-stage, most of them low-grade disease showed sensitivity to detect node positive disease at 97.2% and negative predictive value of 99.2%.[24] In the algorithm, if sentinel node is not mapped on any side, then a side-specific lymphadenectomy is done. Evidence for SLN mapping for high-risk histology (Stage I & II) was demonstrated in the SHREC trial.[25] It demonstrated 100% sensitivity & NPV for detection of metastatic nodes. The bilateral mapping rate was 95%. Long term survival data is awaited

MIS in Cervical Cancer

The standard surgical treatment for early-stage cervical cancer (CC) is radical hysterectomy and pelvic lymphadenectomy by laparotomy. The first laparoscopic radical hysterectomy was described by Nezhat et al. in 1992.[26] Following this, MIS approach was widely adopted because of decreased morbidity and early recovery. Multiple retrospective studies reported the feasibility, advantages, and oncologic safety of MIS in cervical cancer. However, the landmark LACC trial, showed inferior disease-free survival (DFS) and overall survival (OS) with minimally invasive radical hysterectomy in early cervical cancer (FIGO 2009 stage IA1 with

lymphovascular invasion to IB1). At 4.5-year follow-up, the hazard ratio for disease recurrence or death with MIS was approximately 3.9 (95%CI 2.0–7.6) and for OS, it was 2.7 (95%CI 1.3–5.6) compared to open surgery.{31}. The recurrence rate was 11.6% in the MIS group Vs 3.5% in the open group.[27,28] The reasons for the inferior oncologic outcomes with MIS in cervical cancer are not yet clear, though the use of intrauterine manipulator, intracorporeal colpotomy and the effect of CO_2 insufflation on tumor cells have all been hypothesized as possible causes.

A study based on national databases of the United States, including nearly 2460 patients, demonstrated a higher mortality rate among women undergoing MIS compared with open radical hysterectomy (9.1% vs 5.3% mortality risk in 4 years; HR, 1.65; 95% CI, 1.22–2.22).[29] A European multicenter retrospective study (SUCCOR), also reported the inferior survival with MIS compared to open surgery in FIGO 2009 stage IB1[30]. Following this, multiple authors investigated whether a subpopulation of early cervical cancer can be offered MIS. In the SUCCOR trial, the group of patients with tumors ≤ 2 cm, there was no difference in the risk of relapse or death between MIS and open group.[30] Further studies on safety of MIS Vs open surgery in smaller tumors (<2cm) have reported contradictory results.[31-33] Similar inferior DFS results have been reported in patients where uterine manipulator is not used and in patients where protective vaginal closure is done.[33] Presently, there is no conclusive evidence that small tumor size or any modified surgical technique can nullify the detrimental effect of MIS on survival in these patients. A recent analysis of patients meeting "low-risk" criteria (as defined in the SHAPE trial, e.g. <2 cm tumors with superficial invasion) who underwent simple hysterectomy found no statistical difference in recurrence whether done MIS or open.[34] However, this was an exploratory subgroup analysis. Thus, while tumor size appears important, the safest current practice according to guidelines is to favor open radical hysterectomy.

Even after the overwhelming evidence against minimally invasive surgery for radical hysterectomy in early cancer cervix, MIS still has some place in treatment of cervical cancer. In the field of fertility-preserving surgery for early-stage cervical cancer, the minimally invasive radical trachelectomy is an alternative to open radical hysterectomy. MIS offers the advantages of early recovery and less tissue trauma. An international study retrospectively analyzed 646 patients who underwent open or MIS radical trachelectomy. It showed similar DFS and OS at 4.5years.[35] Current guidelines allow minimally invasive fertility-sparing surgery in very early cervical cancer, acknowledging that evidence is limited and these patients should be counseled on potential risks. Currently three prospective randomized trials are exploring the role of MIS in patients with cervical cancer - RACC trial (a Swedish multicenter trial), a trial designed in China includes both laparoscopic and robotic access and ROCC/GOG-3043 trial. These trials will provide additional evidence regarding safety of MIS in cervical cancer patients. Until such data emerge, open surgery is now recommended as the standard of care for radical hysterectomy in early-stage cervical cancer.

MIS in Vulvar Cancer

Vulvar cancer surgery traditionally involves two components: removal of the primary tumor on the vulva (via wide local excision or vulvectomy) and evaluation of the inguinal lymph nodes with unilateral or bilateral inguinofemoral lymphadenectomy (IFL) by separate incisions. The management of the inguinal lymph nodes is the most important factor in early vulvar cancer because, recurrence in this region is associated with high mortality. However, the morbidity of an IFL is high, with lymphedema of the legs in 14–47% and wound complication in 21–57%.[36] Videoendoscopic inguinal lymphadenectomy (VEIL) is associated with less wound complications with equivalent nodal yield. Zhang et al. in a study found 41% of groins treated with open surgery had major lymphatic or wound complications Vs 12.6% in the VEIL group. Blood loss, number of nodes removed, and length of hospital stay were similar between.[37]

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What not to do in Endometriosis

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Introduction

Endometriosis is a chronic, inflammatory, hormone-dependent condition defined by the presence of endometrium-like tissue outside the uterine cavity. Ectopic lesions commonly affect the pelvic peritoneum, rectovaginal space, ligaments, ovaries, and may also involve the bowel and bladder.

Its prevalence is not known, but it is estimated to affect 10% to 15% of women of reproductive age.[1]

Endometriosis presents variably, with lesions ranging from superficial implants and ovarian endometriomas to deep infiltrating nodules and extra-pelvic disease. Symptoms include cyclic or chronic pelvic pain, dyspareunia, dysuria, dyschesia, dysmenorrhea, and infertility. Management includes conservative, medical, and surgical approaches based on symptom severity and fertility goals.

Surgical interventions may be performed robotically, laparoscopically (keyhole) or as an open (laparotomy) procedure. Within high resource settings, a laparoscopic approach is now considered routine for the diagnosis and removal of endometriosis as it offers several advantages when compared to open procedures including decreased recovery time and cost (Ahmad 2019; Somigliana 2009)

Traditionally, laparoscopy has been regarded as the gold standard for the visual identification of endometriotic lesions within the pelvis and for obtaining targeted biopsies to confirm histologic diagnosis. However, according to the ESHRE 2022 guidelines, laparoscopy is no longer considered the first-line diagnostic tool. It is now only recommended in patients with negative imaging results and/or in cases where empirical treatment has been unsuccessful or deemed inappropriate.

Role of Imaging in diagnosis of Endometriosis

The two most commonly employed imaging modalities are transvaginal sonography (TVS) and magnetic resonance imaging (MRI).

Transvaginal sonography (TVS) is an accurate, first-line imaging tool for diagnosing and staging endometriosis, especially when performed with expertise. MRI serves as a second-line option in cases of limited TVS access, extensive disease (DIE), or negative findings despite strong clinical suspicion.

Peritoneal lesions are not detectable by imaging, but Ovarian endometriomas (OMAs) typically appear on transvaginal ultrasound as unilocular or multilocular (≤5 locules) cysts with ground-glass echogenicity and minimal to no vascularity. In 5–10% of cases, they may contain fibrin or blood clots mimicking papillary projections (atypical OMAs), though these are not true solid components. Color Doppler is useful to help differentiate them from ovarian malignancy.[2]

Ovarian Endometriomas often adhere to the posterior surface of uterus or adjacent organs. The sliding sign on transvaginal ultrasound assesses their mobility, while free fluid may suggest adhesions,and probe tenderness is for site specific endometrioma,. The pulling sleeve sign indicates a retroflexed uterus due to posterior adhesions.[3] Kissing ovaries aka

bilateral endometrioma touching in the POD—are commonly associated with bowel or tubal endometriosis.

MRI with rectal and/or vaginal distention using ultrasound gel is a valuable, non-invasive tool for diagnosing and staging deep infiltrating endometriosis (DIE). It enhances presurgical mapping of deep endometriotic implants and adhesions, improving MRI sensitivity and diagnostic accuracy.

Classification

To date, there is no universally accepted gold standard for the classification of endometriosis. Four primary systems are currently in use: the revised American Society for Reproductive Medicine (rASRM) classification, the ENZIAN classification, the Endometriosis Fertility Index (EFI), and the American Association of Gynecologic Laparoscopists (AAGL) classification.

The rASRM classification is the most widely used and helps physicians communicate the severity of endometriosis to patients in simple terms. The ENZIAN classification provides a detailed description of deep infiltrating endometriosis, particularly involving retroperitoneal structures, and can potentially be assessed using imaging techniques—making it useful for surgical planning. The EFI score is designed to predict fertility outcomes in women attempting natural conception following surgical diagnosis of endometriosis.

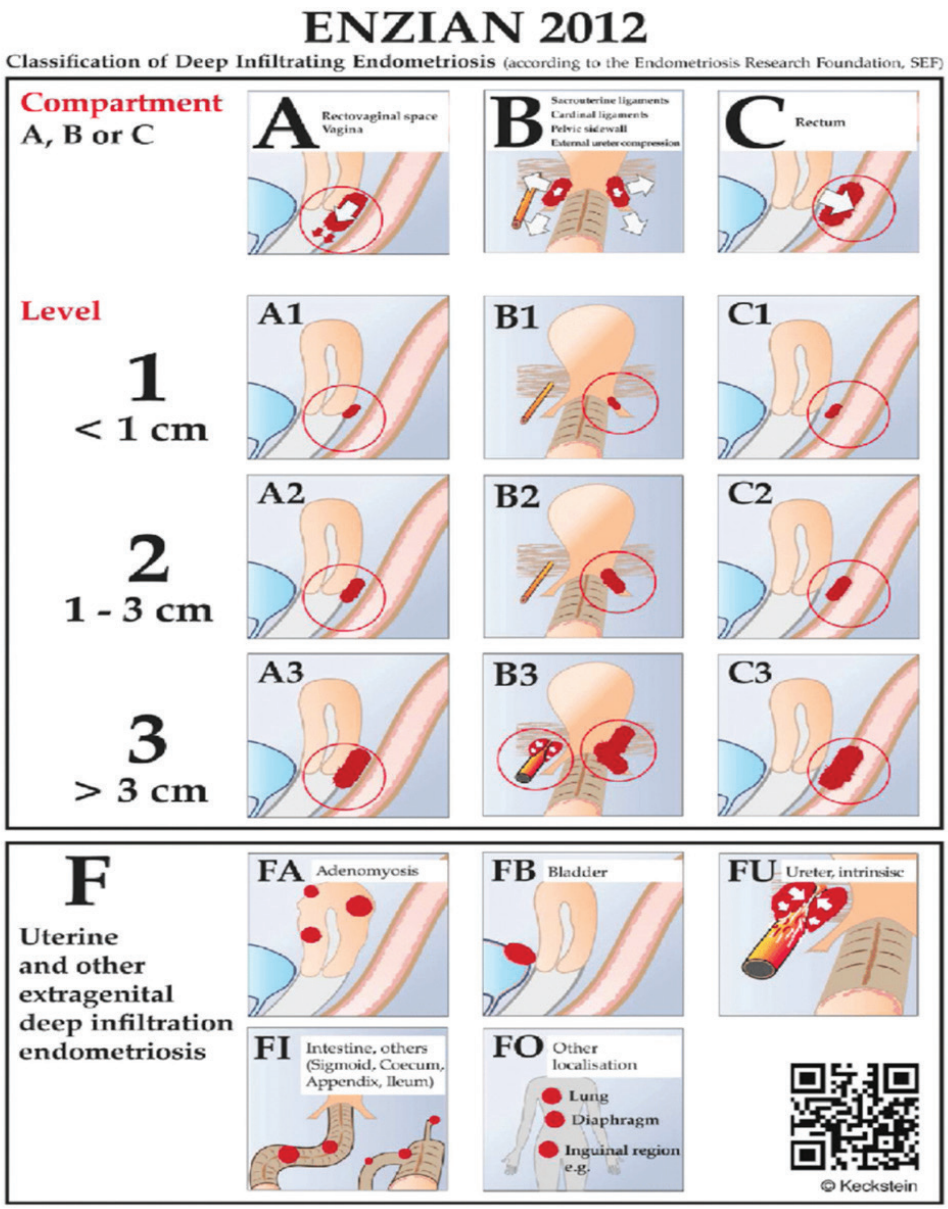

Fig 1 ENZIAN Classification

The AAGL classification system (2021) is a more recent, anatomy-based framework currently under development, designed to enhance the clinical utility of endometriosis staging. It offers a user-friendly scoring system that not only correlates with the complexity of surgical procedures but also aims to establish associations with preoperative symptoms, such as pain and infertility.[4]

To date, no single classification system can fully replace the value of detailed surgical documentation in the assessment and management of endometriosis.

Medical management of Endometriosis

NSAIDs are considered primary treatment for endometriosis related pain. Hormonal treatment in form of Progestogens, LNG-IUS, Combined Oral contraceptives, GnRH agonists or GnRH antagonists are second line treatment for options for pain control and disease suppression when NSAIDs are insufficient.

There is no effective medical treatment for endometriosis-related infertility or deep infiltrating endometriosis (DIE) and expert surgical intervention is necessary in such case.

Postoperatively, Mirena (LNG-IUS) or continuous dienogest/dienogest-containing COCs are commonly used to prevent recurrence and reduce the risk of repeat surgery, which can be challenging due to dense adhesions, distorted anatomy, and increased risk of damage to surrounding organs as each subsequent procedure potentially reduce ovarian reserve and increase complication rates.

Surgical management of Peritoneal Endometriosis

Minimal and mild Disease

Peritoneal endometriotic lesions can be visualized in different forms from small red flame-like lesions, black,yellowish spots to atypical non pigmented lesions . If the lesions take place 5 mm or more deep into the subperitoneal location, it is called deep infiltrating endometriosis (DIE)

Endometrial implants can be surgically resected, coagulated, or vaporized. Various ablative and surgical techniques have been implemented to treat superficial endometriotic implants. Ablation technique uses Carbon dioxide laser, diathermy and monopolar electrosurgery which is only found to be effective in pain relief in stage 1 and 2 disease.[5]

Excision is favored over ablation for peritoneal endometriosis, allowing precise removal of lesions while preserving healthy tissue. For lateral pelvic wall lesions, retroperitoneal dissection and ureteral visualization is important to prevent injury.

Ovarian Endometrioma

Laparoscopic cystectomy is preferred over drainage and ablation for treating ovarian endometriomas to reduce recurrence and improve symptoms (Fig 2). Diluted vasopressin is used especially in cases of large endometrioma. It is injected between the cyst wall and ovarian cortex, creating a clear surgical plane by hydrodissection. It also induces localized vasoconstriction, minimizing bleeding and reducing the need for bipolar cautery, thereby preserving ovarian reserve. Adhesiolysis is performed to improve visualization, followed by the traditional stripping technique using the triple traction method (Fig 3).

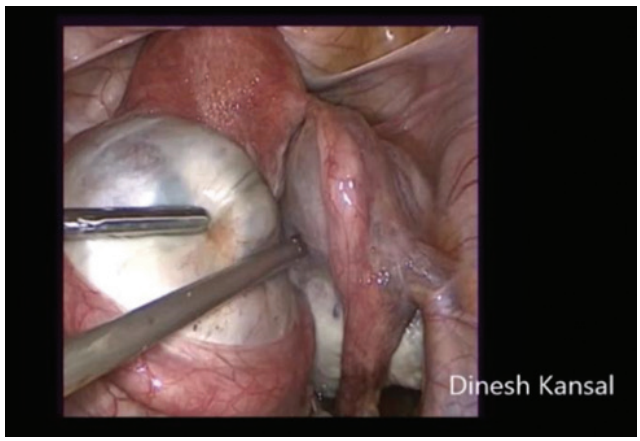

Fig 2. Kissing Ovaries

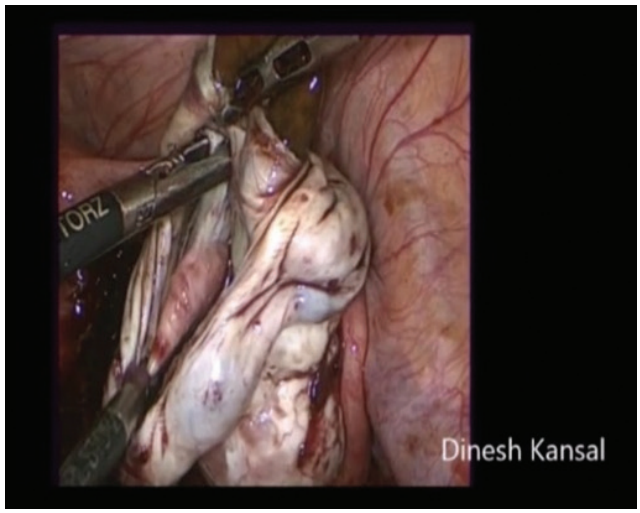

Fig 3 Ovarian Cystectomy by Triple Traction method

The cyst wall is gently stripped using traction and countertraction. Bleeding, often at the ovarian hilum can be managed with applying pressure with laparoscopic grasper for 2 minutes or suture can be taken for tamponade effect. Bipolar energy is rarely used only in case of severe bleeding to protect

healthy ovarian tissue from thermat damage.

For large endometriomas, a two-step approach can be taken to preserve ovarian function. In stage one, cyst aspiration and wall biopsy are performed, followed by 3 months of GnRH agonist therapy to thin the cyst wall and reduce vascularity. In stage two, complete cystectomy is done, aiming to preserve ovarian reserve.

Atypical ovarian endometriomas may exhibit features such as papillary projections or increased vascularity, raising suspicion for malignancy. Although rare, endometrioid or clear-cell carcinoma can develop in OMAs.[6] Therefore, OMAs should be described using the International Ovarian Tumor Analysis (IOTA) terminology for standardized assessment.[7] Intraoperative frozen section helps distinguish benign from malignant pathology, guiding surgical decisions. While CA-125, HE4, and ROMA may aid in evaluation, their diagnostic value is limited in premenopausal women. Management depends on histology: benign lesions warrant conservative surgery, while suspicious findings require complete oncologic staging.

Deep infiltrating endometriosis

Deeply infiltrating disease involves endometriotic invasion of more than 5 mm. This disease can involve the distal third of the ureter, ovary, rectovaginal space, uterosacral ligaments, bladder and bowel. DIE causes dense, cohesive and vascular adhesions between vital structures requiring both sharp and blunt dissection. Complete primary excision of disease is required for alleviating pain caused by DIE as it is resistant to medical treatment.

About one third of women with endometriosis have DIE in pouch of douglas involving vagina, rectum, cervix and rectovaginal septum. DIE mostly affects posterior compartment, particularly Uteroscaral ligaments (Fig 4). Isolated uterosacral lesions occur in up to 83% of cases.[8]

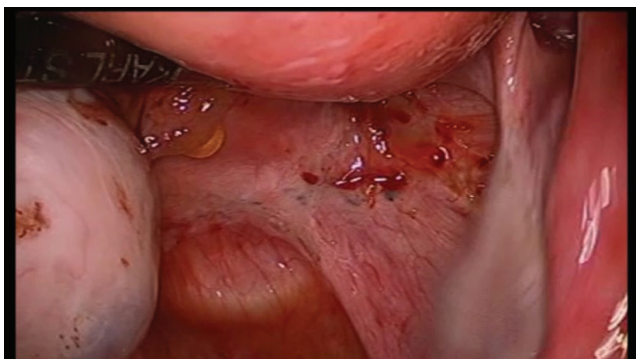

Fig 4 DIE at base of Uteroscaral ligaments

Dissection involves opening of retroperitoneum, and performing ureterolysis starting from pelvic brim where the retroperitoneal spaces are typically maintained. The ureter is mobilized and lateralized upto ureteric tunnel, taking care not to damage uterine vein and hypogastric nerves which is present in close proximity to uterine insertion of uterosacral ligaments.[9] Damage of this nerve complex during radical excision of uterosacral endometriosis can result in functional postoperative complications, namely bladder voiding problems requiring intermittent self-catheterization.[10]

Alternatively, ICG dye can be administered into the ureters via ureteric catheters using cystoscopy, which stains the ureters and provides excellent visibility under ICG mode, enabling precise and safe dissection (Fig 5).

