AOGD BULLETIN

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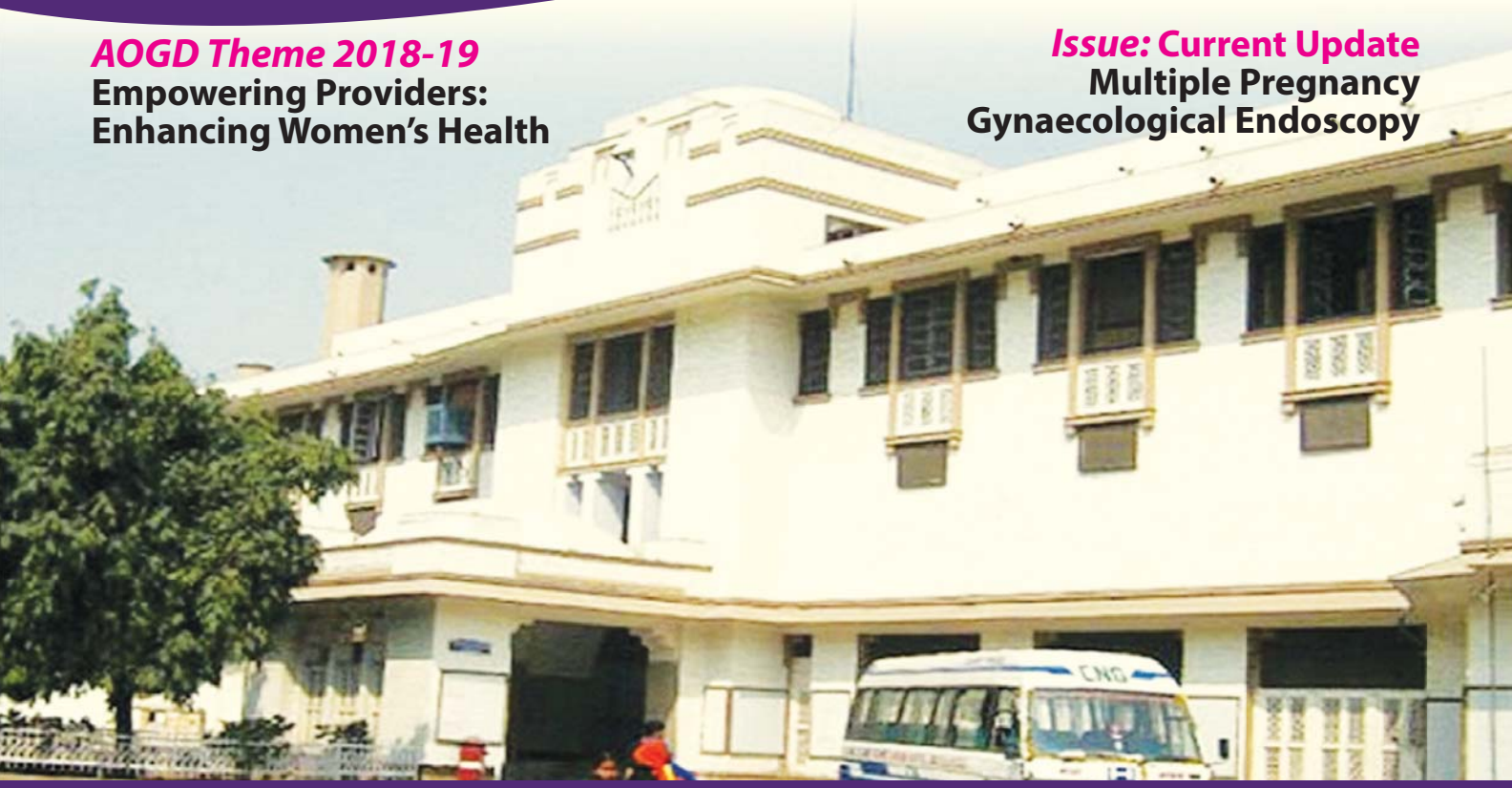
AOGD Theme 2018-19

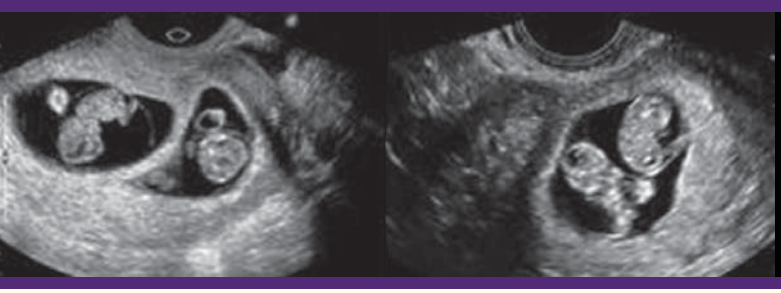
Empowering Providers: Enhancing Women's Health

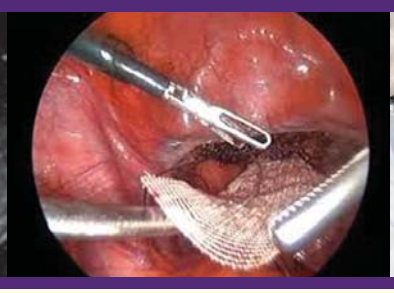
***Issue:* Current Update**

Multiple Pregnancy

Gynaecological Endoscopy







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President's Message

Dear AOGD members,

Warm Summer Greetings !

I hope you would have found the May 2018 issue of AOGD bulletin useful in your day to day practice. Two important topics Preeclampsia and PCOS which are increasing and have an important impact on womens health were discussed.