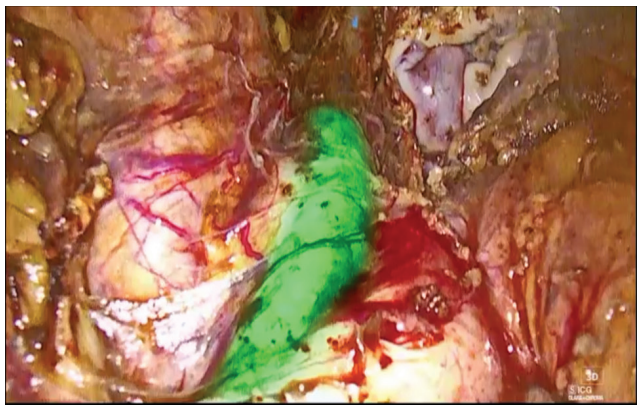

Fig 5 Laparoscopic ureteral visualization under ICG and near-infrared fluorescence (NIRF) imaging

Rectal dissection also starts from pelvis brim in bilateral Okabayashi's space (potential area located between rectum, ureter and mesoureter) so as to isolate endometriotic nodules over uterosacral ligaments, rectovaginal septum, cervix and vagina to make it convenient for excision.

Extrinsic ureteral compression caused by DIE, typically involves the adventitia and surrounding connective tissue. This necessitates meticulous dissection and complete ureterolysis to trace the ureter along its course. Extensive fibrosis often encases the ureter at various sites requiring excision of fibrotic endometriotic tissue to relieve external compression (Fig 6).

Intrinsic ureteric disease causes fibrosis of the muscularis and, in some instances, the mucosa. Ureteric endometriosis is more prevalent on the left-hand side, which may be attributed to the menstrual reflux theory and anatomical differences of the right and left hemi pelvis. Placement of a double J stent for 6 weeks should be considered in cases of urinary obstruction and hydronephrosis or where significant ureteric stenosis has been

diagnosed. Ureterolysis, ureteral resection with end-to-end anastomosis or ureteroneocystostomy, and in cases of complete loss of kidney function, ureteronephrectomy can be considered.[11, 12]

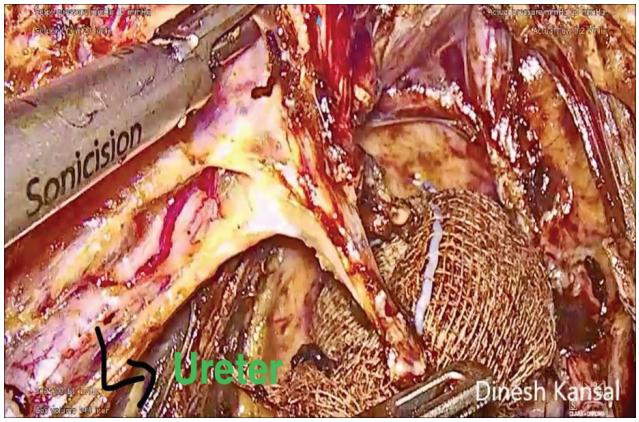

Fig 6 Left Ureterolysis in DIE

Complications can occur with extensive ureterolysis in patients with DIE, with a reported ureteral fistulae rate of 5% (Camanni et al. Reprod Biol Endocrinol 2009; 7:109). Ureteric injury can be caused by ischaemia if ureter is denuded of its sheath, direct trauma or direct electrosurgical injury from the lateral spread of energy.

Endometriosis involving the bowel occurs in 3–37% of cases, commonly affecting the rectum, rectosigmoid junction or sigmoid colon in up to 90% of cases.[13]

Conservative excision of bowel nodule in form of shaving and mucosal skinning is sufficient in majority of affected cases. Bowel resection is considered last resort in case of DIE involving lumen of bowel causing intestinal obstruction.

Butterfly peritonectomy procedure can be adopted for cases of peritoneal involvement which showed a reduced rate of recurrence in patients, reduced pelvic pain, and fertility preservation where applicable, along with effective safeguarding of the peripheral organs including lateral pelvic vessels, the ureter, the hypogastric nerve, and the rectum[14]

Presacral neurectomy, though is considered outdated procedure owing to various surgical risks , is generally reserved for occasional patient with chronic intractable midline dysmenorrhea not responding to medical or routine surgical management and desiring future fertility (Fig 7) .

Conclusion

Endometriosis can cause significant pain and infertility. Complete resection of visible lesions may improve both symptoms and reproductive outcomes. Minimally invasive surgery offers benefits such as reduced trauma, lower infection risk, less postoperative pain, and shorter hospital stays. Combined medical and surgical management remains the standard of care. Advances in laparoscopy, robotics, and multidisciplinary approaches at specialized centres have further improved outcomes and reduced complications.

Fig 7 Prescaral Neurectomy

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Measures to improve Surgical Outcomes in Symptomatic Leiomyoma

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A. Laparoscopic Myomectomy

Laparoscopic myomectomy is a well-accepted fertility preserving minimal invasive surgery for fibroid. It has a longer learning curve requiring intensive training especially intracorporeal suturing and morcellation Furthermore Minimizing Intra operative blood loss and tricky myomas like degenerated, cervical and broad ligament fibroid can be challenging.

This surgical procedure can be divided into three steps, each with its own specific challenges—Enucleation, Suturing of myoma bed, and specimen extraction.

Pre operative work up

- 2D Fibroid mapping with color Doppler to assess the vascularity.

  It helps in deciding the port placements, and if hysteroscopy required.

- MRI- if any doubt of Adenomyoma, Leiomyosarcoma

- Detailed informed consent stating routine surgical complications along with risk of recurrence, small myoma may not be assessable if not visualized, mini laparotomy, Naked morcellation risk, Inbag morcellation, rarely hysterectomy and future risk of LSCS and uterine rupture in pregnancy.

How to decrease blood supply

- PREOPERATIVE GnRH agonist-

  It has a small but significant impact on anemia correction preoperatively, secondary to amenorrhea. It also reduces the size and vascularity of the fibroid, but side effect must be weighed, loss of cleavage planes due to hydropic degeneration, cost, vasomotor symptoms, vaginal dryness, and bone loss.

Intraoperative

- VASOPRESSIN is a peripheral vaso constrictor and increase RI of uterine.
  - 20 units in 200 mL NS dilution, injected subcapsularly , causes vasoconstriction, blanching, and aquadissection. Must be diluted and aspirated carefully before every injection to prevent inadverdent intra vascular injection, leading to bradycardia, hypotension, cardiac arrest, Pulmonary edema.
  - Anasthetist must be informed when injecting
  - Needle used- aspiration needle or innovative Sanket needle(VVIN)
  - Single site injection is preferred. Though the drug can be repeated after 45 minutes, but the uptake of drug is rapid from the cut surfaces.

Tips for safe vasopressin effect

- Use of VVIN - The routine aspiration needle is 33 cm long and opaque. In an inadvertent puncture the blood column will not rise that, to stain the fluid red. In contrast, VVIN has a small, transparent, detachable and disposable tip (Fig 1) which is fixed at the abdominal end. This gives surgeon a higher

chance of seeing blood in the window when aspirating and increasing patient safety by repositioning.

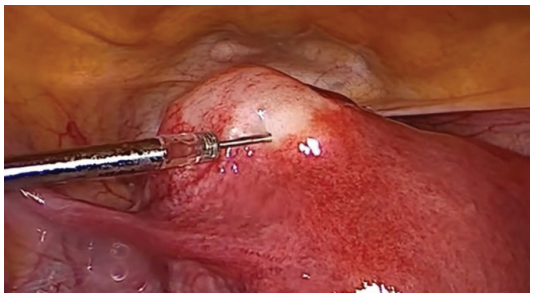


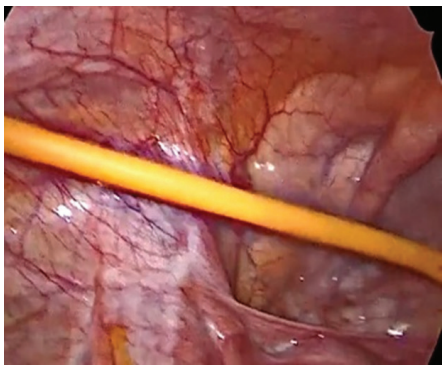
Fig- 1

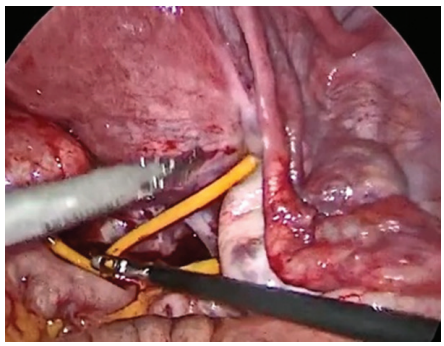
- Tranexamic Acid-

  Administered in a dose of 1–2 grams intravenously, it inhibits fibrinolysis and helps to stabilize the clot. It can be given preoperatively or intraoperatively, with peak effects seen in about 3 hours and a half-life ranging from 8 to 11 hours.

- Tourniquet (Fig 2,3,4)

  The tourniquet involves placing a Foley catheter (14 Fr) or a non- absorbable suture loop(no 1 non absorbable suture) using modified Roeder's knot or slip knot which is tied around the uterus creating avascular windows in the broad ligament, caudal to fibroid. This transiently occludes uterine arteries, reducing intraoperative blood loss. After the procedure, the tourniquet is released to restore blood





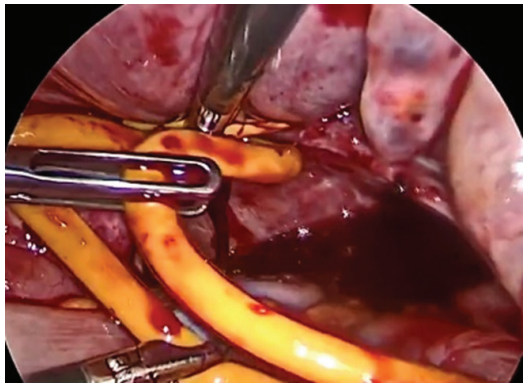


Fig 2,3,4

- B/L Uterine artery ligation/occlusion with clips

  Bilateral uterine artery ligation is a more definitive method, Ligation induces temporary ischemia in the fibroid while preserving perfusion to the uterus via collateral circulation.

Surgical Steps

For anterior approach, Enter retro- peritoneum by dissecting in between the triangle formed by round ligament, IP ligament and iliac vessels, staying parallel to ligament. Dissection is done in loose aerolar tissue till the first major vessel is seen laterally EIA (A is above the V). On further dissection Ureter is identified medially by its peristalsis .The dissection is continued by staying parallel to all vital structures and going towards bladder, till you reach a point where ureter turns medially and is not seen, here is where uterine artery goes above the ureter and vein below. The UA is ligated at its origin laterally either with a clips or suture. Same is repeated on the other side.

Always Reconfirm uterine artery by- (Fig 5)

- Pulsation and tortous
- Ureter is crossing the uterine artery
- Ureter passes under the uterine artery(water under the bridge)
- Can also be traced back to Internal iliac artery or obliterated umbilical artery from traction above.

  Anterior approach is comparatively simpler as more space is available for the surgeon, but in certain cases posterior is more feasible.

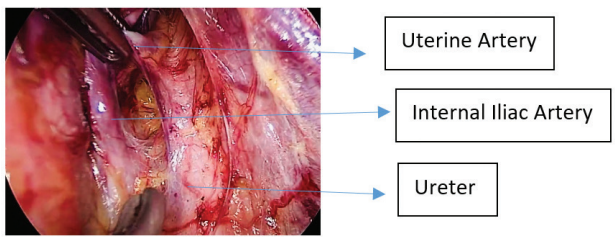
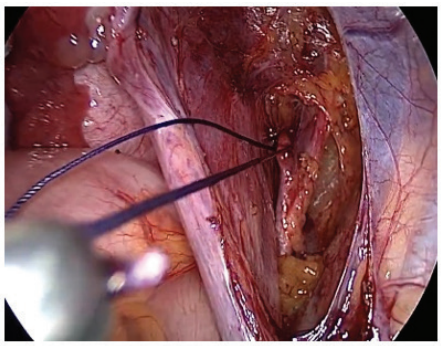


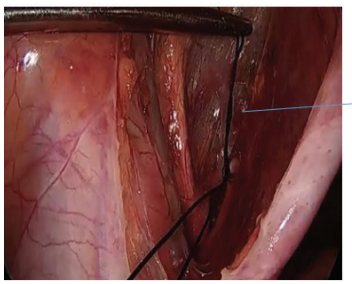
Fig 5)

Suturing Technique- (Fig- 6,7,8)

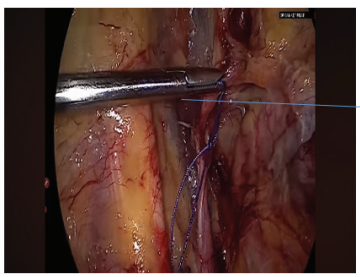
- Shoe lace Knot- No. 1 Vicryl polyglactin absorbable suture is used. After passing the thread around the artery, one end is kept small and other long end forms a double thread loop, this loop will be used to make the knot with the tail end. So instead of two thread (like in conventional) three threads are being used to make a knot. Once knot is made, it is tightened by pulling the tail end of the thread. Once the procedure is done this reversible shoe lace knot is opened by slowly pulling the long end of the thread. Blood flow normally returns in 5-10 minutes. This knot can always be converted to permanent knot also if required.
- Trick knot is a modification of shoe lace knot.



Passing of thread around the uterine



Shoe lace knot



Trick Knot

Fig- 6,7,8

Advantage over Vasopressin

- No systemic side effects
- The clips/ Suture can be removed midway if required to re perfuse the uterus
- Prolonged and desired action, especially in large myoma
- In certain Large myomas or degenerated, where morcellation is sometime needed while the myoma is still attached to uterine bed for better traction and more space.

Steps of Myomectomy

The first step is making an incision over the fibroid. Depending on its location, a transverse or elliptical incision is preferred. Transverse incisions on the anterior surface reduce the risk of vessel transection. The incision is made using a harmonic scalpel, bipolar energy device, or cold scissors, and should be large enough to provide access while minimizing dead space.Enucleation involves identifying the cleavage plane between the fibroid and the surrounding myometrium. This plane appears white and glistening. A myoma screw or tenaculum is used to apply traction while dissection is carried out with hydrodissection or energy devices. In cases involving multiple fibroids, a tunneling technique may allow extraction through a single incision. Once myoma is enucleated, the dead space is obliterated with INTRACORPEREAL SUTURING.

Certain incisions are easier for suturing vertical incision in posterior myoma and oblique/horizontal for anterior myoma but with improved surgical skill development suturing any way is possible.

Layers- Suturing is performed to obliterate the dead space, restore uterine wall integrity, and achieve hemostasis. Small defects can be closed in a single layer, but deeper incisions or those involving cavity breach require multilayer closure. Continuous sutures are generally preferred for their speed and reduced foreign body load, though interrupted sutures may be used in select cases.

Sutures-

Barbed- (fig 9)

- Unidirectional (V Loc- unidirectional consisting of a barbed absorbable thread, armed with a surgical needle at one end and a loop at the other end)
- Bidirectional (Quill-The tiny barbs cut into the length of the filament in a helical array set facing in opposite directions from the midpoint with a needle on each end). The barbs are placed at 72 degree angle and it is scientifically proven hook

between 65-75 degree have best grip.

No 1 polyglyconate (Vicryl)

Advantage of Barbed

- Maintain uniform tension
- Knot are the weakest point of suture, Barbed lack knots.
- Faster repair time
- Lower hemoglobin drop and blood loss
- No need for another assistant to pull on the thread
- Allows deeper bites by pulling the thread in the end.

Technique

Techniques include the "bottom-up" approach, which begins from the base of the defect and progresses upward, and the "baseball" technique, an inside-out method that minimizes suture exposure within the cavity.

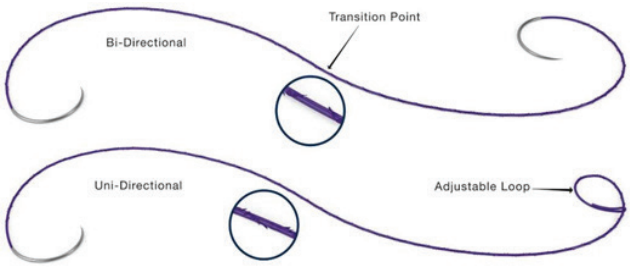


Fig 9

Tissue Retrieval

- Morcellation- Naked or In Bag
- Endo Knife
- Mini laparotomy- Abdominal morcellation
- Vaginal morcellation through POD

Morcellation

In-bag morcellation: Now preferred due to FDA concerns about tissue dissemination. Involves placing the fibroid in a polyurethane bag via lateral port, exteriorizing the tail, recreating pneumoperitoneum, and morcellating inside the bag.

This shift followed the 2014 FDA advisory after the case of Dr. Amy Reed, a physician who underwent morcellation for fibroids that later turned out to be an undiagnosed uterine sarcoma. Her advocacy led to significant reforms in surgical safety protocols and the widespread adoption of contained morcellation.

Advantages: Minimizes risk of tissue spread, endometriosis, parasitic myomas, and organ injury.

Challenges: Requires expertise, is costlier, and has a risk of bag rupture. It doesn't decrease the risk of spillage of malignant cells in LMS, since micro spillage starts once uterus is cut for myomectomy

With low incidence of LMS, or detection of accidental LMS on table and high incidence of benign fibroids irrespective of the age, morcellation ban should not be the reason for women to have access to the benefits of minimal access surgery.

Tricky Myomas

Cervical Fibroid (Fig 10)

Cervical myoma requires greater expertize. However in experienced hand laparoscopic approach is safe and ideal.

What are the Difficulties encountered?

- Poor access to surgical field
- Restricted space and Poor motility of uterus
- Difficulty in inserting manipulator in certain cases
- Distortion of anatomy of vital neighboring structure
- Increased blood loss (adjacent to arterial and venous uterine vessels and neovascularization)
- Difficult suturing

These difficulties are not avoided or overcome by laparotomy.

It is imperative to modify the approach. After securing blood supply and pushing bladder down the myomectomy steps are similar. We need to insert a uterine dilator to avoid inadvertent suturing of the endometrium.

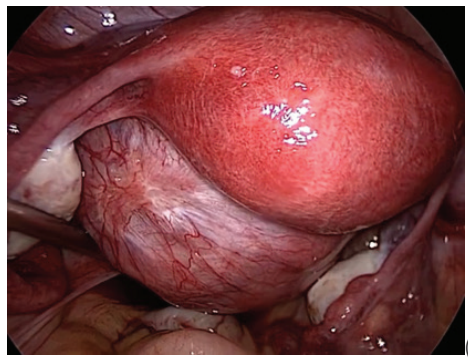


Fig 10)

Broad Ligament

False broad ligament fibroids: These originate mostly from the lateral walls of the uterus or cervix

True broad ligament fibroids: These are rare and from the muscle fibers normally found in the mesometrium. Location can be

Anterior	Posterior	Lateral
LOCATED- Anterior to the round ligament and bulge is in the anterior leaf of the broad ligament	Posterior to the tube and protruding into the posterior leaf of the broad ligament	Laterally to 1 side of the uterus between the round ligament and the fallopian tube
URETER Runs along the latero inferior aspect (less risk)	May push the ureter and uterine artery superiorly	May run along the inferior aspect
COMPLICATION – Risk of bladder injury	Rectum and ureter injury.	Uterine artery and ureteric injury

The surgical steps are same. The course of the ureter is always traced at the beginning and at the end of the surgery. (Fig 11)

- Pre op catheterization although easy and fast, doesn't prevent injury.
- Best recommendation is Pelvic dissection and exploration

Advantage- Under Vision

Disadvantage

- Requires mastering of skills
- Time consuming
- Can induce bleeding
- Rarely DE vascularization.
- Not always easy to predict how it will go.
- Intra operative cystoscopy with or without catheterization can be done in selective cases.
- Role of Prophylactic ureteral catheterization, although have not documented any difference in ureteral injury since it cannot be palpated. However, prophylactic stent placement may be cost effective.

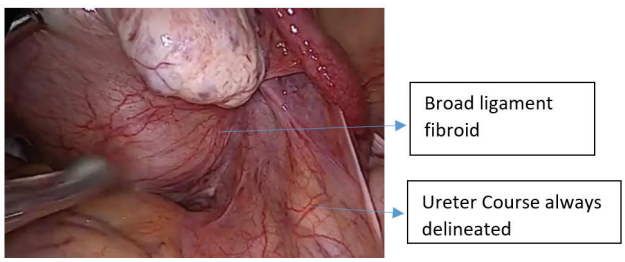


Fig 11

Though the myoma comes out easily because of loose tissue in broad ligament, pulling should be avoided because it may result in avulsion of the feeding vessels. These should be identified and fulgurated as may recoil into the uterus, making it difficult to identify the bleeding points.

The peritoneal incision may or may not be not sutured, to allow for drainage, especially if heamostasis is doubtful.

Conclusion

Laparoscopic Myomectomy offers several benefits to the patient- safe, good reconstructive outcome, and excellent alternative approach with all advantages of surgery being executed through minimal access. It is still a challenging technical procedure with longer learning curve but with regular training, improving surgical skills, using advancing techniques, surgical strategies and improvising, this can be overcome.

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B. Hysteroscopic Myomectomy

Though the first hysteroscopic myomectomy was performed nearly four decades back by Neuwirth and Amin who resected S/M fibroid using a urologic resectoscope with monopolar current and 32% dextran 70 as distension medium, but it took more than a decade for Hallez to develop a gynaecologic resectoscope, changing into a continuous-flow device with a 0 degree optic. Nevertheless its only last 2 decades, where there is a significant advancement of instruments and refining of techniques seen, making it a gold standard procedure for Sub Mucosal fibroid.

Pre-Operative evaluation

2D/3D Ultrasound, SIS, MRI.

Mapping helps in knowing the number of fibroid, location, Depth, myometrial margin between fibroid and serosa.

Best time to operate

Immediate Post menstrual has advantages of thin endometrium and vascularity, decrease fibroid mass, better visibility, decrease intravasation, decrease blood loss and shorter operating time.

Does Office Hysteroscopy have any Role in S/M Fibroid

The advent of the mini resectoscope and tissue removal devices has improved the ability to remove submucosal fibroids in the office setting.

Mechanical operative instruments (scissors, biopsy cup, grasping and corkscrew) and bipolar technology in 5 Fr electrodes, has helped in number of pathologies treated by office operative hysteroscopy.

Procedure

Anesthesia- With mini hysterosopes, cervical dilatation and analgesia or local anaesthesia is not required. However it may be needed in few patients.

Advantage of office Hysteroscopy-

- Office procedure
- Helps in surgical planning and appropriate patient counseling
- Reduced Anesthetic risks
- Reduced costs
- Theoretical one intervention
- In big size myoma's, Incision given with scissor on the pseudocapsule during office procedure may allow protrusion of the fibroid into the cavity, improving the probability of complete resection during subsequent hysteroscopic myomectomy.

Disadvantage

- Not Available in all set ups
- Restricted to Myoma G0-G1,< 1.5 cm
- Limited patient's compliance
- Training and high experience

Pre Operative Prepartion

- Informed Consent- 2 stage procedure to be explained, along with risk of perforation, fluid overload and bleeding.
- Use of Misoprostol- It helps with cervical dilation in patients in whom entry into the uterine cavity might be difficult. However, the softening of the cervix can also lead to overdilation and fluid loss during the procedure. Dose used 200/400 mcg 4 hours before surgery. Decisions to use misoprostol should be individualized.
- Ulipristal Acetate- Preoperative treatment for 3 to 6 months before intervention
  - Increased success with complete resection of type 0/1 fibroids in comparison with patients who underwent direct surgery but more data is needed to determine its clinical utility.
  - Use before did not negatively affect surgical procedure
- GnRH Agonist-

Advantages

- Potentially decrease in size of myoma.
- Endometrial atrophy and reduction in vascularization of fibroids which helps with better hysteroscopic visualization, thereby decreasing operative time.
- Decreased fluid absorption (through a reduction of uterine blood flow)
- Possibility of surgical scheduling.

Side effect of Gnrh

- High costs
- Side effects (i.e. hot flushes, spotting)
- Increased recurrence rate
- Increased risk of uterine perforation (due to a reduced myometrial thickness)
- Increased risk of the 'sinking' phenomenon (due to a decreased elasticity of myometrial tissue caused by estrogen deficiency)

Ø Increased cervical resistance to dilatation. However, larger randomized studies needed.

Role of Vasopressin intra operatively

Vasopressin can be injected directly into the myoma (intralesional) using a cystoscopic needle through the operative channel under hysteroscopic guidance or/ both intracervical.

Advantage- ACOG

- Improve surgical field
- Decreased blood loss
- Decreased fluid intravasation
- Decreased operative time.

Dose- 10 units of vasopressin in 100 to 200 mL of normal saline. There is no consensus on the limit of vasopressin that should be used in a procedure but a maximum of 4 to 6 units has been proposed.

Instrumentation

Resectoscope -electrosurgical system can be monopolar or bipolar,

MONOPOLAR	BIPOLAR
Media-1.5% Glycine	Saline
Physics-Current Needs an exit from body	Entry-Exit from the instrument
Needs cervical dilation upto 9 hegar	May not need
Diameter can range upto 10mm	Diameter ranges from 2.9-5mm
Takes Deeper and bigger bites Depth of penetration 3 to 5 mm	Smaller Depth and bites Depth of penetration of less than 1 mm
Comparatively quicker and shorter operating time in experienced hands	Longer time because smaller bites
Better vision cause blood doesn't mix	More mixing of blood and media
Risk of thermal spread-low-frequency current, can penetrate further and spread from the point of contact	No spread
Can led to electrolyte disturbance if fluid overload	More physiological
Stop procedure if deficit more than 1000 ml or 750 ml in patient with comorbidity	Stop procedure if deficit more than 2500 ml

Pressure

Recommended lowest pressure required for visualization to decrease the risk of intravasation and absorption of fluid. If visualization is difficult, pressure can be increased > 150-200, for a short period to achieve adequate visualization and facilitate completion of the procedure.

It is highly recommended to use automated systems for all operative hysteroscopies, given their ease of use and delivery of constant pressure and continuous flow of the distension media.

Fluid deficit during each procedure is crucial for patient safety and to decide when to terminate the procedure.

How to have correct calculation of fluid deficit

- No drapes of cloth in vaginal end or on the floor
- Using closed Plastic drapes and fluid reservoir
- Know the amount of fluid in the bag. Incorrectly filled fluid bags may be as much as 6% higher than the 3L stated on the bags.
- In manual calculation- Ideally calculate every 15 mins or after every bottle of fluid (3L), there should be a dedicated person assigned to calculate.
- Invest in an automated systems
- If there is significant bleeding during the procedure, it should be taken into consideration as it can increase the amount of return and underestimate the fluid deficit. This limitations make use an automated system more favorable.

To decrease the fluid deficit, the surgery can be started with normal saline to assess the fibroid location and size before changing into glycine media for the surgery using Monopolar current.

Different Techniques

1. **Resectoscope**

   The loop electrode resect tissue moving from the cephalad portion of the myoma to caudal, shaving off the pieces with electrosurgery while maintaining hemostasis. This movement prevents the unnecessary risk of perforation that can occur with a forward caudad to cephalad motion.

   Current flow should be off if resectoscope is stationary at any point.

   Do not use low cutting current, to prevent tissue sticking. In pure current keep the settings

between 110- 140.

Bipolar devices have higher coagulation capacities, which prevents the need for repeated coagulation during a procedure due to bleeding. In Monopolar devices, point coagulation can be done. It is important to resect the intramural portion of the submucosal fibroid, after separating it within the pseudocapsule plane.

When reaching the base of the fibroid, care must be taken to limit the current only to the area of the implant, avoiding damage to the surrounding endometrium. The procedure is stopped once fasciculate structure of the myometrium (soft, pink, fixed, Criss Cross bands, Open vascular channels) is visualized or there's fluid deficit.

It is ideal to resect long strips and move as many myoma chips cephalad with hysteroscope as possible in single entry of resectoscope, this decreases the risk of in advent air embolism caused by multiple entries'.

In anterior and posterior fibroid, it is preferred to remove posterior wall first than anterior because anterior chips may fall down and come in the vision.

2. Cold loop dissection

This Mechanical enucleation technique was introduced by Mazzon in 1995 and is considered optimal for fibroids with an intramural component (G1/2) because of its safety profile and decreased damage to surrounding tissue, using principle of pseudocapsule. The resectoscope technique described above is used with a few additional steps. The technique begins with normal dissection of the intramural component of the fibroid with monopolar or bipolar cautery. When the level of the endometrium is reached, dissection of fibroid with electrocautery is stopped. The next step is to develop the plane between the myoma and the myometrium. There are various cold loop attachments available to bluntly dissect the connective tissue that anchors the fibroid to the surrounding myometrium. As more of the myoma enters the cavity after separation from the surrounding tissue, it can be removed using electrocautery.

It consists of repeated and progressive passages of the monopolar angled cutting loop, carried out with the standard technique. This action must stop at the level of the plane of the endometrial surface, so that the identification of the passage between the fibroid and the adjacent myometrial tissue is not impaired (cleavage plane).

3. Litta's Technique

It is 'Enucleation in toto '. An elliptic incision on the endometrium that covers the fibroid is given with Collins electrode, till the cleavage zone of the fibroid is reached. Connecting bridges between fibroid and surrounding myocytes are resected. The effect of this action causes the fibroid to protrudes into the cavity, thus facilitating its removal by traditional slicing.

4. Lasmar's technique

The Collins electrode is used in shape of 'L', to dissect the endometrium around the myoma until reaching to it. The direct mobilization of the fibroid is started in all directions, doing the coagulation only of the vessels that are bleeding. When the fibroid pops into the cavity, it is possible to remove it with grasping forceps (smaller fibroids) or slice it in several pieces using the Collins electrode.

5. Hydromassage Technique

Hamou in 1993 proposed 'fibroid massage' through rapid changes of intrauterine pressure. They observed that the I/M portion of a S/M fibroid protrudes into the cavity after contractions of the uterus during the removal of tissue chips. Infact, when fluid supply of distension media is interrupted and restarting several times, contraction is stimulated, obtaining the maximum possible migration of the intramural component of the fibroid into the cavity.

Hallez in 1995 introduced 'Manual massage' technique. After partial myomectomy, uterine contractions are induced by finger massaging of the uterus (similar to obstetric manoeuvres), thus pushing the residual intramural fibroid into the cavity and making it accessibile for a resection.

6. Two-step myomectomy

This procedure is performed by means of either traditional Resectoscope or Nd:Yag Laser.

Disadvantage

- Two separate interventions, higher cost (GnRH agonist therapy, Nd:yAG laser, two surgeries)
- Can be used in myomas with a less intramural component or small sizes can be treated with

this technique. In Myoma's with significant intramural component, the part of myoma which remains after the first procedure may be big and such a component, when migrating to the uterine cavity, will meet with resistance to its progression caused by the controlateral myometrial wall. As a result, during the second operation there is myoma which has a significant intramural component, which will remain in the thickness of the wall at the end of the new excision only of the intracavitary part: it will therefore be necessary to carry out more surgical operations. However this limit might be solved by GnRH agonist therapy. - 'Sinking' phenomenon (due to GnRH agonist therapy)

- Increased recurrence rate (due to GnRH agonist therapy)

One step versus Two step Surgery-

Type 0, 1, and 2 leiomyomas of less than 3 cm can be completed as primary or one step surgery.

For larger myomas and multiple myoma cases, more than one session might be needed for the complete resection to avoid fluid overload and other related complications when monopolar modalities are used.

For bigger fibroids(4-6 cm) complete resection is possible in expert hands but a two-stage resection should be counselled and is recommended in the incomplete resection. The deciding factor for single versus two step is primarily not number but the diameter of the lesion due to the association between the diameter and the volume increments. For example, a myoma of 3 X 3 X 3 cm would have a volume of 27 cm3 , whereas a myoma of 4 x 4 x 4 cm would have a volume of 64 cm3.

Irrespective of size or number of fibroids, patient should be counselled about two step surgery.

Tissue extraction devices

- Suction & evacuation
- Ovum forceps
- Suction with simultaneous dissection and removal of tissue There are various brands in the market (eg, Myosure, Truclear, Symphion) and are mainly used for types 0 and 1 leiomyomas
- Single-use tissue extraction device that is inserted into an operative channel.

Disadvantage

- Costly, disposable and requires specific tubing's
- Difficult to resect fundal fibroids as well as the deeper fibroid
- Hard or calcified myoma can dull the blades

Morcellation by IUM

Advantage-

- Fewer fluid-related complications (physiological saline solution)
- Shorter learning curve
- Preservation of tissue for HPR .50% intramural extension

Complication

- Fluid overload.

  The risk factor's – Depth and Size,

  Length of the operation

  Total inflow volume

- Perforation – More fundal or cornual fibroids (Thin Myometrium)

  Deep G2 Myoma

- Bleeding – Can be stopped by Uterine massaging, Inj Tranexemic Acid, Point cautery with coagulating current or inserting foleys catheter
- Adhesions- Can be prevented by use of intra operative foleys catheter (3ml distended) with Post-Operative estrogen and early relook hysteroscopy.
- Uterine rupture in subsequent pregnancy in cases with myoma invading the myometrium deeper, perforation during entry or during surgery. It is important that the surgeon explains and document this discussion in the medical records LSCS is preferred.

Conclusion

The hysteroscopic resection of fibroids is a well-tolerated, secure, and efficacious procedure. The adequate preoperative evaluation and diagnosis is important for the selection of patient. Right instrumentation, monitoring fluid deficit, and meticulous orientation of the anatomy reduces complications. Each patient is evaluated for the achievability of hysteroscopic approach, and the possibility of second look for the cases with S/M ≥3 cm in diameter. This should be explained and documented with the patients before the procedure.

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Surgical Management of Isthmocele- When and How?

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Isthmocoel

An indentation in the anterior myometrium at the site of previous caesarean scar, in the isthmus of atleast 2 mm. Also called 'Diverticulum', 'Niche', or 'cesarean scar defect (CSD)' It's one of the nuisances of the increasing incidence of cesarean deliverie A CSD, when associated with atleast 1 primary or 2 secondary symptoms is termed a Cesarean Scar Disorder (CSDi)

Primary symptoms- Dysmenorrhoea, Irregular spotting specially post-menstrual spotting, Technical difficulties in IUI or ET, secondary unexplained infertility.

Secondary symptoms- Abnormal vaginal discharge, Chronic pelvic pain, dysperunia, AUB, Foul smell from vagina.

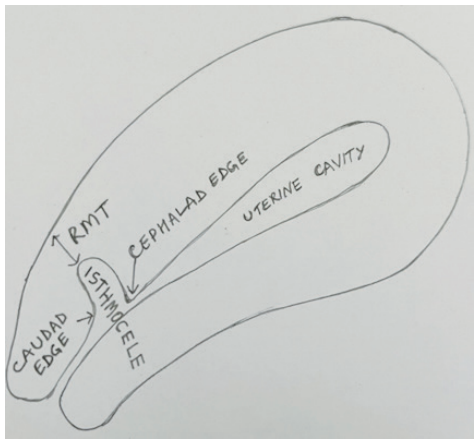

Figure 1 showing anatomy of Isthmocele

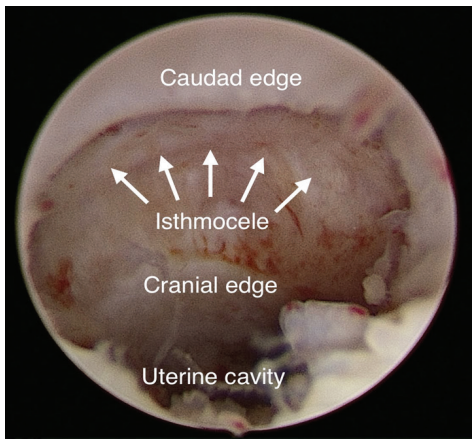

Fig 2 showing Hysteroscopic view of Isthmocele (Picture courtesy Dr Ajay Aggarwal)

How to prevent the formation of isthmocele?

It has been seen that improper techniques of cesarean scar closure; like ischaemic suturing(locking stitches), inadequate haemostasis, exclusion of decidua, single layer closure, lower uterine incision and non closure of peritoneum, have been associated with poor healing of scars and Isthmocele. Besides CS in advanced/obstructed labour, peripartum infection, prolonged PROM, multiple CS, connective disorders, DM and genetic predisposition, all contribute to a higher incidence of CSD.

So to prevent it's formation, the above mentioned factors should be avoided as far as possible, Uterine incision during CS should be given between 1 cm above or below the UV fold, double layered continuous closure including the decidua is recommended. Closing in 2 layers with continuous barbed suture has also shown good results in studies.

Diagnosis

- Detailed history
- Specific Investigations:

- Transvaginal Ultrasound (2D/3D) and MRI are the gold standards in imaging.
- Sonohysterography is also a very good diagnostic tool.

- Hysteroscopy can be diagnostic and therapeutic both.

When to treat?

Treatment is indicated only in symptomatic women.

Women presenting with-

- Previous history of scar ectopic
- Abnormal uterine bleeding
- Persistent post-menstrual spotting
- Secondary unexplained infertility
- Recurrent miscarriages
- Cryptomenorrhoea with severe pelvic pain

A routine repair of incidentally diagnosed asymptomatic niche with no plans for future childbearing is not recommended

How to treat Ishmocele

- **Medical management:**

  Hormonal therapy: Is helpful in symptomatically relieving AUB. OCPs are given if pregnancy is not desired.

- **Surgical management:**

  Uterine sparing surgical treatment: Conservative surgical interventions should be considered after eliminating other causes of presenting symptoms.

  These include resection by

  Hysteroscopic route

  Vaginal route

  Transabdominal route - Laparotomy/ Laparoscopy/ Robotics

Hysteroscopic niche resection or Hysteroscopic Isthmoplasty

Hysteroscopic route is preferred if the residual myometrial thickness (RMT) is ≥ 3 mm.

- Its basis is that re-modelling of the remaining myometrium would fill in the gap rather than healing with scar tissue

It involves either resection of only distal rim or both distal and proximal edges with resectoscope using bipolar or unipolar current and coagulation of fragile vessels at base or even entire niche with ball electrode.

Various techniques used are:

Fabre technique: It includes resection of only caudal edge of isthmocele with coagulation of roof of defect (refer to figures 3,4, & 5).

Gubbini technique: Both caudal and cephalad edges of isthmocele are resected removing all fibrotic scar tissue till underlying pink muscular tissue is seen (refer to figure 6).

Channel like 360 technique: It include resection of whole canal circumferentially (refer to figure 7).