In today's busy world, we often forget the importance of taking care of our own health. It is well established that relevant dietary precautions, physical activity, relaxation techniques and Yoga are of great benefit to all. Incidentally, International Yoga day falls on 21st June and it would provide us an opportunity to promote such measures which will be beneficial for body, heart, mind and soul. Please include such advise in your day to day consultations which will also help in reducing the burden of non-communicable diseases in the society. Promoting the ban on plastics, conserving water, fuel and electricity and planting trees will not only have a positive effect on our environment but also our own health. We request all the Obstetricians & Gynaecologists to take out some time daily and look after their own health.

In the present issue of AOGD bulletin we will be apprising you with developments in field of multiple pregnancy and gynecological endoscopy

The forthcoming 40th Annual conference of AOGD will be held on 24th & 25th November 2018 at India Habitat Centre. Please save your dates.. I hope you will cherish the academic feast.. Those who want to conduct workshop may inform us.

Looking forward for great academic year ahead !

Dr Abha Singh
President AOGD (2018-19)

Secretary's Message

We have moved on in the second month of our term under AOGD. May was quiet happening and we had a lot of interactions and feedback too.

The month started with a FOGSI FORCE Rajdhani a two day PG teaching programme organised under aegis of medical education committee FOGSI and AOGD at SJ Auditorium, LHMC. It was well attended by postgraduates from all over the country with distinguished National Faculty.

Endoscopy subcommittee of AOGD held CME and hands on teaching in endoscopy on 5th May at Maulana Azad Auditorium New Delhi. CME on "Evidence based management of high risk pregnancy", organised by Fetal medicine subcommittee at AIIMS was a well thought of programme. CME on Molecular Pathology of Gynaecologic Oncology was held on 18th May at Indraprastha Apollo Hospital. Advances in molecular pathology, very apt for present day discussions on oncology were addressed.

A capsule CME on Preeclampsia: Current Update held on occasion of World Hypertension day was well appreciated by the students and faculty held at SJ Auditorium, LHMC on 19th May. Breast and cervical cancer awareness subcommittees and Adolescent committee of AOGD were active with their CME's.

The bulletin in its new format was well appreciated. We hope this issue addressing multiple pregnancy and gynecological endoscopy will apprise you of standards of management and what's new in the field

The preparations for the 40th conference of AOGD to be held at India Habitat centre on 24th and 25th November 2018 are on full swing and we hope to present an academic feast enjoyable by all members of AOGD. We are also sorting out the address problems of various members of AOGD who are not receiving the bulletin. This is for everyone's information that bulletin is available on the website aogd.org in its full.

Hoping for a year full of interactions, discussions and learning.

Dr Kiran Aggarwal
Secretary AOGD (2018-19)

Monthly Clinical Meeting

Monthly Clinical Meet will be held at Army Hospital Research & Referral, New Delhi on **Friday, 29th June, 2018 from 04:00pm to 05:00pm**.

Editorial Team's Message

Dr Ratna Biswas
Editor

Dr Pikee Saxena

Dr Sharda Patra

Dr Swati Agrawal

Co-Editors

Dear Readers,

Greetings from the Editorial team!

We are back with the second issue of AOGD bulletin from the AOGD office at Lady Hardinge Medical College & Smt. SSK Hospital. Our focus for this issue is on Multiple Pregnacy and Gynaecological Endoscopy.

Multiple pregnancy accounts for 3% of live births and has a perinatal mortality which is 3-5 times higher than singleton pregnancy with a 2.5 times higher maternal mortality. Keeping this in mind we should be on a red alert for the unique problems encountered in multiple gestation so that they are tackled timely and appropriately to minimize untoward outcome. The first article in this issue comprises of standards of care for managing multiple pregnancy which gives us an evidence based approach for the management of multiple pregnancy. The following article on "Recent advances in fetoscopic procedures" gives a review on the management of complication encountered in multiple gestation more so in monochorionic twins like TTTS, TRAP, selective fetal growth restriction (sFGR) and discordancy for malformation in the two fetuses. The controversy on the**"**Acceptable time interval for delivery of 2nd twin" is addressed in a very distinctive way by ESSENCE meaning "**E**a**S**yu**S**eful**E**vide**N**ce". The uniqueness of this article is that the author has also addressed the methods by which evidence may be comprehensively collected and presented. Case approach to "Twins with one molar pregnancy and coexististing live fetus" is a challenging condition because to differentiate a twin pregnancy with one molar with other conditions like a singleton pregnancy with partial molar changes in placenta, placental mesenchymal disease or choroio-angioma of placenta etc. is technically difficult antenatally. Not all conditions require termination of pregnancy wherein lies the importance of accurate diagnosis.

We are back with another motivational article by Dr Mohit Gupta on "Creating Happiness-A Choice?" The changing perspective on how one chooses happiness will enable one to evolve as a person and be at peace with the inner self.

Gynecological endoscopic procedures has evolved over time with almost all major gynaecological surgeries coming under the ambit of laparoscopy. We have discussed the topic beginning with the "Basic setting of equipments in laparoscopy and hysteroscopy" which is a must know area for anyone venturing into minimally invasive surgery. Recent advances in technology has ensured the foray of laparoscopy into pelvic reconstructive procedures including vaginoplasty. It calls for an interesting reading. Though laparoscopic procedures are performed in malignancies including cervical and endometrial cancers, controversy exists in the use of laparoscopy in ovarian cancers. This is dealt with in depth in this issue with a thorough search on evidence to define the role of laparoscopy in the management of ovarian cancer. Deeply infiltrating endometriosis is a nightmare to manage, largely due to the significant rate of visceral involvement which may cause injury or mandate resection anastomosis as a part of the management. The case approach section deals on this subject and clearly defines the types of deeply infiltrating endometriosis and their management laparoscopically.

The maze of knowledge-crossword and the pictorial quiz is yet another exercise to test and sharpen your knowledge on the above subjects plus it also reflects whether the articles are keeping you interested or not. So do participate and send us your answers.