Fabre's Technique

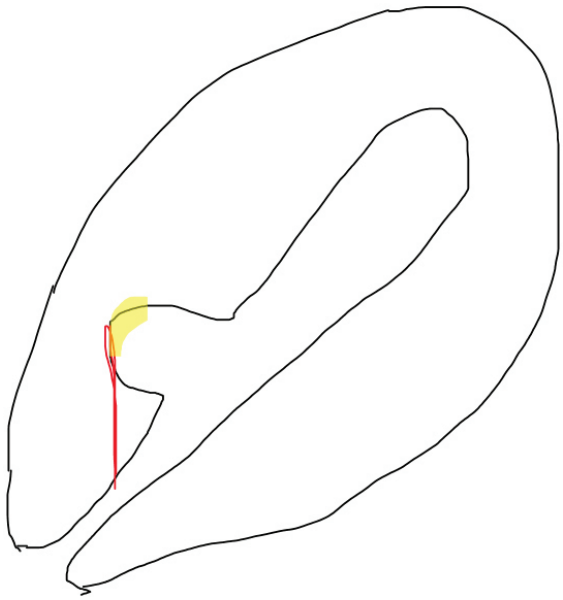

Fig 3. showing diagrammatically the caudal edge of the isthmocele is resected hysteroscopically along with coagulation of the roof of the defect

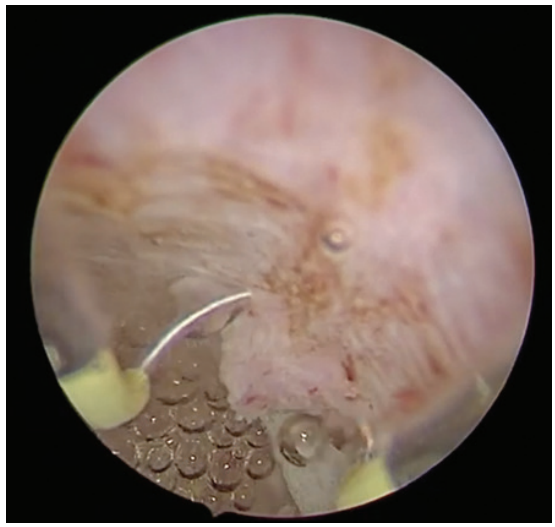

Fig 4. showing the caudal edge of the isthmocele is resected hysteroscopically (Picture courtesy Dr Ajay Aggarwal)

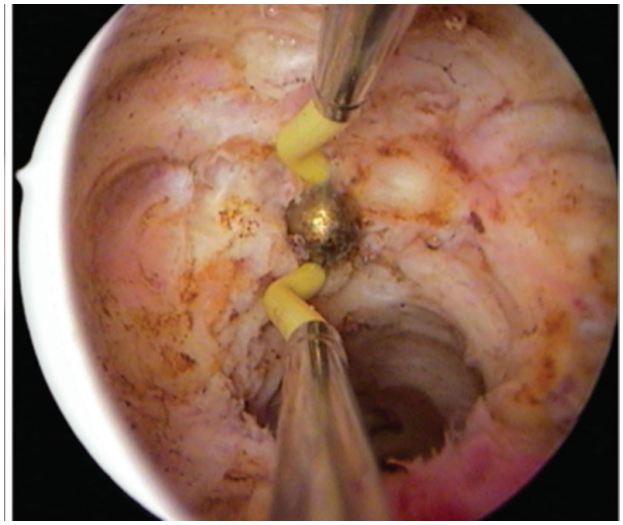

Fig 5 showing coagulation of the roof of the defect hysteroscopically (Picture courtesy Dr Ajay Aggarwal)

Gubbini technique: Both caudal and cephalad edges of isthmocele are resected removing all fibrotic scar tissue till underlying pink muscular tissue is seen.

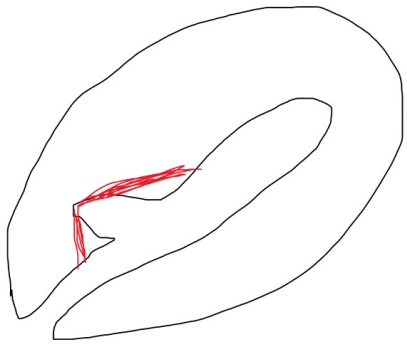

Fig 6 showing diagrammatic excision of isthmocele by Gubbini technique

Channel like 360 technique : It include resection of whole canal circumferentially.

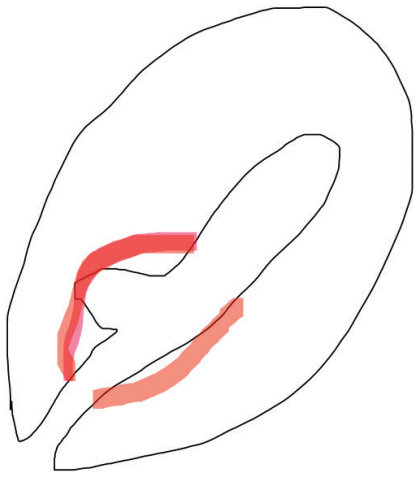

Fig 7 showing diagrammatic excision of isthmocele by 360 technique

Follow-up:

- A follow up hysteroscopy is recommended after 3 months to visualize surgical outcomes.
- It is advisable not to conceive till 3 months after surgery.
- An elective LSCS not later than 38 weeks is recommended.

Complications:

- Uterine perforation
- Bladder injury especially if overlying RMT < 3mm, Cervical incompetence with proximal rim resection
- Uterine ruptures in subsequent pregnancy
- Following hysteroscopic correction - symptomatic relief is found in 72.4% cases of AUB and pain relief in 94% cases, recurrence is seen in upto 5% patient.

Niche repair

It's preferred method when RMT is < 3mm It involves -

1. Identification of defect
2. Separating the bladder from isthmus and pushing it down
3. Excision of fibrotic tissue from the edges
4. Re-approximation in 2 layers - Transabdominal or vaginal route

Vaginal route can be undertaken by experienced surgeons **when niche is not at higher level.**

- After reflecting bladder from cervix, niche is identified, excised and hysterotomy is closed in 2 layers

Laparoscopic management of isthmocele

When RMT is less than 3mm then hysteroscopic correction might lead to perforation and bladder injury due to thin scar. Hence laparoscopic correction of isthmocele is planned with additional benefit of strengthening of scar by suturing.

Steps of surgery are-

- Hysteroscopic confirmation of isthmocele
- Laparoscopic separation and pushing down of bladder
- Laparoscopic identification of thinnest part of isthmocele by transillumination (refer to figure 8).

- Injection of diluted vasopressin.
- Isthmocoel is cut and wedge shaped scar tissue is removed including excision of any deep/ blind pocket from cranial and caudad end of isthmocele (refer to figure 9 & 10)
- Defect is sutured in 2 layers after inserting uterine dilator to ensure that the uterine cavity is not obliterated(refer to figures 11,12,13).
- In cases of retroverted uterus, bilateral round ligaments can be plicated to maintain antiversion of uterus to decrease tension on suture line.

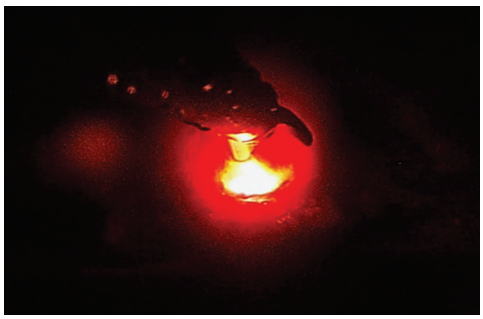

Fig 8 showing transillumination of isthmocele (Picture courtesy Dr Ajay Aggarwal)

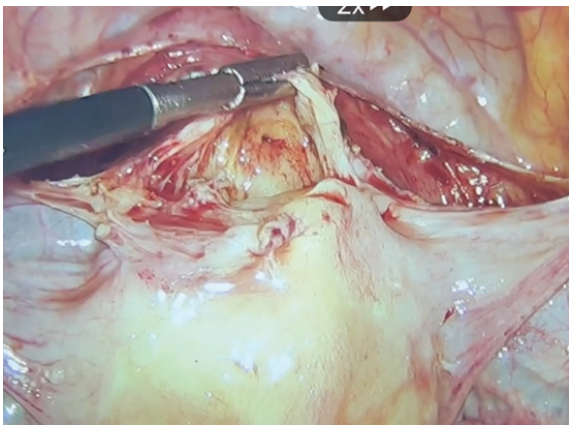

Fig 9 showing laparoscopic view of isthmocele (Picture courtesy Dr Ajay Aggarwal)

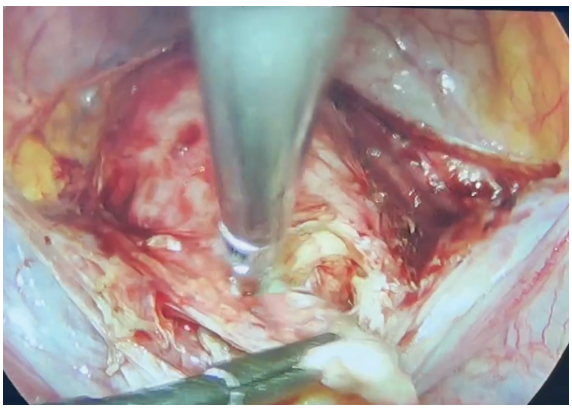

Fig 10 showing excision of isthmocele (Picture courtesy Dr Ajay Aggarwal)

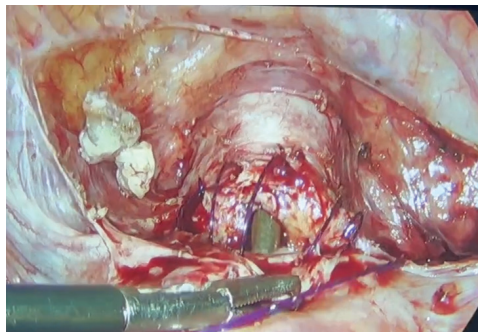

Fig 11 showing laparoscopic view of suturing of isthmocele (Picture courtesy Dr Ajay Aggarwal)

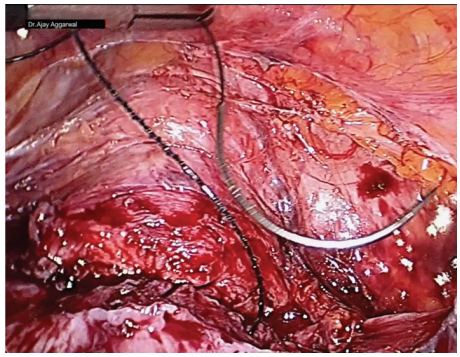

Fig 12 showing 2nd layer suturing(Picture courtesy Dr Ajay Aggarwal)

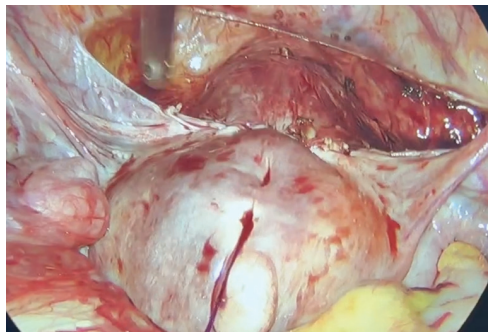

Fig 13 final picture after suturing (Picture courtesy Dr Ajay Aggarwal)

Isthmocele if left untreated :

Can present as Scar ectopic

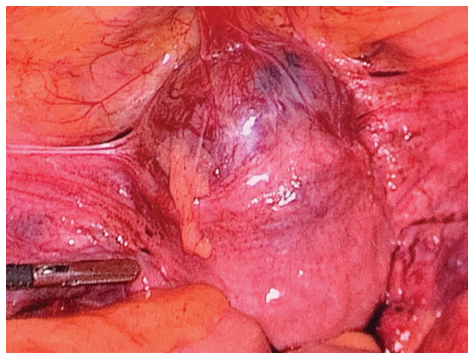

Fig 14 showing large exophytic unruptured scar ectopic pregnancy in an isthmocele

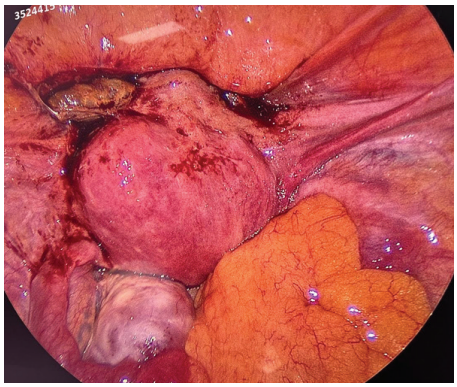

Fig 15 showing ruptured scar ectopic pregnancy in an isthmocele

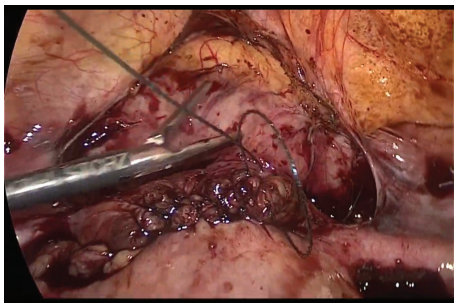

Fig 16 showing final repair of isthmocele in ruptured scar ectopic pregnancy

Hysterectomy is the definitive treatment for symptomatic perimenopausal women not desirous of any conservative surgical approach and with failed medical management.

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Surgery for Adenomyosis When and How?

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Adenomyosis, characterized by the presence of endometrial glands and stroma within the myometrium is a benign disease of reproductive age women and a common cause of dysmenorrhea, heavy menstrual bleeding, infertility and chronic pelvic pain. First described by pathologist Carl von Rokitansky in 1860[1], the adenomyosis is recognized as an "elusive disease" by gynaecologist Ludwig Emge in 1962. The reported prevalence of adenomyosis ranges widely from 8% to 62% based on histopathology findings after hysterectomy and often coexists with other pathologies such as fibroids or endometriosis.[2] Adenomyosis can have a substantial impact on the quality of women's lives and can lead to symptoms such as heavy menstrual bleeding, pelvic pain, and infertility. Today, despite having a broad range of options to manage adenomyosis, not a single treatment is considered curative.[3] While medical management is often the first line of treatment, surgery may be necessary for women with severe symptoms or those who have not responded to conservative treatments. Surgery is aimed for relief of symptoms, improvement of quality of life and to improve the potential for future fertility.

Indications for Surgery

Surgery for adenomyosis is typically considered for women who:

- Experience severe symptoms that impact quality of life
- Have failed medical management
- Have significant uterine enlargement or adenomyomas
- Desire for definitive treatment
- Large localised adenomyosis (adenomyoma) in patients desirous of future fertility

Surgical Options

While the definitive surgical management is hysterectomy, conservative surgical management is gaining attention in patients desiring future fertility. Although adenomyosis is a disease of third or fourth decade of life, the incidence is increasing among infertile or nulliparous women due to delayed child bearing among women. Surgical management depends upon age of women, parity, severity of symptoms, size and location of adenomyosis/ adenomyoma; and associated pelvic pathologies. The most crucial issues to be discussed while planning surgery for adenomyosis are desire of future fertility, desire to preserve uterus.

The following surgical options are available for adenomyosis:

1. Hysterectomy with bilateral salpingectomy
2. Adenomyomectomy
3. Endometrial ablation
4. Uterine artery embolization

Hysterectomy with bilateral salpingectomy

Hysterectomy is the most definitive treatment of adenomyosis. The patients get complete relief from the menstrual symptoms. Removal of ovaries for complete clearance of endometriosis depends on the degree of involvement of the ovaries, severity of pain symptoms and the age of the patient. Minimally invasive surgery (laparoscopic or robot assisted) is the preferred route when available in view of faster recovery, early return to

work and cosmetic benefits. Open hysterectomy is reserved for patients when the minimally invasive surgical facility is not available or the complexity of the disease prevents minimally invasive surgery. Opportunistic salpingectomy is done along with hysterectomy as a procedure to prevent future recurrence of ovarian cancer.

ADENOMYOMECTOMY

Adenomyosis has a significant impact on fertility and can impact the outcome of fertility treatment. The impact of adenomyosis on fertility is due to the proinflammatory milieu resulting from platelet aggregation and hypoxia, leading to increased levels of cytokines, prostaglandins, and local estrogen synthesis.[4]

If patient is subfertile, keen for future fertility or otherwise wants to retain uterus, the objective of the surgery is:

(a) to remove most (ideally tall) of the adenomyotic tissue

(b) to preserve the integrity of the endometrial cavity

(c) to reconstruct the uterus aiming to an anatomic result

(d) to preserve the functionality of the ovaries and fallopian tubes.

The choice of surgery will depend upon pre-operative finding on imaging (ultrasonography and MRI) and intra-operative findings.

As in most of the cases of adenomyosis, there is infiltration of the adenomyotic tissue into the adjacent myometrium, it becomes very crucial to decide the extent of removal keeping in mind to retain the integrity of myometrium after resection of adenomyotic tissue. Broadly the surgeries may be divided into: (a)- complete excision of adenomyotic tissue; (b)- partial excision procedure; (c)- non excisional techniques.

Complete excision procedure (adenomyomectomy)

Focal adenomyosis (adenomyoma) has traditionally been vaguely described as a localized area of hypertrophic distorted endometrium and myometrium, typically situated within the myometrium.[5] However, more recently, more detailed descriptive classifications have been introduced, dividing focal adenomyosis into outer and inner subtypes based on junctional zone involvement. This classification is further subdivided into groups based on the size and number of foci.[6]

The classic technique is the primary approach used for adenomyomectomy, which involves similar steps as a myomectomy but utilizes different methods for reconstructing the uterine wall.[5] Also there is no definite plan between the adenomyoma and the adjacent normal myometrium. The procedure can be performed via an open or minimally invasive approach, including conventional laparoscopy and, more recently, robotic assistance depending upon the availability and surgical expertise.

Surgery for diffuse adenomyosis

Complete excision is not possible in diffuse adenomyosis sue to risk of removal of significant portion of normal myometrium. This can lead to weakened uterine wall and poor pregnancy outcomes in future. Following techniques have been described for diffuse adenomyosis:

- Wedge resection
- Double- or triple-flap method
- Transverse H incision
- PUSH technique

Wedge resection- The wedge resection of the uterine wall is applied in diffuse lesions located mainly in a localized area of the uterus (i.e., adenomyosis restricted only in the anterior or only in the posterior uterine wall). A typical cone-like resection involving the seromuscular uterine layer with an attempt to remove as much adenomyotic tissue as possible both in width and depth. Approximation of myometrial defect is done using 1- o Vicryl or barbed sutures (figure 1).

Triple-flap method (Osada's technique)- This method has been described mainly for an open approach and involves the midline bisection of the uterus at the adenomyosis bulge until the endometrial cavity is opened. Using index finger, palpation method is used to facilitate maximum excision of adenomyotic tissue. The adenomyotic tissue is grasped and is excised from the surrounding myometrium leaving a myometrical thickness of 1 cm from serosa and 1 cm from endometrium. This can be done with scissors or unipolar cautery. Endometrial cavity is closed using 2-0 vicryl suture. The flaps of the uterine wall are approximated from one side of the bisected uterus to the anteroposterior plane of the other side while the contralateral side of the uterine wall is brought over the already reconstructed part of the uterus in such a way as to cover it[7] (figure 2). The triple-flap method offered several advantages, enabling wider and more thorough excision of affected tissues than conventional wedge resection.