Journal scan has brought forth important issues being researched currently.

The authors have worked hard immensely on their manuscripts to provide an immaculate review on the topics and must be congratulated for their efforts.

I hope this bulletin maintains the momentum gained as adjudged by your response to our previous edition and keeps you gripped. The prospects of improving will be enhanced by your comments and suggestions.

Happy Reading!!

Editorial Team

STANDARDS OF CARE

Antenatal Management of Twin Pregnancy

Vidhi Chaudhary
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Dr Vidhi Chaudhary

Introduction

The incidence of multiple births has risen since the decade due to increase use of assisted reproduction techniques, including in vitro fertilization (IVF). Multiple births currently account for 3% of live births. Maternal mortality in multiple births is 2.5 times higher than for singleton births. Peri-natal mortality is 3-5 times higher in twins than singletons, with significantly higher losses in monochorionic (MC) twins (11%) compared with dichorionic (DC) twins (5%).Because of the increased risk of complications, women with multiple pregnancies need more monitoring and increased contact with healthcare professionals during their pregnancy.

There are two types of twins in terms of zygosity:

1. Monozygous twins - Splitting of a single fertilized oocyte produces a monozygotic twin pregnancy with two genetically-identical co-twins. One third of twins are monozygotic. Of these (80%) form a MCDA (monochorionic diamniotic) pregnancy, 20% DCDA (dichorionic diamniotic), and approximately 1% become MCMA (monochorionic, monoamniotic).
2. Dizygous twins occur when two separate ova are fertilized by two different sperm. These always form DCDA pregnancy.

Antenatal Care in Multiple Pregnancies

Hospitals should organize antenatal and postnatal care around consultant led, multidisciplinary multiple pregnancy clinics. Mothers with a multiple pregnancy have a need for specific information, including discussion of delivery and postnatal wellbeing.

As per NICE guidelines

Clinical care for women with twin pregnancies should be provided by a nominated multidisciplinary team consisting of:

a. Core team of named specialist obstetricians, specialist midwives and ultrasonographers, all of whom have experience and knowledge of managing twin and triplet pregnancies
b. An Enhanced Team For Referrals, Which Should Include:
   - A perinatal mental health professional
   - A Women's Health Physiotherapist
   - An Infant Feeding Specialist
   - A dietician.

Antenatal Care in Twin Pregnancy

1. Establishing Chorionicity and Gestational Age

Determination of chorionicity is crucial for correct risk assessment, counseling and management for complications such as TTTS, fetal growth restriction and single fetal death. Ensure good quality ultrasound to establish dates, chorionicity and amnionicity by an expert. The best time to diagnosis chorionicity by ultrasound is at 11-13 weeks 6 days gestation. The presence of the lambda or 'twin peak sign' for dichorionicity and the 'T sign' for monochorionicity.

2. Antenatal Booking and Ultrasound Scans

Number of Visits as per Nice Guidelines.

- Uncomplicated Dichorionic Twin Pregnancies
  - Combine appointments with chorionicity determining scans scans (11 weeks 0 days to 13 weeks 6 days) and then at estimated gestations of 20, 24, 28, 32 and 36 week.
  - Offer additional appointments without scans at 16 and 34 weeks
- Uncomplicated Monochorionic Diamniotic Twin Pregnancies
  - Combine appointments with chorionicity determining scans (approximately 11 weeks 0 days to 13 weeks 6 days) and then at estimated gestations of 16, 18, 20, 22, 24, 28, 32 and 34 weeks. Fetal ultrasound assessment should take place every 2 weeks in uncomplicated monochorionic pregnancies from 16+0 weeks onwards until delivery.
  - Allow 45 minutes for the anomaly scan in twin pregnancies (as recommended by FASP)
  - Allow 30 minutes for growth scans in twin and triplet pregnancies
  - Fetal echocardiography must be offered at 20-24 weeks.

3. Diet, Lifestyle and Nutritional Supplements

Recommend folic acid, iron, calcium and iodine supplements:

- Calcium 1.2 g/day in woman with low calcium intake
- Folic acid 500mcg/day
- Elemental iron 80-100mg/day.

Perform a full blood count at 20–24 weeks to identify women who need early supplementation with iron or

folic acid, and repeat at 28 weeks.

- Perform screening for gestational diabetes at 26-28 weeks gestation or as per recommendations followed by the treating centre.

4. Fetal Complications and Screening

Screening for Down's syndrome- greater likelihood of Down's syndrome in twin pregnancies with high false positive rates. There is increased likelihood of invasive testing and complications due to invasive testing. Following is done for screening

- Map the fetal positions
- Use the combined screening test (nuchal translucency, beta-human chorionic gonadotrophin, pregnancy-associated plasma protein-A) for Down's syndrome when crown–rump length measures from 45 mm to 84 mm (at 11 weeks 0 days to 13 weeks 6 days)
- Calculate the risk of Down's syndrome per pregnancy in monochorionic twin pregnancies.
- Calculate the risk of Down's syndrome for each baby in dichorionic twin pregnancies. If in case of woman book late in pregnancy, consider second trimester serum screening and inform potential problems of such screening. These include the increased likelihood of pregnancy loss associated with double invasive testing because the risk of Down's syndrome cannot be calculated separately for each baby. Non-invasive prenatal screen (NIPS) can usually be performed in twin pregnancies, although has not been clinically validated in high order multiple pregnancies.

In women with monochorionic twin pregnancies who 'miss' or who have unsuccessful first trimester screening for aneuploidy, second trimester screening by the quadruple test should be offered.