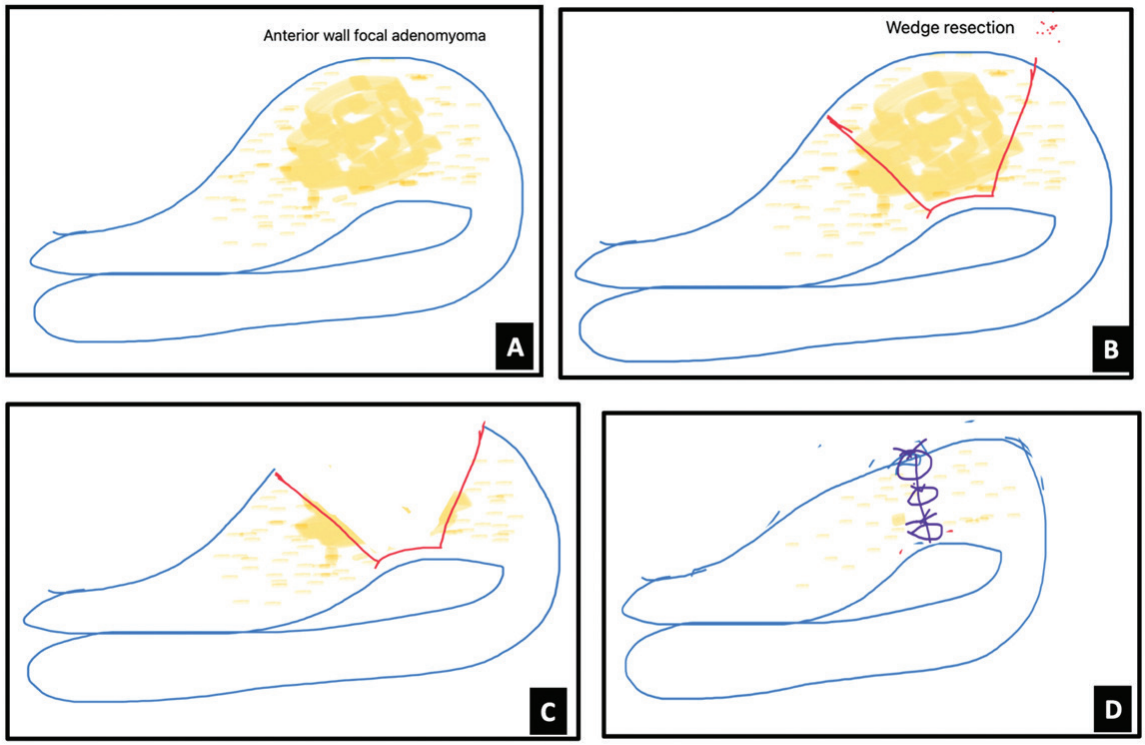

Figure 1- A – Anterior wall adenomyoma along with diffuse adenomyosis of anterior wall; B- defining the margins of resection; C- Wedge resection ensuring as much as possible without

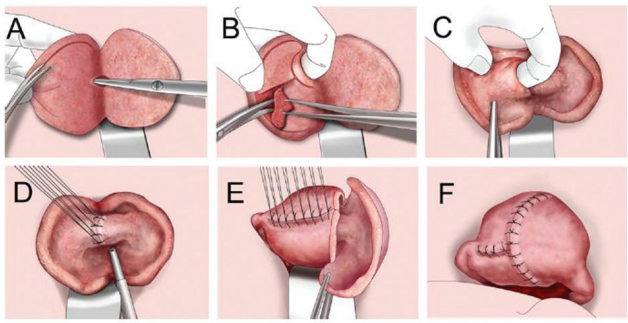

Figure 2- Steps of Osada's (Triple flap) procedure for adenomyomectomy[7]

Although this technique became very popular but there were some flaws making this procedure difficult in cases of sever adenomyosis. In 'triple-flap' procedure, one needs to remove some of the seromuscular layer of the uterus and at least 5 cm of the myometrium layer for recovery has to be retained, which may potentially not allow the operators to complete the removal of the full lesion, the key to avoid reoccurrence, and make the surgery not applicable for severe cases. Different authors reported different modifications to ensure maximum adenomyosis removal along with retaining the normal myometrium.

Transverse H incision technique- This is another laparotomic modification for diffuse adenomyosis, mainly described for adenomyosis of the anterior uterine wall. A vertical incision perpendicularly to the midline is initially made on the uterine wall, and two transverse secondary incisions are applied perpendicularly to the first incision along the upper and the lower parts of the uterus. The adenomyotic tissue underneath the two flaps is removed with the use of scissors or diathermy until a healthy myometrium, preserving the integrity of the endometrial cavity assessed with chromopertubation during surgery. The closure of the uterine wall is performed in multiple layers.[8]

Yoon et al. described a novel technique with the argon laser where a T or transverse H incision was performed through laparotomy, followed by a serosal flap and subsequent shaving of the adenomyometrial tissue with the argon beam guided by ultrasound until residual myometrial thickness was at least 1 cm.[9]

The protection of uterine structure for healing (PUSH) operation- This is a surgical technique for uterus reconstruction. This technique has been developed by Wu et al and is and described as a fertility preservative surgery for Protection of Uterine Structure for Healing (PUSH Surgery). This involves a full-layer mattress-type vertically penetrating suture aiming to assist the surgical

overlapping of residual uterine muscle flaps (10).

There have been no randomised trials comparing different surgical procedures for ademyomectomy. The treatment and surgical technique needs to be individualised depending upon intraoperative findings. But adenomyosis surgery should be done by gynae surgeons with good surgical expertise and this surgery is beyond the scope of a general gynaecologist (especially the severe disease). With high rate of recurrence, it is crucial to ensure maximum removal of disease along with retaining the integrity of myometrium and functionality of ovaries and tubes (especially if future fertility is desired). Figure 3 describes the different surgical approaches for adenomyosis.

SURGICAL APPROACHES

1. **Laparoscopic surgery:** Minimally invasive surgery using small incisions and a laparoscope.
2. **Open surgery:** Traditional surgery using a larger incision.
3. **Robotic-assisted surgery:** Use of robotic technology to assist with laparoscopic surgery.

Minimally invasive surgery provides faster recovery, better tissue handling, magnification in addition to cosmetic advantages. The firm to hard tissue consistency that poses a challenge for approximation of the incision line can be compensated by flap techniques (triple flap or Osada) and use of barbed sutures in place of traditional vicryl sutures.

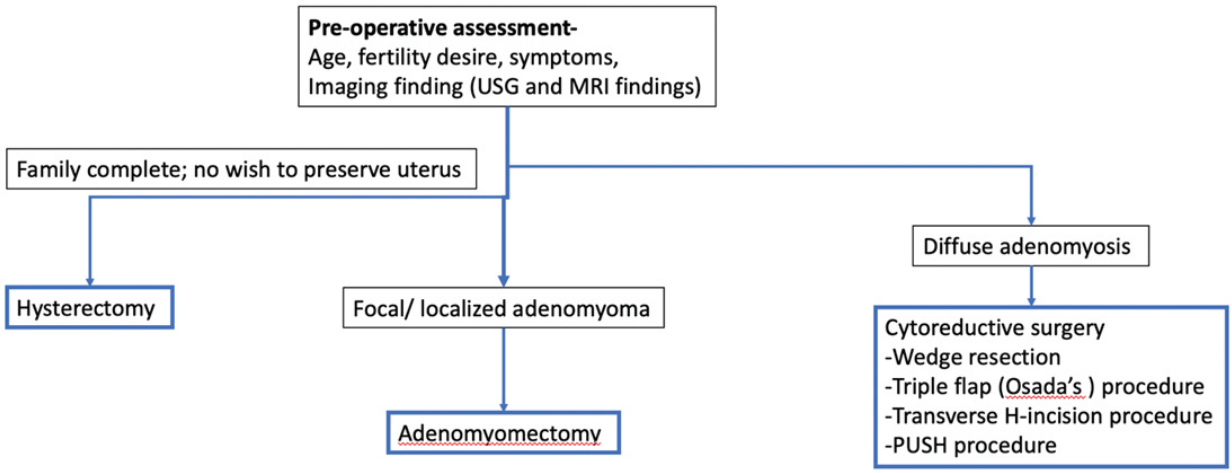

Figure 3- Algorithm for different surgical options for adenomyosis

Methods to reduce intra-operative bleeding during adenomyomectomy-

- As most of the patients with adenomyosis had AUB and anaemia, Hb optimisation is important before planning the surgery. Injectable iron therapy or blood transfusion may be planned before surgey in women with moderate to severe anaemia.
- **GnRh agonist therapy-** Especially for women with large adenomyotic lesions and with associated anaemia, these agents give time for anaemia correction and reduce the size and vascularity of the lesion. They may ease the surgery and reduced intraoperative blood loss also.
- Transient occlusion of uterine arteries (TOUA) prior to performing a classical cytoreductive surgery in patients with diffuse adenomyosis helps in reducing estimated blood loss (EBL) without extending operative duration (5).

Fertility after adenomyosis surgery

The complete return of the myometrial strength and return of vascularity at the scar site takes more than 6 months. Preconception and early pregnancy uterine wall thickness of 9-15 mm is optimal for conception and preventing uterine rupture during pregnancy, while <7 mm may pose an elevated risk of subsequent rupture (11).

Although most of the studies documenting outcomes are retrospective and non-randomised, the delivery rate of 46.9% has been reported following any type of uterine sparing adenomyosis surgery (9).

As it is advised to postpone pregnancy for 6 months after surgery, adding medical management after surgery further reduces the recurrence and

enhances the fertility outcome. Younger age, lower baseline analgesic-use score, BMI, and anterior location of the adenomyoma were associated with better live births. A lower level of CA-125 (<15 IU/mL) was also shown to be a significant predictor of spontaneous pregnancy in a small series of patients undergoing conservative surgery and GnRH agonist treatment for adenomyosis.[12]

Adenomyosis surgery for infertile women- The management of infertile women with adenomyosis is a topic of ongoing debate as there is no robust evidence to support improved fertility and reproductive outcomes after adenomyosis surgery. Those with focal adenomyoma especially size >5cm; those distorting endometrial cavity, should be excised as it will give best surgical outcome with least complications. Those undergoing IVF for adenomyosis per se or for other indications, the surgery may be decided as per the patient age, ovarian reserve, associated endometriosis, size of lesion and feasibility to do oocyte retrieval.

In women with symptomatic adenomyosis and with infertility, IVf and embryo freezing may be planned. Following this medical or surgical intervention can be done depending upon absolute uterine size, size of lesion, severity of symptoms and previous medical treatments taken.

In women with large lesions and with associated endometriosis, it may be imperative to do surgery as endometriomas may interfere with oocyte retrieval procedure.

It is important that these cases should be managed with expert Reproductive Medicine experts and choosing the best possible individualised treatment plan for every patient.

Outcomes and Complications

Adenomyosis is associated with Various adverse pregnancy outcomes, including uterine rupture, abnormal placentation, preterm labor, premature rupture of membranes, and fetal growth restriction. Fertility preserving surgeries further enhance the perinatal complications of adenomyosis. Placenta accreta spectrum and uterine rupture pose significant morbidity and mortality risks. These complications may arise from adenomyosis-induced alterations in myometrial strength and perfusion, compounded by surgical trauma that may affect uterine healing.

Mode of delivery after adenomyomectomy

The risk of uterine rupture increases especially when entry to the endometrial cavity is entered during surgery. . In some studies, the risk of uterine rupture is as high as 1 in 18 (almost 6%) after surgical treatment for adenomyosis. So, although vaginal delivery is possible, it is safer to opt for elective caesarean section for best outcome and to eliminate the risk of intrapartum uterine rupture.

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Measures to Improve Fertility Outcomes in Asherman Syndrome

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Introduction

Asherman syndrome is one of the endometrial factors leading to infertility. It is an acquired condition characterized by intrauterine adhesions or synechiae due to formation of scar tissue within the uterine cavity and cervix. It's a pathological healing process following endometrial damage resulting in endometrial fibrosis, reduced uterine cavity volume and sometimes even complete closure of the cavity. Damage to endometrium can be in the form of dilatation and curettage postpartum, B-lynch sutures, intrauterine infections like tuberculosis, schistosomiasis and certain surgical procedures like myomectomy, polypectomy and corrective surgeries of Mullerian anomalies. It typically presents as Hypomenorrhea, amenorrhea, cyclical abdominal pain, subfertility and secondary infertility.[1]

Background

The very first case of intrauterine adhesions was brought to light by Heinrich Fritsch in 1894.But it was in 1948, that an Israeli Gynaecologist Joseph Asherman gave a full description of asherman's syndrome. He published case series of intrauterine adhesions calling it "Traumatic amenorrhea".

Intrauterine adhesions cause endometrial dysfunction that results in abnormal menstruation and Infertility. When adhesions are limited to lower uterine cavity with preservation of some functioning endometrium it gives rise to severe pelvic pain and retrograde menstruation.[2]

Pathophysiology

Intrauterine adhesions are fibrous bands of scar tissue that form inside the uterus following injury to stratum basal of endometrium. In post-partum/abortal endometrial curettage, retained products of conception can stimulate fibroblastic activity and lead to formation of adhesions even before the endometrium starts to regenerate. The hypoestrogenic state postpartum inhibits endometrial regeneration. Intra uterine manipulations like myomectomy, polypectomy contribute to a large number of intra uterine adhesions. The damaged stoma is replaced by fibrotic bands. Anterior and posterior surfaces of endometrium appose which leads to formation of intrauterine adhesions. The resulting endometrium is avascular and responds poorly to cyclical ovarian hormones.

Impact on Fertility

Women with Asherman's syndrome have significantly compromised reproductive outcomes. The reasons for infertility being occlusion of tubal ostia, intra uterine adhesions, non-receptive endometrium, obliterated endometrial cavity and cervical canal stenosis. Intrauterine synechiae block the transport of sperms and prevent implantation of the embryo.

Less severe adhesions can lead to recurrent pregnancy loss due to insufficient amount of healthy endometrial tissue and sub optimal vascularization to support the growth and development of placenta.

In case of Pregnancy following Asherman's Syndrome there is high risk of miscarriage, preterm birth, abnormal placentation, and foetal growth restriction.[3]

MANAGEMENT

DIAGNOSIS

Women with asherman's typically present with menstrual abnormalities following an intrauterine procedure done in the past. It's not a clinically diagnosed condition, although uterine sound may reveal obstruction at or near the internal os. Hysteroscopy remains the gold standard for diagnosis as it is more precise than radiological imaging techniques. It helps in grading the severity of the disease as well as pre surgical mapping of the uterine cavity.

In severe ashermans with complete obliteration of uterine cavity, hysterosalpingography is of great diagnostic value with 75–80% diagnostic sensitivity and specificity. HSG picture of ashermans is typically irregular filling defects with distorted endometrial cavity.

Saline infusion Sonography or Sono hysterography is another non-invasive diagnostic modality with sensitivity of about 75% and a positive predictive value of 43% for the detection of intrauterine adhesions.

3D TVS a novel diagnostic tool that provides easily comprehensible images that show the precise location and size of adhesions and extent of damage of the uterine cavity.[4]

TREATMENT

Treatment of Asherman syndrome aims at restoring the size and shape of the uterine cavity, preventing recurrence of the adhesion, promoting the repair and regeneration of the destroyed endometrium, and restoring normal reproductive functions. The right surgical treatment will restore the anatomy and physiology of the uterus and provide excellent fertility outcomes.[3]

HYSTEROSCOPY

Hysteroscopy has transformed the management of asherman's syndrome due to its minimally invasive approach and the fact that it can be conducted with direct visualization. It aims to restrore the uterine cavity volume and morphology, facilitate endometrial repair and reduce adhesion recurrence to improve fertility outcomes.

Li Y et al reported a pregnancy rate of 69.9% following hysteroscopic adhesiolysis out of 89 infertile patients with a live birth rate of 50.2% within 24 months following hysteroscopic adhesiolysis.

Cavity distension can lead to breakdown of flimsy adhesions due to increased intrauterine pressure. Flimsy adhesions can further be removed by negotiating the scope through the cavity. Adhesiolysis should start form the lower part of the uterus and proceed in cephalad direction toward the fundus. Multiple sittings may be required in case of severe adhesions. Either electrosurgical instruments or hysteroscopic scissors can be used for adhesiolysis. Both techniques have their own advantages and disadvantages over each other. Li Y et al found no statical difference in the pregnancy rate between use of electrosurgery and hysteroscopic scissors for hysteroscopic adhesiolysis. A wide range of electrosurgical equipment (monopolar energy systems, bipolar energy systems), laser, and cold knife can be used for adhesiolysis. There is always a risk of thermal damage to the residual endometrium with use of cautery. On the other hand, hysteroscopic scissors carry an increased risk of intra operative bleeding. The Nd-YAG laser can be used for adhesiolysis even in severe cases with negligible blood loss. Adequate intrauterine space and a receptive endometrium are prerequisites to support the growing embryo which can be achieved by adhesiolysis.[5]

Measures to Improve Fertility Outcomes

Improving fertility outcomes in patients with intrauterine adhesions leading to RPL and infertility is of paramount importance. Hysteroscopic adhesiolysis improves both pregnancy and live birth rates. Numerous proactive pre-operative, intraoperative and post-operative techniques have been used to improve the surgical outcome in asherman's syndrome.

PRE-OPERATIVE

- Diagnostic hysteroscopy to accurately map the adhesions preoperatively
- Pre-operative transvaginal ultrasonography to asses disease prognosis

Intraoperative

- Trans abdominal ultrasound directed or laparoscopy guided lysis of synechiae
- Maintenance of intrauterine space can be achieved by placement of physical barriers inside the cavity like
  - foley's bulb, intra uterine balloon
  - Hyaluronic acid gel or polyethylene oxide-sodium carboxymethylcellulose gel
  - Human amniotic membrane grafts
  - IUCD

Post adhesiolysis recurrence of adhesion formation has been reported in up to 60% of patients. Placement of intrauterine substances prevents de novo recurrent adhesions and subsequently improves reproductive outcomes. A balloon catheter or an inert IUCD (after removing copper) can be used to mechanically separate the uterine walls. Amnion grafts are also used to cover the balloon catheter to improve outcomes. Certain adhesion barriers like hyaluronic acid gel and carboxymethyl cellulose prevent recurrent adhesions by "hydro-flotation" or "siliconizing" effects. Hyaluronic acid is an biocompatible, biodegradable material which promotes cell proliferation, regeneration and migration. Acunzo et al. found a significant effect of hyaluronic acid compared to no treatment (14% vs. 32%).[6]

On the other hand, Lin et al. demonstrated that the balloon and IUCD were more effective than hyaluronic acid.[7]

Postoperative

- Oestrogen therapy- a daily dose 2.5mg of conjugated equine oestrogen or oestradiol valerate with or without progesterone support for 2-3cycles to be given post surgically. It promotes endometrial regeneration.
- Vasodilators- Intrauterine adhesions lead to a hypo perfused unhealthy endometrium non receptive to implantation. Aspirin, nitro-glycerine, and sildenafil citrate improve endometrial blood flow. Although there is insufficient evidence regarding their effect on pregnancy and live birth rate. These drugs have only been used off-label for research purposes.[8]
- Antibiotic therapy- There is always a risk of infection with transcervical intrauterine procedures. Although there is no recommendation to use of pre-operative and post-operative antibiotic therapy, there is always a theoretical benefit. As infection leads to fibrosis leading to intrauterine adhesions.[9]
- Re-look Hysteroscopy after 4-8 weeks to assess the uterine cavity.

There is high risk of recurrence of adhesion formation following hysteroscopic procedures due to endometrial trauma and subsequent fibrosis. Hence second glance of the endometrial cavity becomes essential. Early diagnosis of recurrent adhesions is imperative for good reproductive outcome. In case of severe adhesions complete cure cannot be achieved in single sitting and may require multiple sittings.[10]

Hysteroscopic evaluation of uterine cavity post hysteroscopic adhesiolysis s recommended as Level B evidence.[9]

Good Practice Guidelines -Surgical Techniques to Avoid Recurrent Adhesions Following Hysteroscopic Adhesiolysis

- Hysteroscopic resection to be carried out up to healthy endometrium.
- Circular block resection is recommended in case of hard and dense adhesions.
- If fallopian tube ostia or uterine cornua is inaccessible USG guided spirotome can be used to enter ostia.
- Touboul et al. found that the rate of recurrent intrauterine adhesions following resection with bipolar electrosurgical device was lower when compared to monopolar. Although randomized control trials need to be conducted to confirm the above findings.