Refer to Fetal Medicine Centre for the Following:

a. Monochorionic Monoamniotic (MCMA) Twins
b. Pregnancies Complicated by any of the following:
   - Discordant Fetal Growth
   - Fetal Anomaly
   - Discordant Fetal Death
   - Feto-Fetal Transfusion Syndrome
c. Chorionic Villus Sampling (CVS) or Amniocentesis Required

Intrauterine Growth Restriction: Diagnosis

Growth in dichorionic pregnancies reflects both genetic potential and placental function, but monochorionic twin growth is also subject to the effects of unequal blastomere separation and placental vascular communications.

- Abdominal palpation or symphysis–fundal height measurements are not reliable for diagnosing fetal growth restriction.
- Estimate fetal weight discordance(growth discordance of > 25%) using two or more biometric parameters at each ultrasound scan from 20 weeks. Serial scans are required at intervals of less than 4 weeks.
- Calculate inter-twin size difference (as %) at each ultrasound using estimated fetal weight (EFW):

$$\frac{\text{Larger twin EFW – smaller twin EFW}}{\text{Larger twin EFW}} \times 100$$

Special Concerns in Monochorionic Twins:

1. **Selective growth restriction (sGR) – Occurs in** approximately 10–15% of monochorionic twins. Selective growth restriction (discordant growth) is defines when both fetuses have an EFW greater than the tenth centile and there may be significant size discordance. sGRO surveillance of growth-restricted twins will include monitoring of fetal Doppler's (umbilical artery, MCA and ductus venosus), liquor volume and biophysical profile.

Types of sGR:

- Type I Growth discordance but positive diastolic velocities in both fetal umbilical arteries.
- Type II Growth discordance with absent or reversed end-diastolic velocities (AREDV) in one or both fetuses.
- Type III Growth discordance with cyclical umbilical artery diastolic waveforms (positive followed by absent then reversed end-diastolic flow in a cyclical pattern over several minutes [intermittent AREDV; iAREDV]).

Type I sGR – It has favorable perinatal outcomes. (more than 90% perinatal survival).

Type II sGR – There is high risk (up to 29%) of intrauterine demise of the growth-restricted twin and/or preterm delivery.

Type III sGR is associated with a 10–20% risk of unexpected fetal demise of the smaller twin (despite stable ultrasound features and/or normal computerized Cardiotocography [CTG] hours or days before) with a 10–20% risk of neurological injury in the larger twin.

2. FETO-FETAL TRANSFUSION SYNDROME (Twin To Twin Transfusion Syndrome –TTTS)

It develops in 10-20 % monochorionic pregnancies from shared placenta via multiple vascular anastomoses between the circulations of each co-twin, such that there is a flow of blood from one twin (the 'donor') to the other (the 'recipient'). This results in hypovolaemia and oligohydramnios in the donor twin and hypervolaemia and polyhydramnios in the recipient.

Pathophysiology:

Superficial and deep placental vascular connections are present in the monochorionic placenta. Deep anastomoses occur between arteries and veins. These arteriovenous (AV) connections are unidirectional, and require the presence of 'balancing' superficial anastomoses to prevent TTTS. Superficial anastomoses are bi-directional and are found between arteries (arterio-arterial anastomoses) and veins. Bidirectional flow allows compensatory relaxation of pressure differences within the placenta. Absence or reduction in superficial anastomoses predisposes to TTTS.

Diagnoses

- Do not screen for feto-fetal transfusion syndrome using nuchal translucency in the first trimester.
- Ultrasound examinations between 16 and 26 weeks of gestation (including to identify membrane folding) focus primarily on the detection of TTTS.
- After 26 weeks, when first presentation of TTTS is relatively uncommon (but may occur)
- Start diagnostic monitoring with ultrasound from 16 weeks. Repeat monitoring 2 weekly until delivery to allow time to intervene if required.
- At every ultrasound examination, liquor volume in each of the amniotic sacs should be assessed with a deepest vertical pocket (DVP) depth measurement and umbilical artery pulsatility index (UAPI). Fetal bladders must be visualized.

The Quintero classification system of feto-fetal transfusion syndrome

Stage Classification:

I - There is a discrepancy in amniotic fluid volume with oligohydramnios of a maximum vertical pocket (MVP2 cm) in one sac and polyhydramnios in the other sac(MVP 8 cm). The bladder of the donor twin is visible and Doppler studies are normal

II - The bladder of the donor is not visible, but Doppler studies are normal

III - Abnormal Doppler studies in either twin characterized by reversed EDF in the umbilical artery, reversed flow in the ductus venosus or pulsatile umbilical venous flow

IV - The presence of hydrops in the recipient

V - Death of one or both twins

Management options

a. Laser ablation – Selective endoscopic placental laser ablation aims to coagulate the vascular anastomoses contributing to TTTS. Amnioreduction is performed following laser ablation in most cases. The Eurofetus randomized trial demonstrated increased survival of one or both twins following laser (76%) compared with serial amnioreduction (56%). Following successful laser ablation, the incidence of intrauterine death is around 13-33%.

b. Serial amnioreduction and septostomy – Amnioreduction aims to reduce liquor volume in the recipient twin and to prevent premature delivery. It requires repeated procedures and does not treat the underlying cause of feto-fetal transfusion. Associated risks include premature labour, ruptured membranes, chorioamnionitis and placental abruption. It's not an preferred approach.

c. Selective occlusion - Termination of discordant anomalous or severely affected twin fetus by cord occlusion is an option to increase survival chances in the other, less affected twin. Selective feticide by intravascular injection of an abortifacient is not an option in monochorionic pregnancies because of the presence of placental anastomoses. The potential risks of intrafetal/ umbilical cord ablative procedures includes the risk of co-twin loss and neurological morbidity.