RECENT ADVANCES

1. PRP- Platelet rich plasma- It's a novel therapy based on regenerative medicine. It is a concentrate of autologous platelets. It contains growth factors like VEGF (vascular endothelial growth factor), EGF (Epidermal growth factor), transforming growth factor (TGF), platelet derived growth factor (PDGF) and regulatory cytokines.[11]

   It stimulates the growth of tissues with poor regenerative capability by supplying supraphysiological levels of essential growth factors. It promotes tissue regeneration and neovascularization.[12]

   The endometrial lining undergoes cyclical changes to make itself ready for the possibility of embryo implantation. A healthy and well vascularized endometrium facilitates the blastocyst's attachment and embryo implantation. In the absence of a healthy endometrium even good quality embryo's fail to implant. Hence receptive endometrium is essential for a successful pregnancy. PRP has proven to improve fertility outcomes in patients with poor endometrial receptivity by increasing endometrial thickness and enhancing local microcirculation.

   It can be administered directly under vision via hysteroscope or through a uterine catheter under ultrasound guidance. There are no

standard guidelines regarding the mode of administration. Additional studies are needed to create standardized protocols and enhance the therapeutic application of PRP in endometrial therapies.[13]

- G-CSF (Granulocyte-colony stimulating factor)

  It is a glycoprotein that stimulates the bone marrow to generate granulocytes and stem cells, releasing them into the circulatory system. It promotes embryo implantation and development by stimulating decidual macrophages, increasing Th2 response and affects phagocytotic and oxidative processes essential for implantation. It promotes endometrial regeneration by endometrial vascular remodelling preventing cellular apoptosis. Yanling Zhang et al found an increase in endometrial thickness by 2.9mm with use of intrauterine G-CSF infusion following hysteroscopic adhesiolysis.[14]

- Stem cell therapy

  Asherman syndrome is usually associated with thin endometrium due to injury to the basal layer making the functional layer unresponsive to cyclical hormonal stimulation. As we all know endometrial thickness of a minimum of 7 mm is required for a successful implantation and subsequent pregnancy. Management of thin endometrium has always been a reproductive challenge. Mesenchymal-SCs derived from bone marrow, adipose tissue, and umbilical cord can increase endometrial thickness have proven to improve fertility through their regenerative properties and angiogenesis. Tissue engineering of live human cells into collagen scaffolds and 3-D structures have been used to transplant stem cells into the uterine cavity. Yanling Zhang et al conducted a pilot study on "Unresponsive thin endometrium caused by Asherman syndrome treated with umbilical cord mesenchymal stem cells on collagen scaffolds" and found that umbilical cord mesenchymal stem cells can be beneficial in treating thin endometrium caused by asherman syndrome. Autologous CD133+ bone marrow derived stem cells to treat asherman syndrome is in phase 2 clinical trials. Hence there is limited evidence and it has not been used beyond clinical research.[15]

Conclusion

A comprehensive approach is required to improve fertility outcomes in patients with asherman's syndrome. This includes early and accurate diagnosis, right surgical treatment and post-operative measures to prevent re adhesion and improve endometrial susceptibility. The integrated application of all the above methods has proven to improve reproductive outcomes.

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Laparoscopic Encerclage

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Cervical insufficiency [Cervical Incompetence] is defined by the ACOG as the 'inability of the cervix to retain a pregnancy in the second trimester in the absence of uterine contractions' This entity thus results in spontaneous miscarriages in the second trimester or in preterm labour. These structural cervical abnormalities can be due to

1. **Congenital causes:** Mullerian anomalies like septum; collagen abnormalities like Ehler Danlos syndrome or
2. **Acquired causes:** Can happen as a result of procedures/trauma to the cervix (previous D&C or previous cervical tear or a large loop excision of cervix for CIN, or previous Radical trachelectomy).

Preterm birth [before 37 weeks]is the single most important cause of neonatal morbidity and mortality and is associated with complications like respiratory distress syndrome, intraventricular haemorrhage, necrotising enterocolitis, retinopathy of prematurity and can cause cerebral palsy and /or neurodevelopmental delay in the long run. The prophylactic placement of a cervical encerclage is an effective treatment for providing structural support and for retaining the cervical mucous plug to aid the cervix in retaining the pregnancy.

Cervical cerclage is classified according to the indication for performing cerclage into the below mentioned categories

1. **History indicated Encerclage:** a cervical cerclage placed prophylactically in asymptomatic women with a history of previous second trimester miscarriages (3 or more as per RCOG) or preterm birth. This stitch is applied either pre pregnancy or during pregnancy (after first trimester anomaly screening with NT scan and Dual marker or NIPT).
2. **Ultrasound indicated Cerclage:** A cervical cerclage placed prophylactically in asymptomatic women detected with having a cervical length less than 25 mm on ultrasound screening between 14 and 24 weeks or in high-risk women. Routine cervical length screening every 2 weeks in high-risk women [women with history of one or two previous second trimester miscarriage or preterm birth, history of Caesarean section on a fully dilated cervix or history of previous cervical weakness by cervical trauma or mullerian defects] is recommended by NICE guidelines.
3. **Emergency Encerclage:** A cervical cerclage which is performed as a rescue salvage procedure in cases of premature dilatation of cervix with exposed membranes. This stitch is only applied after ruling out chorioamnionitis.

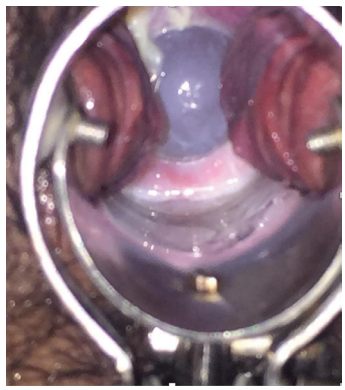

Figure 1: Dilated os with bulging membranes(Picture courtesy-Sunrise hospital, New Delhi. Operated by Dr.Nikita Trehan)

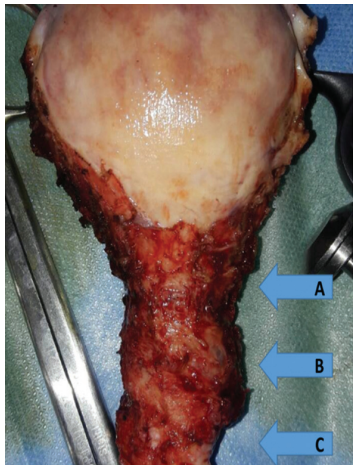

Figure 2 Levels of cerclage placement

ervical Cerclage is also classified according to the anatomical location of the cerclage into

1. Low vaginal cerclage (Mac Donalds cerclage)
2. High vaginal cerclage [after bladder mobilization like Shirodkar's stitch]
3. Abdominal cerclage [at the level of internal os]
4. Occlusion stitch [like Wurms stitch]. The MAVRIC study, a multicentric RCT demonstrated the superiority of trans abdominal cerclage compared to high or low vaginal cerclage in preventing preterm birth before 32 weeks of pregnancy.

The fundamental principles of Laparoscopic encerclage

We are aware that the process of labour starts at the internal os, which upon commencement of dilatation further stimulates contractions and the last part to get dilated is the external os [a cerclage placed at the external os like Mac Donalds frequently fails in genuine cervical incompetence]. Hence a cerclage placed abdominally at the internal os is the ideal location for placement of the Encerclage.

The Sunrise Method of Laparoscopic encerclage

Our method of performing a laparoscopic encerclage is designed keeping certain key points in mind:

1. The passage of the mersilene tape [the suture of choice in our method] is around the cervix and not into the matter of the cervix. This tape is passed medial to the uterine vessels as occlusion of the uterine vessels in pregnancy can lead to fetal growth restriction and placental abnormalities.
2. During pregnancy it is difficult to manipulate the pregnant uterus [as the usual uterine manipulator or myoma screw cannot be used] so creation of broad ligament windows by our method greatly aids in the passage of the needle of the mersilene tape. 3]If the tape is accidentally placed at a higher level [above the internal os in the lower uterine segment] it will be useless, hence an intraoperative ultrasound to check the correct level of placement is mandatory.
4. During pregnancy a low vaginal cerclage or an occlusion stitch is also placed along with the laparoscopic encerclage to prevent the loss of the cervical mucus plug as the loss of this mucus plug can lead to vaginal infections ascending during pregnancy.

Steps of surgery:

1. Primary visual 10 mm trocar is entered via the Lee Huangs point. Three [5 mm] secondary working trocars are the placed under vision.
2. The Uterovesical fold of peritoneum is opened and bladder is pushed down (Figure 3)
3. Bilateral broad ligament windows are opened and the bilateral uterine vessels identified (Figure 4-5)
4. Mersilene tape is then passed medial to the uterine vessels anterior to posterior on the left side and the needle is then passed through the pouch of Douglas and posterior to anterior on the right side medial to the uterine vessels just above the level of uterosacral insertion to encircle the cervix (Figure 6-7)
5. The needle is then cut, and 4 to 6 tight knots are placed. A check ultrasound is then performed to check the level of the stitch and the fetal heart rate is also checked (Figure 8)

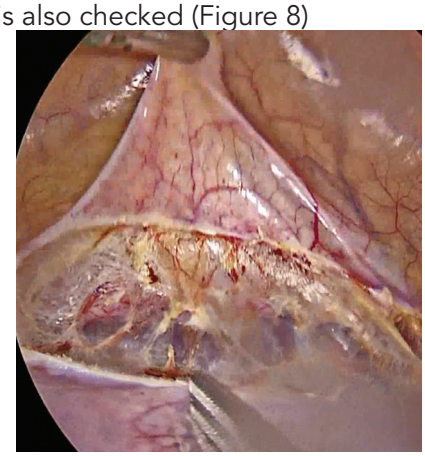
Figure 3:Opening the U-V fold

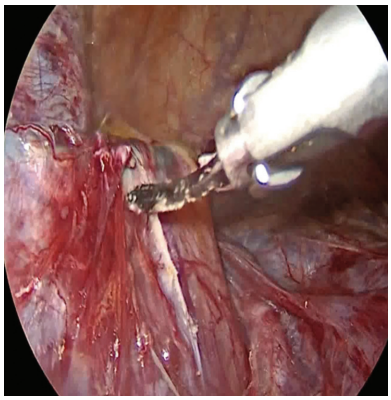

Figure 4: Opening the Broad Ligament

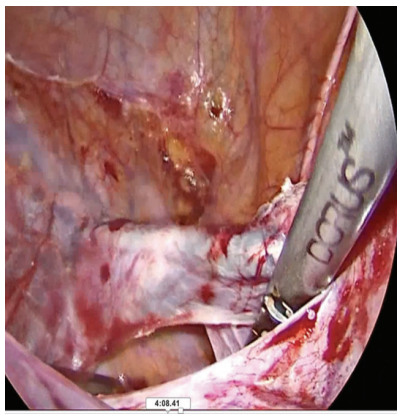

Figure 5: Identifying the Uterine vessels

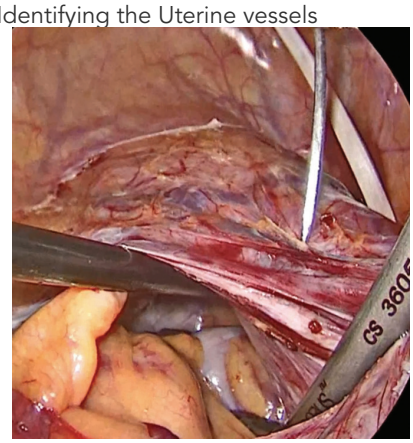

Figure 6: Passing the tape on the left side

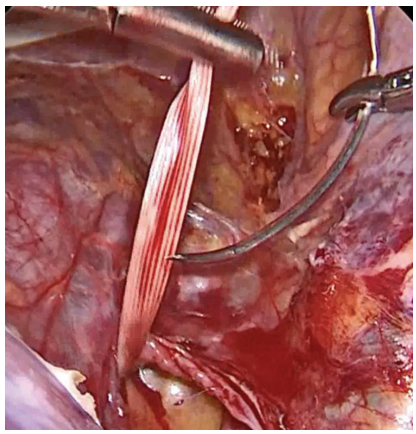

Figure 7: Passsing the tape on the right side

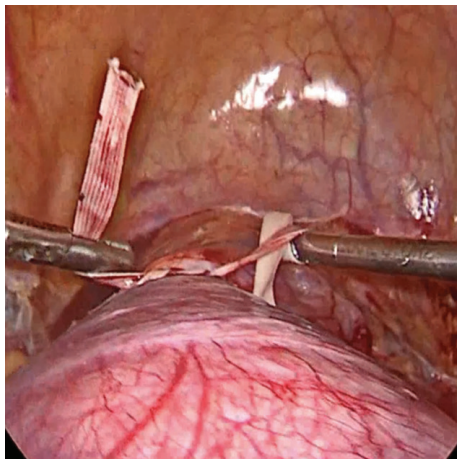

Figure 8: Tying the knot anteriorly
(Picture courtesy: Sunrise Hospital, New Delhi. Operated by Dr. Nikita Trehan)

Intra-operative challenges while performing a laparoscopic Cervical cerclage:

1. Accidental injury to the pregnant uterus during primary trocar entry (Figure 9) or secondary trocars while insertion: In such cases we are aware that unless there is profuse bleeding which may require a stitch, a simple bipolar coagulation of the bleeding point on the surface is enough to arrest the bleeding. The gravid uterus has increased vascularity and even though the bleeding may appear greater in proportion to the injury, surface coagulation will arrest this bleeding easily. A simple stitch may also suffice in case of any doubt.
2. Accidental injury to the Internal iliac and Uterine vessels (Figure 10) while creating the broad ligament windows: Keeping vascular clips handy at such times can be extremely beneficial, as a 5mm port can easily be converted into a 10mm port for applying a 10mm vascular clip on the vessel to arrest bleeding (Figure 11)
3. Obliterated Pouch of Douglas: This can be one of the greatest intra-op challenges one can face. In patients with previous history of endometriosis, Pelvic Inflammatory Disease (PID), previous surgical adhesions, the Pouch of Douglas(POD) may be obliterated complicating the surgery to such an extent, that we may have to abandon laparoscopic approach in favour for a high vaginal cerclage like a Shirodkar, etc because of complete inaccessibility or completely obliterated POD or a frozen pelvis. We may also try placing the knot anteriorly by passing through the broad ligament bilaterally and pulling it down on the cervix without separating

the POD adhesions (Su technique), however the sequelae of this bilateral tying of uterine vessels may potentially lead to placental insufficiency and Foetal growth retardation subsequently.

2. Wrong level(placement) of the tape: If the tape is placed very high up i.e in the lower uterine segment, the rescue stitch becomes redundant as due to the dilatation starting at the Internal os below the tape. To in order to avoid this mishap, we advocate performing an intra-op Ultrasound to confirm the level of our stitch.
3. Accidental injury to the bladder: Can occur while dissecting the bladder down as it can be difficult to ascertain the level of dissection, especially if there have been previous surgeries. Upon identification of such an injury, we close the injury using barbed sutured in two layers with continuous draining catheter for 14 days. The Lap encerclage should be proceeded as planned to keep in mind that we mustn't close the U-V fold of peritoneum as the tape may erode into the bladder.

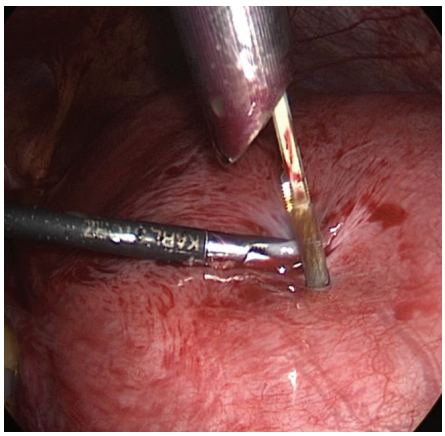

Figure 09 Injury to gravid uterus (Picture courtesy-Sunrise Hospital, New Delhi. Case operated by Dr.Nikita Trehan)

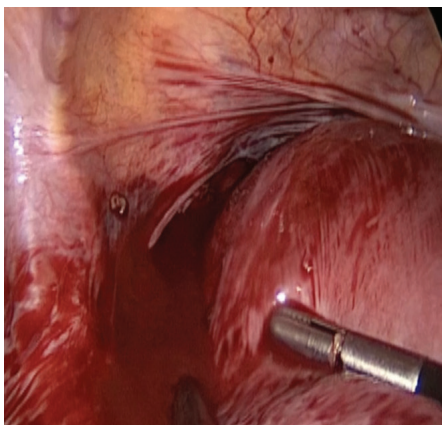

Figure 10 Injury to uterine vessels (Picture courtesy-Sunrise Hospital, New Delhi. Case operated by Dr.Nikita Trehan)

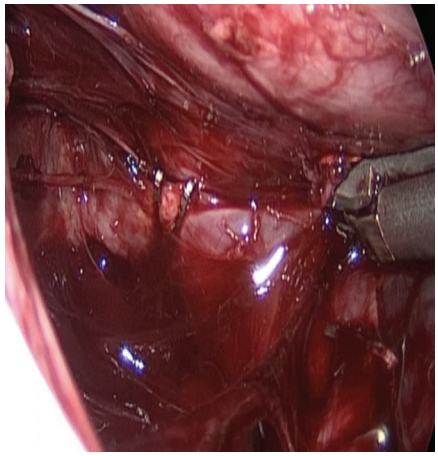

Figure 11 Clipping of the uterine vessels (Picture courtesy-Sunrise Hospital, New Delhi. Case operated by Dr.Nikita Trehan)

POST-OP COMPLICATIONS

Chorioamnionitis: The most dreaded and grave complication of a Laparoscopic encerclage is Chorioamnionitis or the Triple I. To prevent and decrease the incidence of chorioamnionitis, it is preferable to perform an ultrasound indicated cerclage as opposed to a rescue or emergency cerclage.

Chorioamnionitis can lead to Septicemia, Septic shock, Acute Respiratory Distress Syndrome resulting in the ICU admission of such patients and in some cases this may necessitate the need for cutting the tape and delivery of the baby.

Ascending infections from the vaginal tract are the most common cause of chorioamnionitis.

The cervical mucous plug is paramount in preventing the ascent of such infections to the intra-amniotic membranes, hence a Mac donald's stitch or the Wurm stitch is helpful in keeping the Triple I at bay by maintaining the mucus plug.

Additionally, intra-op antibiotics either broad spectrum or as guided by the high vaginal swab sensitivity, are given to the patient. A single shot of intravenous Metronidazole in addition to the routine amoxycillin helps give the anaerobic cover needed to the procedure. Additionally, high vaginal swabs incorporated in routine practice are complimentary to such measures.

The role of Tocolytics: The use of tocolytics in elective planned procedures is not indicated. A single shot of intramuscular 17-alpha hydroxyprogesterone caproate during the procedure, while performing a history or ultrasound indicated cerclage can help

prevent recurrent preterm birth in women who have had prior singleton preterm birth. During an emergency cerclage, Atosiban is the drug of choice for arresting the progress of contractions without compromising foeto-maternal health. Atosiban as an intravenous bolus dose followed by a maintenance dose post procedure, for 48 hours regime is usually followed at our facility. Close monitoring is however warranted in all cases. It is important to note that persistent contractions maybe a sign of chorioamnionitis and hence masking of Triple I by preventing contractions is not advisable. In summary, a watchful charting of fever, foeto-maternal vitals, contractions is paramount in averting chorioamnionitis.

Steroid cover: is usually indicated between 24-34 weeks and is extremely important and it has been shown to prevent complications like neurological deficit, RDS, IVH in the newborn.

Magnesium Sulphate: 24 hours before imminent labour may be advised by the neonatal team as it is a tocolytic and a neuro-protectant and can give time for steroid cover for foetal lung maturity before unavoidable preterm delivery.

Mode of Delivery after Lap Encerclage: is by elective-casaerean route only, keeping the tape intact for the next pregnancy.

In case of intra-uterine death or chorioamnionitis the tape must be cut and the baby delivered without delay, instead of performing a hysterotomy.

The mersilene tape can be cut either by a laparoscopy or posterior colpotomy. It is not essential to cut the knot or remove the tape. The tape can be cut at any place in the entire encercle, following which it will become loose and and the baby will deliver through open incompetent cervix.