Monitoring of feto-fetal transfusion syndrome (Post Treated)

- Weekly ultrasound assessment (including examination of the fetal brain, heart and limbs) and serial measurements of UAPI, MCA PSV and ductus venosus Doppler velocities should be performed.
- After 2 weeks post treatment, the ultrasound interval is increased to every 2 weeks (noting UAPI, MCA PSV and DVP) with measurement of adequate fetal growth (by calculating EFW).
- In treated TTTS pregnancies, ultrasound examination of the fetal heart should be performed by the fetal medicine specialist to exclude functional heart anomalies.

3. TWIN REVERSED ARTERIAL PERFUSION SEQUENCE (TRAP)/ACARDIAC TWIN

It is a rare complication of monochorionic twin pregnancies, occurring in approximately 1 in 35 000 cases arterial blood flows in a retrograde fashion from the pump twin towards the affected twin via a single arterio-arterial anastomosis). The poorly-oxygenated blood entering the circulation of the affected twin preferentially perfuses the caudal structures , resulting in abnormal development of all organ systems. The head and the heart are commonly absent, with a preserved central trunk and rudimentary spine. Lower limbs may be more preserved due to the improved blood supply. Acardiac twins are frequently hydropic due to their abnormal lymphatic and vascular drainage.

Management

Primary aim of management is to improve survival chances for the structurally normal pump twin. Options

for intervention include

a. Cord occlusion techniques, or
b. An intrafetal approach to ablate the vasculature in the acardiac twin.

4. TWIN ANEMIA POLYCYTHEMIA SEQUENCE (TAPS)

It occurs in 2% of uncomplicated monochorionic diamniotic (MCDA) and up to 13% of monochorionic twins post laser ablation.

- TAPS is a form of TTTS characterised by a significant discordance in hemoglobin level between twins without significant amniotic fluid discordance.
- TAPS should be screened for following fetoscopic laser ablation for TTTS other complicated monochorionic pregnancies like sGR.
- Screening is done by serial middle cerebral artery peak systolic velocity (MCA PSV).

Diagnoses

Increased MCA PSV in the donor, suggestive of fetal anaemia (greater than 1.5 multiples of the normal median), and a decreased MCA PSV in the recipient twin, suggestive of polycythaemia (less than 1.0 multiples of the normal median), with the absence of significant oligohydramnios/polyhydramnios sequence.

5. SINGLE FETAL DEATH

Single fetal death after 20 weeks of gestation occurs in about 5 percent of twin pregnancies and are more common in monochorionic pregnancies. As placental vascular anastomoses remain intact in monochorionic pregnancy, there is a risk of acute 'inter-twin' transfusional events causing fetal death and morbidity in the form of neurological morbidity.

- Metanalysis have shown that co-twin death after single fetal death in monochorionic and dichorionic twins are (15% compared with 3%), rates of preterm delivery after single fetal death (68% compared with 54%), rate of neurodevelopmental impairment after single fetal death (26% compared with 2%) respectively.

Management

Screen for fetal anemia and neurological morbidity

a. Fetal anaemia is assessed by measurement of the fetal MCA PSV using Doppler ultrasonography. Presence of an increased MCA PSV in the surviving twin would suggest fetal anaemia. Treatment by intrauterine transfusion is controversial, as this may improve fetal survival without reducing the long-term risks of neurological morbidity.
b. Fetal magnetic resonance imaging of the brain may be performed 4 weeks after co-twin demise to detect neurological morbidity in monochorionic pregnancy.

6. VANISHING TWIN AND FETUS PAPYRACEOUS

Up to 21% of twin pregnancies are said to be complicated by either miscarriage or loss of one twin in the early stages Loss of a co-twin in the second or third trimester carries a risk of preterm delivery, neurological sequelae or death to the remaining fetus

7. CONJOINED TWINS

The prevalence is one in 90 000 to 100 000 pregnancies. Incomplete division of the embryo may result in conjoined twins. Termination of pregnancy is advocated after ultrasound diagnoses .Survival depends on the organs joined. 50% are stillborn and of the survivors up to 75% may have inoperable defects

Maternal Complications

1. HYPERTENSION

- Measure blood pressure and test urine for proteinuria to screen for hypertensive disorders at each antenatal appointment in twin pregnancies.
- Advise women with twin pregnancies to take 75 mg of Aspirin daily from 12 weeks until the birth of the babies if they have one or more of the following risk factors for hypertension:

First pregnancy

- Age 40 years or older
- Pregnancy interval of more than 10 years
- BMI of 35 kg/m2 or more at first visit
- Family history of pre-eclampsia.

2. PRETERM BIRTH

The risk of preterm birth is 50% higher in multiple pregnancies than in singleton pregnancies.

Predicting the risk of preterm birth

- Twin pregnancies have a higher risk of spontaneous preterm birth if they have had a spontaneous preterm birth in a previous singleton pregnancy.
- Do not use fetal fibronectin testing alone or home uterine activity monitoring and cervical length (with or without fetal fibronectin to predict the risk of spontaneous preterm birth in twin or triplet pregnancies as theyhave no proven benefit.
- Preventing preterm birth:

Following interventions have no proven benefit in preventing spontaneous preterm birth in twin pregnancies:

- bed rest at home or in hospital
- intramuscular or vaginal progesterone
- cervical cerclage
- oral tocolytics.

3. THERE IS INCREASED INCIDENCE OF FOLLOWING:

a. Hyperemesis
b. Gastro-esophageal reflux
c. Gestational diabetes mellitus
d. Anaemia
e. Operative delivery
f. Post-partum haemorrhage
g. Perinatal mental health disorders

Timing of Birth

A. Offer women with uncomplicated:
   - Monochorionic twin pregnancies -elective birth from 36 weeks 0 days, after a course of antenatal corticosteroids.
   - Dichorionic twin pregnancies -elective birth from 37 weeks 0 days and triplet pregnancies elective birth from 35 weeks 0 days, after a course of antenatal corticosteroids.

B. sGR (selective growth restriction)
   - In type I sGR, planned delivery should be considered by 34–36 weeks of gestation if fetal growth velocity is adequate and umbilical artery Doppler waveforms are normal.
   - In type II and III sGR, delivery should be planned by 32 weeks of gestation, unless fetal growth velocity is significantly abnormal or there is worsening of the fetal Doppler assessment. Abnormal ductus venosus Doppler waveforms (reversed flow during atrial contraction) or computerised CTG short-term variation should trigger consideration of delivery.

C. Monochorionic twin pregnancies previously complicated by TTTS and treated-
   - Delivery should be between 34+0 and 36+6 weeks of gestation

D. Monochorionic monoamniotic twin –

   MCMA twins have a high risk of fetal death and should be delivered by caesarean section between 32+0 and 34+0 weeks following administration of steroids. This is due to high incidence of cord entanglement and occlusion. This complication is not preventable and cannot be predicted by cardiotocographic monitoring.

Mode of Delivery

- Current practice supports the policy of planned vaginal birth in uncomplicated pregnancies with a cephalic first twin, unless the mother prefers Caesarean delivery
- Delivery should be conducted in a unit where continuous electronic fetal monitoring is available and where there is access to early recourse to Caesarean section if required.

Conclusions

Multiple pregnancy is a high risk pregnancy causing increase in both maternal and fetal complications. Antenatal care focuses on accurate diagnosis of chorionicity in the first trimester preferably prior to 14 weeks. Women with multiple pregnancies have an increased risk of miscarriage, anaemia, hypertensive disorders, hemorrhage, operative delivery and postpartum complications. Monochorionic pregnancies have higher fetal complications than dichorionic pregnancies and hence require intensive monitoring. Vaginal delivery must be an aim for uncomplicated twin pregnancies.

Suggested Reading

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RECENT ADVANCES

Fetoscopic Procedures for Multiple Pregnancy


Dr K Aparna Sharma

K Aparna Sharma[1], Latika Chawla[2]
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1. *What is Fetoscopy ?*

The recognition of the fetus as a 'Patient', has paved way for considerable developments in the field of fetal medicine. One of the most important advances in this area has been the development of Fetal Endoscopy i.e. Fetosocpy.

Fetoscopy is an endoscopic procedure that allows access to the uterine cavity, fetus, umbilical cord and the placenta through specially designed endoscopic instruments, placed percutaneously, under ultrasound guidance, through the mother's abdominal wall.

2. *History*

This technique was first performed trancervically, by Westin in 1954, in women undergoing therapeutic abortion from 14-18 weeks of period of gestation (1). The transabdominal approach was used by Mandelbaum in 1967 for fetal blood sampling and intrauterine blood transfusion in Rh isoimmunized pregnancies. The term "Fetoscopy' was coined in the year 1973 by Scrimgeour. The technique was primarily developed for fetal blood sampling, fetal tissue sampling and visualization of the fetus in utero.

3. *Indications for Performing Fetoscopy*

Fetoscopy is currently being utilized for

1. Minimally invasive repair of spina bifida, meningomyelocele and sacrococcygeal teratoma
2. Fetoscopic tracheal occlusion (FETO) in cases of isolated congenital diaphragmatic hernia
3. Laser fulgration of posterior urethral valve, amniotic band syndrome
4. Management of complicated monochorionic twin pregnancies[2].

Although fetoscopy has been performed for all of the above mentioned indications, it is most commonly performed for the management of monochorionic twins with considerable success.

4. Fetoscopy in complicated monochorionic twin pregnancies

Monochorionic twin pregnancies have their own set of unique complications. All monochorionic twins have communications between the two as they share a common placenta. It is the presence of unbalanced communication which result in pathological conditions .

Death of one twin in complicated monochorionic pregnancies creates a 10% risk of fetal demise in the other twin and almost 10-30% risk of neurological deficit in the surviving twin[3,4,5]. This results because the death of a twin leads to acute transfusion from the surviving twin to the dead twin resulting to acute hypotension in the surviving twin. It may therefore become important to selectively reduce one fetus by coagulating the umbilical cord of the twin having an impending demise to safeguard the other. This is known as Selective Fetal Reduction and can be performed by ultrasound guided percutaneous procedures (laser ablation, radiofrequency ablation, bipolar cord coagulation) or by introduction of bipolar forceps under fetoscopic guidance.

The complications that can arise in monochorionic twins can be:

1. Twin to twin transfusion Syndrome (TTTS)
2. Twin reversed arterial perfusion sequence (TRAP),
3. Selective fetal growth restriction (sFGR)
4. Discordancy for malformation in the two fetuses.

4.1 *Fetoscopy in TTTS*

As the basic pathophysiology of TTTS and selective growth restriction results from unbalanced arteriovenous communications , the approach to treatment is to sever the communications and dichorionize the fetuses. Fetoscope is used to visualize these communications and laser energy is utilized to coagulate the vessels.

Fetoscopy Guided Laser Ablation of Placental Anastomosis: Procedure

TTTS arises as a result of imbalance of blood flow from one twin to the other through intertwin placental anastomoses. The donor twin develops hypovolemia, reduced renal perfusion thus oligoamnios, growth restriction and gets "stuck". The recipient twin suffers from fluid overload, polyhydramnios, polyuria and may develop hydrops. Fetoscopic laser ablation of the anastomotic vessels is used to separate the two fetal circulations thus helping in the treatment of TTTS.