Additionally, if an interval cerclage has been placed before this pregnancy and there is a first trimester foetal loss up 14 weeks or an Mtp must be performed due to a congenital anomaly a suction evacuation of the products of conception can be performed with the tape in situ.

Bed Rest: Post an emergency cerclage, the patient will require more bed rest compared to a patient post elective cerclage, as there are chances of a bag of membranes with amniotic fluid present between internal and external stitch (Mac donald's or Wurm) herniating into the cervix. The effect of gravity superadded to the above factors can aggravate a leak from the membranes. So, bed rest is advised, so that the bag of membranes does not herniate. If the procedure is electively planned, prolonged bed rest is not warranted as in the case of an emergency procedure and early ambulation is not only possible but advised.

To summarise, even if history indicated cerclage is not done, an ultrasound indicated elective cerclage and surveillance is better than performing a rescue cerclage.

Leaking: If there is a high leak with the membranes intact and no chorioamnionitis or preterm contractions, the pregnancy can be continued with a close watch as even patients with oligohydramnios will progress and will continue quite favourably. In one such case of twin pregnancy, at our centre the first twin had a high leak leading to IUD, but the second twin survived and was delivered by caesarean section at 35 weeks.

Tape Erosion: The laparoscopic tape in rare circumstances can erode into the bladder or the cervix. In one such case at our centre a lady had two successful pregnancies post lap encerclage who delivered by caesarean section at term. The mersilene tape extruded into the cervical canal a few years after her caesarean delivery and led to repeated vaginal infections and dysparenunia(Figure 12) The tape had to be removed by another laparoscopy. Thus we now advice removal of the mersilene tape at the time of caesarean once her family is complete.

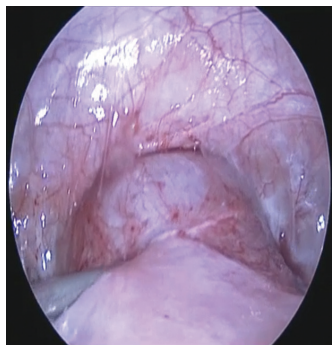

Figure 12: Migration of tape into the cervix, Sunrise Hospital, New Delhi. Operated by Dr. Nikita Trehan

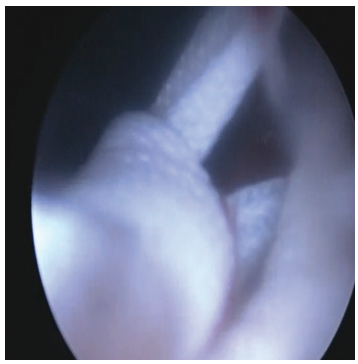

Figure 13: Hysteroscopic image of tape eroding into cervical canal, Sunrise Hospital, New Delhi. Operated by Dr. Nikita Trehan

Figure 14: Tape erosion into the cervix. Sunrise Hospital, New Delhi. Operated by Dr. Nikita Trehan

Myth-busting: In case of massive contractions with chorioamnionitis or otherwise/after the procedure, the tape will migrate and come into the cervical canal from one side. The tape will automatically become loose, hence the myth that 'in case of massive contractions there can be rupture uterus' is ill founded as the tape, once it comes into the cervical canal, becomes completely free and will not lead to a bucket handle or complete rupture of the uterus.

Recommended reading:

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When and How to Intervene in Adnexal Masses in Pregnancy

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Introduction

The incidence of adnexal masses in pregnancy ranges from 0.05-2.4% and among these 1-6% are malignant.[1] The detection of adnexal masses in pregnancy has increased over the years due to an increase in the use of antenatal ultrasounds and caesarean sections. Adnexal masses can be of ovarian origin (benign, low malignant potential or malignant), tubal (paratubal cysts, hydrosalpinx) or pedunculated fibroids. The presentation of these masses may vary from being asymptomatic to causing acute abdominal pain requiring emergency surgery. It is important to detect these lesions timely and plan management, whether expectant or surgical, taking into consideration the effect of treatment on the fetus versus delay in treatment till post-delivery. Functional ovarian cysts are managed expectantly and majority (70%) may resolve spontaneously.[2] Adnexal masses requiring surgical intervention include dermoid cysts, endometrioma, functional cysts, serous cystadenomas and mucinous cystadenomas.[3]

Clinical presentation

The adnexal masses in pregnancy can be asymptomatic and detected incidentally during antenatal ultrasound or during caesarean section. They may also be symptomatic and present as follows:

- Non-specific symptoms like dull aching abdominal pain or back pain, bowel or bladder symptoms.
- Palpable mass identified either during routine abdominal or vaginal antenatal examination.
- Acute abdominal pain due to torsion, rupture or haemorrhage of adnexal mass or due to degeneration of fibroid. Adnexal torsion is seen in around 5% of pregnant patient and it usually occurs when the size of adnexal mass is 6 cm or more.[4]
- Rarely, large adnexal masses can cause obstruction of labour by getting impacted in the pouch of douglas.

Most commonly encountered adnexal masses in pregnancy are ovarian in origin. Ovarian masses can be benign, of low malignant potential or malignant. Most of the benign masses are simple functional ovarian cysts like follicular or corpus luteal cysts. These cysts are usually detected during the first trimester antenatal ultrasound and are ≤ 5 cm. These cysts usually resolve by the early parts of second trimester. Theca lutein cysts, also known as hyperreactio- luteinalis, form as a result of high hCG levels. These appear as bilateral multi-septated cystic adnexal masses in pregnant women with gestational trophoblastic disease, multiple pregnancy or pregnancy following ovulation induction. These usually resolve post-delivery. Luteomas are solid benign lesions formed by proliferation of luteinised cells which mimic malignant lesion in appearance, both clinically as well as microscopically, and are associated with maternal hirsutism or virilization. Other benign adnexal lesions commonly encountered during pregnancy are mature teratoma, endometrioma, hydrosalpinx, paratubal or para-ovarian cysts and pedunculated fibroids. Heterotopic pregnancy is

seen in 1 in 30,000 cases and tubo-ovarian abscess are other very rare causes of adnexal masses.[5,6]

Epithelial ovarian tumors found in pregnancy can be of low malignant potential or invasive. Among the germ cell tumors, nearly three-fourth of tumors are dysgerminomas and remaining one-fourth are endodermal sinus tumor, immature teratoma or mixed germ cell tumors. Dysgerminomas are bilateral in 10-15% of cases and others are usually unilateral. Nearly half of the sex-chord stromal tumors are granulosa cell tumors, one-third are Sertoli-leydig cell tumor and remaining are unclassified stromal tumors. These tumors are usually unilateral and nearly 10-15% of these lesions produce virilization due to release of androgen hormone. Usually, ovarian tumors are detected in early stages during pregnancy and so five-year survival rate for ovarian tumors is between 72-91%.[7]

Diagnosis

Adnexal masses may present as already mentioned either with symptoms where history and examination (abdominal and rectovaginal) can help in reaching to the possible diagnosis or as incidental finding during routine ultrasounds. Ultrasound imaging is the first diagnostic modality of choice and it helps in differentiating between benign and malignant lesions depending on the size and appearance of the lesion. Ultrasound scoring systems like Sassone, Lerner, International ovarian tumor analysis (IOTA) simple rules and ADNEX (IOTA Assessment of Different NEoplasias in the adnexa) used in non-pregnant women can also be used in pregnancy. A meta-analysis of studies assessing ultrasound accuracy in diagnosing malignant masses in pregnancy reported a pooled sensitivity, specificity, positive and negative predictive value of 64%, 88%, 5.6 and 0.4 respectively among a total of 559 adnexal masses.[8]

In cases of doubt in differentiating lesions especially degenerating pedunculated fibroid and ovarian neoplasm following ultrasound imaging, MRI may be required. It is considered safe for both mother and the fetus. Gadolinium based contrast material should not be used due to fetal concern. CT should be avoided.

Tumor markers in pregnancy are difficult to interpret. Markers like alfa feto proteins, carcinoembryonic antigen, CA-125, h CG are involved in fetal development and cannot be used as in non-pregnant state. If malignancy is proven, then appropriate tumor marker can be measured in post-operative period as a part of follow-up.

Expectant management

In adnexal masses detected in the first trimester with radiological features suggestive of benign lesion, expectant management should be done. Also, asymptomatic benign masses of less than 10 cm persisting beyond first trimester can be managed conservatively after explaining the pregnant women the risks-benefits involved. In cases of pedunculated fibroids causing pain due to degenerative changes, expectant management with analgesic is done.

Surgical management

Patient selection

Pregnant women with adnexal mass having following characteristics require surgical intervention:[9]

- Persistence of adnexal mass beyond first trimester (less likely to be physiological).
- Size of mass more than 10 cm in diameter.
- Ultrasound features suggestive of solid or solid-cystic mass having papillary areas and septae suggestive of possibility of malignancy.
- Symptomatic adnexal mass

Timing of surgery

The optimal time for performing surgery for adnexal masses in pregnancy is after the first trimester due to following reasons:

- As organogenesis is completed by first trimester, risk of drug induced teratogenesis becomes minimal.
- Placenta takes over (progesterone production) in second trimester and surgery on ovary does not result in loss of pregnancy due to deficiency of progesterone.
- Spontaneous abortions due to certain fetal intrinsic factors usually happens by second trimester.

Gestational age between 16-20 weeks is considered to be best time to perform surgery.[10]

Certain indications may require emergency surgery and it is done irrespective of trimester although this is uncommon (<5%).

As already mentioned, some adnexal masses may be identified for the first time during caesarean section. Cystectomy is preferred in cases of benign looking masses, but if suspicious of malignancy, salpingoopherectomy is done and specimen should be sent for frozen section to plan further management.

Pre-anaesthesia checkup

Pre-anaesthetic checkup should include thorough history (gestational age and comorbid conditions related to pregnancy) and examination.

Anaesthesia

Aspiration prophylaxis should be administered. General anaesthesia and endotracheal intubation are essential, and the use of a laryngeal mask airway is not recommended. Maternal arterial CO_2 should be controlled, avoiding hypo- and hypercapnia, to maintain optimal uteroplacental blood flow and thus avoiding fetal acidosis. End-tidal CO_2 (ET CO_2) is used as a surrogate marker for arterial CO_2. Obstetrical anaesthesiologist should be a part of anaesthesia team.

Type of surgery

Surgical management of adnexal masses in pregnancy appears to be safe for both the mother and the fetus with comparable surgical and obstetric outcomes irrespective of the approach i.e., laparoscopy or laparotomy.

Laparoscopy is an acceptable alternative to laparotomy especially in cases of benign adnexal masses requiring surgical intervention. Robotic surgery in also a safe and feasible alternative when available. Ideally, it is best to perform surgery in the second trimester, but case series in literature consider laparoscopy to be safe in first and third trimester as well.[11,12] Ovarian cystectomy is the preferred treatment modality if pre-operative imaging and intraoperative findings are suggestive of benign mass. In cases of tubal masses, salpingectomy is done.

The points to be taken into consideration while using minimally invasive approach are as follows:[13,14,15]

- Experienced laparoscopist should carry out the procedure in a well-equipped centre.
- Limitations of visual field and surgical access due to enlarged uterus should be taken into consideration. There is an increased risk of vascular injury, uterine perforation and subsequent uterine rupture, laceration of the fetus or the placenta, infections, preterm delivery. Proper written informed consent is a must.
- Complete or partial left lateral decubitus position is recommended for optimal patient positioning during surgery.
- Creation of pneumoperitoneum should be gradual with careful monitoring of maternal hemodynamics. Initial insufflation pressure of 20-25 mm Hg is appropriate with intraabdominal pressure during surgery maintained at or below 12 mmHg.
- Fetal heart doppler assessment should be done pre-surgery as well as post-surgery. Intra-operative assessment is not recommended.
- Antenatal corticosteroid and magnesium sulphate for neuroprotection should be administered in selected cases.
- Anti-D administration, use of tocolytics and antibiotics is not required.
- Port placement should be individualised depending on the uterine size. Primary port site alternatives include 1-2cm below costal margin in the left (Palmers' point) or right mid-clavicular line or 3-6 cm above the umbilicus in the midline. Veres's needle, optical trocar or open Hasson's technique can be used. Secondary port placement will be according to uterine size, pathology and operative approach. Ipsilateral ports are considered better due to limited surgical space available due to gravid uterus.
- Specimen extraction should be in-bag.
- Ultrasound, bipolar and monopolar energy sources are safe.

Another type of procedure is Laparoendoscopic single site surgery (LESS). Limited multicentre case series using LESS in pregnancy are there in literature.[16] The procedure is performed via a single umbilical incision of 2-2.5cm. They highlight few advantages of the procedure. These are as follows:

- Incisional pain is less.
- Guarded entry reduces the chances of injury to uterus and other vital structures.
- Specimen extraction is also easy.

If the mass has features suggestive of malignancy in pre-operative imaging or on gross examination intra-operatively, then ipsilateral salpingooherectomy is done. If contralateral ovary seems affected, only then biopsy is done to confirm bilateral disease. It is important to minimize uterine manipulation. Both the specimens (ipsilateral tube-ovary ±contralateral ovarian biopsy) should be sent for frozen section analysis. It is important to inform pathologist about concurrent pregnancy. If the pathologist confirms a malignant tumor at frozen section, the surgeon

should be prepared to complete an adequate surgical staging procedure, and a gynaecology oncologist should be involved.

The surgical staging steps to be followed are as follows following ipsilateral salpingoopherectomy:

- Obtain peritoneal washings for cytological evaluation.
- Systemically explore all intra-abdominal organs and surfaces- liver, gall bladder, diaphragm, bowel, mesentery and peritoneum.
- Biopsy all suspicious areas. If no suspicious areas found and malignancy is confined to one ovary, obtain multiple biopsies from peritoneum of cul de sac, para-colic gutters, diaphragm, bladder and bowel mesentery.
- Omentum is then resected from transverse colon.
- Explore retroperitoneum to evaluate pelvic nodes and all suspicious nodes should be removed.
- Similarly, explore para-aortic nodes and remove all suspicious nodes. Nodes superior to inferior mesenteric artery should also be resected.
- In case of confirmed contralateral disease, perform contralateral salpingoopherectomy.
- Gravid uterus is preserved. If required, hysterectomy can be performed post-delivery following the course of chemotherapy.

Lymph node sampling can be omitted in following conditions, as these cases will require post-operative chemotherapy:

- Malignant germ cell tumors
- Stage IIIB/IIIC ovarian tumors

As pregnancy is a hypercoagulable state, appropriate mechanical and chemical thromboprophylaxis should be administered perioperatively and in post-operative period.

Chemotherapy in pregnancy

If chemotherapy is indicated, it is advisable to start it after the first trimester to minimize the risk of teratogenicity caused by the drugs. Platinum-based chemotherapy is preferred. Following are the indications of chemotherapy, post-surgery:

- All germ cell tumors except those with stage IA dysgerminoma or stage I grade one immature teratoma.
- Early-stage epithelial ovarian tumors if any of the following high-risk features is present: stage IA/IB, grade 2/3; stage IC or II (any histology); serous or clear cell carcinoma (stage IA, IB, IC, or II)
- Patients with stage III or IV epithelial ovarian tumors.

Conclusion

Most adnexal masses in pregnancy are benign and can be managed expectantly. But some benign and malignant masses may require surgical intervention. Timing and mode of surgery has to be individualised in each case. Laparoscopy is a safe alternative to laparotomy with its innate advantages of being minimally invasive.

References

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JOURNAL SCAN

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New Delhi

Does hyaluronic acid gel reduce intrauterine adhesions after dilation and curettage in women with miscarriage? A Multicentric randomized controlled trial (HYFACO Study)

American Journal of Obstetrics and Gynecology, 2022-10-01, Volume 227, Issue 4, Pages 597.e1-597.e8

Approximately 20% to 30% of all pregnancies end in miscarriage. Management of miscarriage requires dilation and curettage (D&C) in 30% of cases. Although D&C is frequently and routinely performed, it is not without risk: indeed, it can lead to intrauterine adhesions (IUAs), and in some cases amenorrhea and infertility. The most serious form of IUA, the Asherman syndrome, is a consequence of trauma to the endometrium producing partial or complete obliteration of the uterine cavity, resulting in amenorrhea, infertility, and recurrent pregnancy loss.

Intrauterine instillation of hyaluronic acid gel (HAG) is known to reduce IUA after operative hysteroscopy. Acunzo et al 15 reported in 2003 an auto-cross linked derivative of hyaluronic acid that seemed particularly suitable for preventing adhesion formation because of its higher adhesiveness and longer residence time on the injured surface compared with unmodified HAG. Hysteroscopic adhesiolysis procedures with and without the use of HAG were compared and found to result in fewer IUAs in the gel group than in the control group (6/43, 13.9% vs 13/41, 31.7%; P<.05). Hence, a large randomized controlled trial (HYFACO study, HYaluronic acid for FAusses Couches - miscarriages in French) was conducted to analyze the effectiveness of HAG in reducing IUAs after D&C for miscarriage.

Materials and Methods

The study was designed as a multicenter randomized open-label trial in 2 parallel arms to compare the efficacy of D&C with application of HAG (gel group) with that of D&C without application of HAG (control group). Nine centers participated in the study with the eligible women aged from 18 to 46 years, who had a miscarriage at 7 to 14 weeks of pregnancy, requiring D&C, and wanted another pregnancy were included. Patients with molar pregnancy, history of IUAs, or infected miscarriage were excluded. Patients were randomized within 2 days before the surgery by the investigator of each center using the internet (Clean- WEB, Telemedicine Technologies, Boulogne-Billancourt, France) to obtain the randomized strategy allocation. Block-balanced randomization in a 1:1 ratio, stratified on center, was prepared by an independent statistician. D&C was performed in the operation room, under either general or spinal anesthesia. After dilation of the cervix, aspiration was performed with a plastic suction cannula. If a patient was assigned to the control group, the intervention was completed. In the gel group, 10 mL of HAG (Hyalobarrier, Nordic Pharma, Hoofddorp, The Netherlands) were instilled into the uterine cavity with a prepared syringe and cannula. IUA diagnoses were rated following the American Society for Reproductive Medicine (ASRM) score, from stage I (mild) to III (severe). All patients received were asked to complete 2 follow- up surveys, the first at 6 and the second at 12 months after D&C. The primary endpoint was the rate of IUAs during an office hysteroscopy at 6 to 8 weeks after D&C. The

secondary endpoints were the severity of IUAs, evaluated by the ASRM score and the ASRM stage, fecundity at 12 months evaluated by the pregnancy rate, and obstetrical complication rate at 12 months.

Results

From November 2014 to May 2016, 348 patients with a written informed consent were included and randomized in 9 French centers. Among them, 343 patients underwent D&C and were analyzed in the modified ITT population (169 in the control group and 174 in the gel group. A total of 65 patients did not have the office hysteroscopy - 35 (20.7%) in the control group and 30 (17.2%) in the gel group. After multiple imputation, the rate of IUAs was 18.4% (31.1/169) in the control group and 9.1% (15.8/174) in the gel group (P = .0171), corresponding to a difference of 9.3% (95% CI, 17.0% to 1.6%). Among the 278 patients who had an office hysteroscopy, 24 of 134 (17.9%) patients in the control group had IUAs vs 13 of 144 (9.0%) in the gel group (difference, 8.9%; 95% CI, 16.9% to 0.9%; P = .0294). There were 110 (32%) responders with fully completed surveys at 6 and 12 months. Among them, overall pregnancy rate at 12 months after D&C was 64.5% (71/110) - 57.4% (27/47) in the control group vs 69.8% (44/69) in the gel group (P= .1789).

Conclusion

Intrauterine instillation of hyaluronic acid gel reduces the rate of intrauterine adhesions in women treated with dilation and curettage for miscarriage.