This procedure is performed 16-26 weeks of period of gestation. The laser coagulation is performed as an outpatient procedure under local anesthesia with intravenous sedation. As discussed above, under ultrasound guidance, 3-5 mm trochar is used to gain access into the amniotic cavity, through the uterus in

an area without the placenta. A 600 micron laser fibre is inserted through the sided channel under fetoscopic guidance and under vision is used to coagulate the anastomotic vessels after tracing the equator. An energy of 20 to 40 watts from a diode or YAG laser is delivered to the vessels. Simultaneous amnioinfusion with warm normal saline can be done for better visibility and to compensate for the extra loss of amniotic fluid. A Cochrane review concluded that laser ablation should be considered for managing all stages of TTTS as it leads to better 6 year survival and significant improvement in neurodevelopmental outcomes[5].

Fetoscopic Bipolar Cord Coagulation for Selective Fetal Reduction in TTTS

Fetoscopy is safely performed under intravenous sedation and local anesthesia, though some centers may prefer to give general/epidural anesthesia. Bipolar cord coagulation is performed only from 16-25 weeks period of gestation. Doing the procedure under ultrasound guidance allows accurate placement of the trocar and cannula. We choose a site away from the placenta but with best access to allow intervention on the placenta or the fetus/cord. Cannulas of 3-5mm are generally used. A 1-2mm fibreoptic endoscope (Image 1) is introduced through a main port and bipolar forceps with insert is introduced into the amniotic cavity under vision via an accessory port. Special bipolar forceps with a side port for the optical fetoscope can also be used (Image 2). The cord is grasped under vision at the umbilical insertion and absence is checked for by applying Doppler. Cord coagulation is performed by using bipolar energy (20-40 watts) in 3-4 bursts of 10 seconds each. Two adjacent areas of the cord are coagulated. Absence of fetal heart is then confirmed by ultrasound doppler.

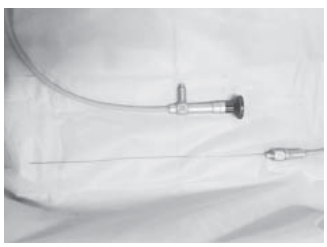

Image1: Image shows a 2mm fibreoptic fetoscope

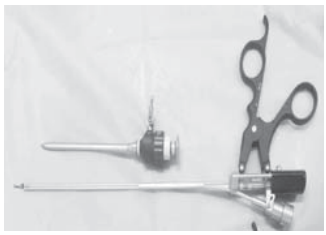

Image 2: Image shows a 3mm metallic trochar and cannula. Bipolar forceps with side port for the fetoscope.

Outcomes of Intrauterine Fetal Therapies for TTTS

The Eurofetus randomised trial[7] showed that, when compared with serial amnioreduction, laser photocoagulation resulted in a higher likelihood of survival of at least one twin (76% versus 56%; 95% CI 0.25–0.93; P 0.009). A systematic review by Fox et al[8] similarly found a better perinatal outcome for laser ablation compared with amnioreduction, with more babies alive without neurological abnormality at 6 months after laser ablation. Selective feticide has been proposed as an attempt to salvage one twin when the outcome of the co-twin appears hopeless. This approach has not been thoroughly investigated but would seem intuitively inferior, as selective feticide has a maximum survival rate of 50% and laser ablation has the potential to salvage both fetuses at all stages of the disease.

Fetoscopy in TRAP sequence

Twin reversed arterial perfusion sequence (TRAP) refers to a rare, unique complication of monochorionic twin pregnancy in which a twin with an absent or a nonfunctioning heart ("acardiac twin") is perfused by its co-twin ("pump twin") via placental arterial anastomoses. The acardiac twin usually has a poorly developed heart, upper body, and head. The pump twin is at risk of heart failure and problems related to preterm birth.

For pregnancies between 18 and 27 weeks of gestation, current treatment modalities target occlusion of the umbilical cord of the acardiac twin and include laser ablation, bipolar cord coagulation, and radiofrequency ablation (RFA), which are performed with local anesthesia and conscious sedation. Fetoscopic cord ligation is an alternative, but is less common.

Fetoscopy in selective Fetal growth restriction (sFGR)

sFGR results from unequal distribution of placenta between the two monochorionic fetuses. In a few progressive cases of selective fetal growth restriction (AEDF/REDF in growth restricted twin) selective feticide can be considered. Laser photocoagulation in these cases should be considered investigational and has been reported to be associated with 70% intrauterine fetal death in the growth-restricted twin.

Fetoscopy in monochorionic twins discordant for anomalies

If one of the monochorionic twins having a lethal abnormality, selective feticide may be attempted. The mode of reducution is by vaso-occlusive techniques like laser ablation, bipolar cord coagulation, and radiofrequency ablation (RFA). In this case also, optical bipolar can be used to coagulate the cord and perform selective fetal reduction.

Feasibility and complications of fetoscopy

Fetoscopy is a feasible and safe technique, but

should be attempted only at tertiary level and highly specialized centers. The percutaneous technique has gained wide acceptance, with an acceptable risk of maternal morbidity but a significant risk of miscarriage or preterm rupture of the membranes.

The rates of PPROM within one and three weeks post-procedure are 7 and 17 percent, respectively[9]. Other complications include amniotic fluid leakage into the maternal peritoneal cavity (7 percent), vaginal bleeding (4 percent), abruption (2 percent), and chorioamnionitis (2 percent). An amniotic band-like syndrome has also been reported[10]. Orientation to the intrauterine environment and acquiring the ultrasound-instrument-laser coordination poses a unique challenge to the surgeon attempting therapeutic fetoscopy guided therapeutic procedures[11].