Upcomings

1. **CAMP FOR HPV VACCINATION** organized by Institute of Obstetric & Gynaecology under the aegis of NARCHI (National Association for Reproductive & Child Health of India) on 28th June, 2025 at Hall A, Auditorium, **Sir Ganga Ram Hospital, New Delhi 110060**.
2. **Workshops**
3. **NARCHI DELHI 2025 : 31st Annual Conference of National Association for Reproductive & Child Health of India (NARCHI)** will be held on **8th , 9th & 10th August 2025** at **India Habitate Centre, Lodhi Road, New Delhi.**

QUIZ TIME
Gynaecological Endoscopy

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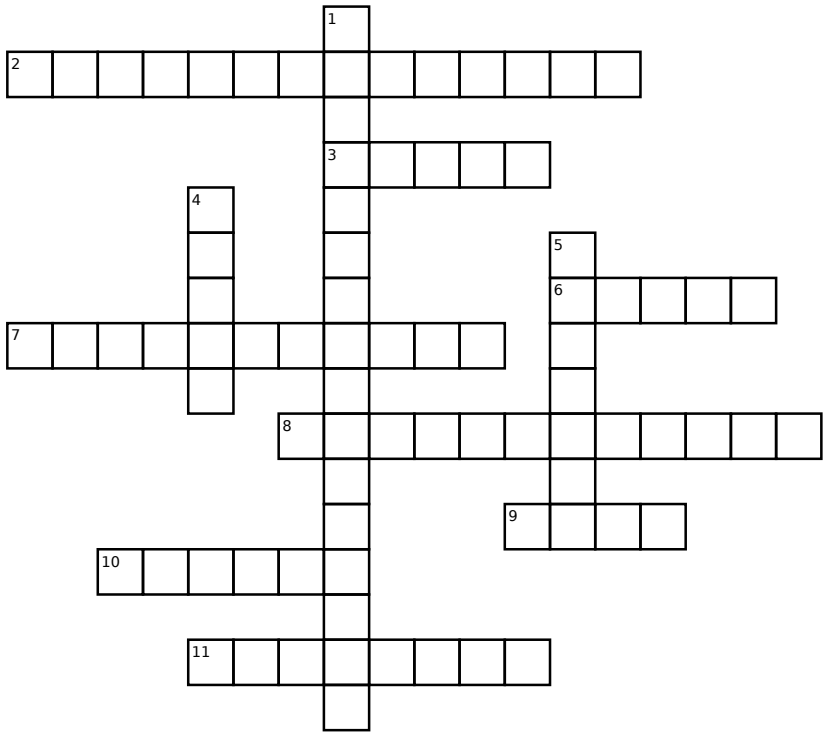
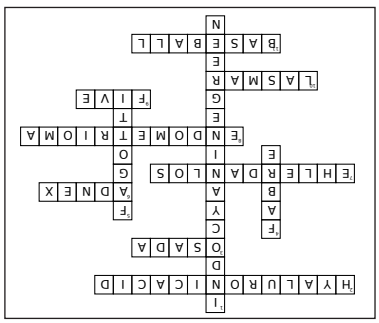


Down:

1. dye preferred for sentinel lymph node mapping
4. Technique for hysteroscopic isthmocoele correction in which only caudal end is resected
5. Predictive scoring method for advanced ovarian cancer surgical management

Across:

2. Gel which can be used after hysteroscopic adhesiolysis in Sherman's syndrome for adhesion prevention
3. Technique of adenomyosis surgery by open method which involves the bisection of uterus in midline
6. Acronym for IOTA Assessment of Different NEoplasias in the adnexa
7. congenital condition causing cervical incompetence
8. adnexal mass with ground glass echogenecity on ultrasound
9. minimum depth (in mm) under peritoneum for classifying as deep infiltrating endometriosis
10. pre-operative classification of sub-mucous fibroids
11. Suturing technique for fibroids which derives its name from a sport.



Answer

NARCHI DELHI 2025

31st Annual Conference of National Association for Reproductive & Child Health of India (NARCHI)-Delhi Branch

Organized by: *Institute of Obstetrics & Gynaecology Sir Ganga Ram Hospital, New Delhi*

Theme: "Plan Promote Propagate Women's Health"

PRE-CONFERENCE WORKSHOP

WORKSHOP FOR ASHA WORKERS

Date : 05th August 2025 **Timing:** 09:00 AM to 01:00 PM

Venue: Sir Ganga Ram Hospital, New Delhi

CONVENER

Dr. Shivani Agarwal

CO - CONVENER

Dr. Jyoti Sachdeva

Dr. Seema Singhal

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Organized by: *Institute of Obstetrics & Gynaecology Sir Ganga Ram Hospital, New Delhi*

Theme: "Plan Promote Propagate Women's Health"

PRE-CONFERENCE WORKSHOP

WORKSHOP FOR NURSES

Date : 05th August 2025

Timing: 02:00 PM to 05:00 PM

Venue: Sir Ganga Ram Hospital, New Delhi

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Dr. Seema Prakash

CO - CONVENER

Dr. Rachna Agarwal

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PRE-CONFERENCE WORKSHOP

WORKSHOP FOR ASHA WORKERS

Date : 06th August 2025 **Timing:** 09:00 AM to 01:00 PM

Venue: Sir Ganga Ram Hospital, New Delhi

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CO - CONVENER

Dr. Divya chauhan

Dr. Renuka Gupta

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PRE-CONFERENCE WORKSHOP

FETAL THERAPY : EXPECTATIONS AND PREPAREDNESS

Date : 06th August 2025

Timing: 02:00 PM to 05:00 PM

Venue: Sir Ganga Ram Hospital New Delhi

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Dr. Nandita Dhimri	**Dr. Nidhish Sharma**

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PRE-CONFERENCE WORKSHOP

POCT IN CRITICAL CARE OBSTETRICS

Date : 07th August 2025

Timing: 09:00 AM to 02:00 PM

Venue: Safdarjung Hospital New Delhi

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Dr. Jyotsna Suri	**Dr. Rekha Bharti**

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PRE-CONFERENCE WORKSHOP

HYSTEROSCOPY MADE EASY: A HANDS-ON WORKSHOP

Date : 07th August 2025 **Timing:** 09:00 AM to 05:00 PM

Venue: ASDC, Sir Ganga Ram Hospital, New Delhi

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Dr. Kanika Jain	**Dr. Swati Agrawal**

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PRE-CONFERENCE WORKSHOP

FROM SCREENING TO STRATEGY: PREVENTING GYNECOLOGIC CANCERS

Date : 07th August 2025 **Timing:** 01:00 PM to 05:00 PM

Venue: Conference Hall, Library Block UCMs and GTB Hospital

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PRE-CONFERENCE WORKSHOP

WORKSHOP ON CTG

Date : 08th August 2025

Timing: 09:00 AM to 01:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

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Dr. Aruna Nigam

CO - CONVENER

Dr. Sumedha Sharma

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PRE-CONFERENCE WORKSHOP

MENOPAUSE:UNLOCKING THE POTENTIAL OF THE SECOND INNINGS

Date : 08th August 2025

Timing: 09:00 AM to 01:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

ORGANIZING CHAIRPERSON

Dr. Poonam Laul

CONVENERS

Dr. Urvashi Miglani

Dr. Harvinder Kaur

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PRE-CONFERENCE WORKSHOP

PATIENT SAFETY

Date : 08th August 2025

Timing: 09:00 AM to 01:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

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Dr. Poonam Joon

CO - CONVENER

Dr. Mala Srivastava

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Theme: "Plan Promote Propagate Women's Health"

PRE-CONFERENCE WORKSHOP

PROMOTING FERTILITY IN ENDOMETRIOSIS FOR PRACTISING GNAECOLOGIST

Date : 08th August 2025 **Timing:** 09:00 AM to 01:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

CONVENER

Dr. Shweta Mittal Gupta

CO-CONVENER

Dr. Neeti Tiwari

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Conference Secretariat:
Dr. Mala Srivastava (Organising President)
Dr. Chandra Mansukhani (Organising Vice President)
Dr. Geeta Mediratta (Scientific Committee Chairperson)
Dr. Kanika Jain (Organising Secretary)
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NARCHI DELHI 2025

31st Annual Conference of National Association for Reproductive & Child Health of India (NARCHI)-Delhi Branch

Organized by: *Institute of Obstetrics & Gynaecology Sir Ganga Ram Hospital, New Delhi*

Theme: "Plan Promote Propagate Women's Health"

PRE-CONFERENCE WORKSHOP

GENETICS IN OBS & GYNAE

Date : 08th August 2025

Timing: 02:00 PM to 05:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

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CO - CONVENER

Dr. Neharika Malhotra

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PRE-CONFERENCE WORKSHOP

QUALITY IN MATERNITY CARE

Date : 08th August 2025

Timing: 02:00 PM to 05:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

CONVENER	CO - CONVENER
	
Dr. Sumita Mehta	**Dr. Anshul Rohatgi**

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PRE-CONFERENCE WORKSHOP

INFECTIONS IN PERINATOLOGY

Date : 08th August 2025

Timing: 02:00 PM to 05:00 PM

Venue: India Habitat Centre Lodhi Road, New Delhi

CONVENER

Dr. Nidhi Khera

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PRE-CONFERENCE WORKSHOP

OBSTETRIC ANAL SPHINCTER INJURIES WORKSHOP (OASIS)

Date : 08th August 2025

Timing: 01:00 PM to 05:00 PM

Venue: ASDC, Sir Ganga Ram Hospital, New Delhi

Participants: 20 Seats only

CONVENER

Dr. Geeta Mediratta

CO - CONVENERS

Dr. Sharmistha Garg

Dr. Huma Ali

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Conference Secretariat:

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PRE-CONFERENCE WORKSHOP

ADOLESCENT HEALTH

Date : 11th August 2025

Timing: 09:00 AM to 01:00 PM

Venue: Sir Ganga Ram Hospital, New Delhi

CONVENER

Dr. Latika Bhalla

CO-CONVENER

Dr. Chandra Mansukhani

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Date: 08th - 10th August 2025 | Venue: India Habitat Centre, New Delhi

QUIZ ON 9 August, 2025

PG QUIZ ON "High Risk Pregnancy"

Attractive prizes to be won

SCAN QR CODE FOR REGISTRATION

PATTERN OF THE QUIZ Preliminary Theory round at 08:00 am & Final round at 04:00 pm on 9th Aug 2025

Quiz masters:

Dr. Sharmistha Garg

Dr. Renuka Brijwal

Dr. Purvi Khandelwal

Conference Registration is Mandatory for Participation

Organizing Committee

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Theme: "Plan Promote Propagate Women's Health"

Date: 08th - 10th August 2025 | Venue: India Habitat Centre, New Delhi

The Organizing Committee of NARCHI Delhi Chapter is excited to announce a slogan competition.

SLOGAN ON 10 August, 2025

Slogan Competition on "Preventive Oncology"

Co-Ordinator:

Dr. Ashmita Jawa

Kindly send your slogan at narchidelhi2025@gmail.com

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Conference Registration is Mandatory for Participation

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Dr. Kanika Jain (Organising Secretary)

Conference Secretariat:

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Organized by: *Institute of Obstetrics & Gynaecology*
Sir Ganga Ram Hospital, New Delhi

Theme: "Plan Promote Propagate Women's Health"

08th - 10th August 2025

VENUE :
INDIA HABITAT CENTRE,
LODHI ROAD, NEW DELHI

Conference Brochure


SGRH
NARCHI DELHI 2025
31st Annual Conference of National Association for Reproductive & Child Health of India (NARCHI)-Delhi Branch
Organized by: Institute of Obstetrics & Gynaecology Sir Ganga Ram Hospital, New Delhi
Date: 08th - 10th August 2025 | Venue: India Habitat Centre, New Delhi
Theme: "Plan Promote Propagate Women's Health"
Last Date of Abstracts Submission is 30th June
Abstracts Submission is Now Open
Scan QR Code to Abstract Submission
SUBMISSION CATEGORIES
High Risk Pregnancy
Miscellaneous
Adolescent Health
Preventive Oncology
Endoscopy
Scan QR Code to Registration
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Date: 08th - 10th August 2025 | Venue: India Habitat Centre, New Delhi
Organized by: Institute of Obstetrics & Gynaecology Sir Ganga Ram Hospital, New Delhi
Early Bird Extended Till 15th JUNE 2025
SCAN QR CODE FOR REGISTRATION
JUNE 15 2025
Registration Categories | Early Bird Till (15th June 2025)
• Conference (without workshop) | INR 6000
• Combo (Conference + workshop) | INR 7000
• Conference (PG students) | INR 5000
• Combo (Conference + Workshop) for PG Students | INR 6000
• Accompany Person | INR 5000
• Faculty (Single Day only) | INR 3000
Organizing Committee
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Activities Held Under Narchi in April 2025

PUBLIC AWARENESS LECTURES ON RESPECTFUL MATERNITY CARE HELD ON 14TH APRIL, 2025

NARCHI DELHI CHAPTER - Together with Institute of Obstetrics & Gynaecology and Institute of Anaesthesiology, Pain & Perioperative Medicine, Sir Ganga Ram Hospital, New Delhi organized Public Awareness Lectures on Respectful Maternity Care at **Sir Ganga Ram Hospital, New Delhi**.

It was attended by 6 antenatal patients along with their husbands, an interactive session was held where basics of "Pregnancy and labour" was taken by Dr. Sharmistha Garg, "Introduction to Labour Analgesia" was taken by Dr. Anjeleena Gupta, "Dietary Management" was taken by Dr. Faria, "Physiotherapy in ANC" was taken by S/N Jyotsna, "Breast Feeding" was taken by S/ N Sushmita & "Labour Care Bundle" was taken by S/N Sarita Samaul. The topics were discussed in detail and all the related queries were answered. This sessions of Public Awareness Lectures were highly appreciated.

It was an interactive session and all the delegates really appreciated the event.

NARCHI EXECUTIVE COMMITTEE MEETING & CME ON CERVICAL CANCER PREVENTION & AWARENESS HELD ON 24TH APRIL, 2025

NARCHI DELHI CHAPTER - under the aegis of Institute of Obstetrics & Gynaecology, Breast & Cervical Cancer Prevention & Awareness Committee AOGD & NARCHI DELHI CHAPTER on 24th April 2025 at Auditorium, Hall A, Sir Ganga Ram Hospital.

Convener : Dr. Mala Srivastava, President of NARCHI Delhi Chapter & Chairperson : Dr. Seema Prakash, Chairperson of BCCAC, AOGD.

We were lucky to have star speakers who enlightened us on topics of " HPV – Facts & Files by Dr. Milind Shah", "Panel Discussion : Cancer among women: identification & prevention by Moderators Dr. Anju Singh & Dr. Srishti Prakash", "Advanced Wound Healing by Dr. Mala Srivastava", "Basics of Colposcopy by Dr. Seema Prakash", "Ablative or Excisional Procedures by Dr. Nilanchali Singh" & "Quiz (for Doctors & Nurses) by Dr. Nitasha Gupta & Dr. Rashmi Shriya". The CME was attended by approximately 60 delegates. It was an interactive session with lots of take home messages.

Activities Held Under Narchi in May 2025

CME ON OECC HELD ON 3rd MAY 2025

CME on **CME on OBSTETRICAL EMERGENCIES & CRITICAL CARE CONFERENCE 2025 was organized** at SGRH by **Institute of Critical Care of SGRH and Society of Critical Care Medicine Delhi Noida Chapter along with NARCHI Delhi Branch**. This event brought together multidisciplinary panel of experts to address the prevailing issue. There was wide participation of the clinicians all over Delhi NCR. It was a well structured CME with focus sessions & interaction case based learning.

PUBLIC AWARENESS LECTURES ON RESPECTFUL MATERNITY CARE HELD ON 14TH MAY, 2025

NARCHI DELHI CHAPTER - Together with Institute of Obstetrics & Gynaecology and Institute of Anaesthesiology, Pain & Perioperative Medicine, Sir Ganga Ram Hospital, New Delhi organized Public Awareness Lectures on Respectful Maternity Care at Sir Ganga Ram Hospital, New Delhi.

It was attended by 6 antenatal patients along with their husbands, an interactive session was held where basics of "Pregnancy and labour" was taken by Dr. Sharmistha Garg, "Introduction to Labour Analgesia" was taken by Dr. Anjeleena Gupta, "Dietary Management" was taken by Dr. Faria, "Physiotherapy in ANC" was taken by S/N Jyotsna, "Breast Feeding" was taken by S/ N Sushmita & "Labour Care Bundle" was taken by S/N Sarita Samul. The topics were discussed in detail and all the related queries were answered. This sessions of Public Awareness Lectures were highly appreciated.

It was an interactive session and all the delegates really appreciated the event.

WEBINAR HELD ON 24TH MAY 2025

WEBINAR on **24th May, 2025** on "C**ervical cancer screening : An update**" was organized by **Institute of Obstetrics & Gynaecology, Sir Ganga Ram Hospital, New Delhi** under the aegis of the **NARCHI Delhi Chapter & AOGD Breast & Cervical Cancer Prevention Committee & AOGD Oncology Committee.**

We were blessed by our chief guests Dr. Jayashree Sood, Guest of Honors Dr. Reena Yadav, Dr. Kanwal Gujral & Dr. Geeta Mediratta. The Co-ordinators of the webinar were Dr. Mala Srivastava, Dr. Seema Prakash & Dr. Bindiya Gupta.

We were happy to have Senior and experienced chairperson, who enriched the learning with their inputs and experience - Dr. Ratna Biswas, Dr. Anita Sabharwal, Dr. Sharmistha Garg, Dr. Harsha Khullar, Dr. Deepa Gupta, Dr. Chandra Mansukhani, & Dr. Sunita Kumar.

The speakers like Dr. Anshuja Singla who spoke on "Cervical Cancer Screening Guidelines : An LMIC Perspective", Dr. Seema Singhal's topic was "Portable Colposcopes : Can they replace the standard colposcope" & Dr. Nilanchali Singh's topic was "Management of Screen Positives". The Panel discussion

: was on Case Capsules, moderated by Dr. Satinder Kaur & Dr. Shruti Bhatia with Experts : Dr. Seema Prakash & Dr. Bindiya Gupta was an icing on the cake. ¬Panelists : Dr. Kanika Batra Modi, Dr. Pakhee Agarwal, Dr. Divya Singhal, Dr. Manisha Gupta, Dr. Archana Misra & Dr. Neeti Tiwari were our experienced panelists. Vote of thanks was delivered by Dr. Neeti Tiwari. The session had great interaction and active participation by the faculty members, delegates & panelists. The webinar was participated by 28 faculties and 92 delegates. This webinar was very well appreciated and all the attendees requested to hold such webinars frequently in the future. There is also request to obtain the recording of this webinar which was really informative and exhaustive. These are a few glimpses of the webinar.

Lunch CME on 6th June, 2025

Forum of obstetricians and gynecologists of south Delhi (FOGsd) in association with AOGD and NARCHI conducted CME at INDIA HABITATCENTRE, New Delhi. Chief Guests were renowned gynaecologist Dr. Kamal Buckshee and Dr. Neera Agarwal, Guest of Honours being Dr. Reena Yadav, Dr. Reena Malhotra & Dr. Pushpa Chandra. The CME was attended by more than 100 delegates and there were lots of take home messages.



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Dr. Huma Ali
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Dr. Debasis Dutta
(Workshop/
CME co-ordinator)


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Mrs. Uma Bhalla
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Ms. Josephine Cyrill
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Vice-President	Dr. Chandra Mansukhani
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Web editor	Dr. Shweta M Gupta
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	Dr. Rahul D Modi
	Dr. Ila Sharma
	Dr Manoj Modi
	Dr. Pankaj Garg
(Workshop/CME coordinator)	Dr. Debasis Dutta
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Team NARCHI Delhi 2024-2026

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	Dr Maya Sood
	Dr SS Trivedi
	Dr. B. G. Kotwani
	Dr. M. Kochhar
	Dr. P. Chadha
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	Dr Chitra Raghunandan
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	Dr Sangeeta Gupta
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