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Calendar of Monthly Clinical Meetings 2018-19

Months	Name of the Institute
June, 2018	Army Hospital - Research & Referral
July, 2018	AIIMS
August, 2018	VMMC & Safdarjung Hospital
September, 2018	Deen Dayal Upadhyay Hospital
October, 2018	ESI Hospital
November, 2018	MAMC & LN Hospital
December, 2018	Sir Ganga Ram Hospital
January, 2019	Dr RML Hospital
February, 2019	UCMS & GTB Hospital
March, 2019	LHMC
April, 2019	Apollo Hospital

CONTROVERSY

Acceptable Time Interval for Delivery of 2nd Twin

ESSENCE (**E**aSy u**S**eful **E**vide**N**ce in obstetri**C**s & gynaecology)


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Background

Twin pregnancies are at increased risk of intrapartum complications. Second born twins have been reported to have a higher incidence of adverse outcome (morbidity and mortality) due to lower birth weight; higher frequency of malpresentation, cord prolapse, and abruptio placentae; and more -deliveries involving internal podalic version. Historically, a prolonged interval between delivery of the first and second twins was thought to be associated with poorer outcomes. Intervals of less than 25 to 30 minutes have been advocated. Today, there is evidence to suggest that delayed delivery of a preterm second twin might be beneficial. Current evidence around delayed **delivery interval of second twin delivery is discussed.**

How & why of this Summary

Guidelines from any of the major professional organisations for this clinical scenario are not available at present.

This write-up presents

1. Practical evidence keeping the **pyramid of evidence** (Fig 1) in mind.
2. The essential steps to Evidence Based Practice (EBP) are *Ask, Acquire, Appraise, Apply & Audit*. Important practical points of first two steps have been addressed since this write-up also aims to increase familiarity with the how and why of EBP. At least one step would be addressed in subsequent articles.

Systematic reviews filter evidence from all published trials within a stated time (hence these are considered the best forms of unbiased evidence).

Fig 1: Hierarchy of Evidence

Search terms/strategy

Search terms were identified from Pubmed MESH terminology. Some terms with maximum hits are mentioned

- (Second twin) AND delivery;
- "twin pregnancy" AND labour AND India;
- (twin pregnancy) AND labour; Search "twins"AND labo* Filters: Systematic Reviews; published in the last 10 years; Humans
  - For comparison of interventions/therapy, it is advisable to search for RCTs.
  - *Use () brackets for search of exact terms," " quote marks for words appearing together*

Databases searched: Cochrane Database of Systematic Reviews, Pubmed, TRIP (Turning Research Into Practice), GIN (Guidelines International Network), Indmed

Following a detailed search one systematic review [1] on the subject was found. Primary studies and reviews especially those which provide information that is relevant to low-income countries were selected and appraised for quality. Good quality studies have been used for reference.

Contraindication to Delayed Delivery of Second Twin

Monochorionicity is an exclusion criterion because vascular anastomoses in the retained placenta may cause complications

Interval Between Deliveries of the Two Twins

An extended time interval between births of siblings at a critical gestational age may prove beneficial in terms of neonatal survival and reduce morbidity from preterm birth. However, the optimal strategy to achieve a successful delayed-interval delivery has not been validated by randomized studies, nor have there been adequate sample sizes in observational studies to draw statistically meaningful conclusions. There is as yet no consensus as to optimum management of potential candidates for delayed-interval delivery. Delaying delivery does increase the risk of maternal, fetal, and/or neonatal infection.

In a 2016 systematic review including 128 cases of

delayed interval delivery, the retained sibling had a survival benefit in delayed-interval delivery, irrespective of whether the birth of the first fetus was before or after 24 weeks of gestation[1]. However, other studies have reported the importance of the age at birth of the first twin affecting the prognosis of the remaining twin. In a study not included in the review in which delayed-interval delivery was attempted early in gestation (>16 weeks), survival of firstborns was only 16 percent, and survival of retained siblings was 54 percent[2]. This is lower than the survival rates reported in several series for firstborns delivered at >24 to 25 weeks (survival 53 to 64 percent) and for their retained siblings (survival 74 to 100 percent)[3-6].This highlights the limited success of even relatively long latency when the first delivery occurs remote from viability. There is a small risk of fetal death of retained siblings, especially in gestations <24 weeks. In a series including 200 retained twin fetuses , the sibling fetal death rate was 11 percent when delivery of the first twin occurred at 17 to 23 weeks and 1 percent when delivery of the first twin occurred at 24 to 29 weeks[4]

Cerclage — If membranes from a retained sibling are prolapsed, they are gently retracted cephalad using standard technique. Most authors recommend placement of a cerclage[6,7] though there are numerous reports of successful delayed-interval deliveries without placement of a cerclage[4,7]

Ongoing maternal and fetal surveillance during latency involves assessment for signs of infection, premature labor, premature rupture of membranes, cervical change, fetal heart rate abnormalities, and other complications

Selecting Candidates for Delayed-Interval Delivery

There are no high-quality data on which to select or exclude candidates for delayed-interval delivery and no generally accepted, published guidelines for selection of appropriate pregnancies.

Informed Consent

The possibility of extending the pregnancy from a previable to a periviable gestational age is a concern that should be raised in the counseling and consent process.

Delayed-interval delivery is one option, not the only option. Regardless of gestational age, parents may choose to deliver the entire pregnancy when one fetus of a multiple gestation delivers.

- Delaying delivery increases the risk of maternal, fetal, and/or neonatal infection and, in turn, the potential sequelae of infection (eg, maternal: infertility; pediatric: periviable or preterm birth, neurodevelopmental impairment, death)

The key principles of management are:

1. Appropriate selection of candidates
2. Informed consent
3. Exclusion of intra-amniotic infection in undelivered siblings
4. Drug-induced uterine relaxation
5. Antibiotic prophylaxis
6. Placement of a cerclage
7. Administration of antenatal glucocorticoids

Management of the cord and placenta — After the first fetus has delivered, its umbilical cord is clamped, cut, and ligated with absorbable suture as close to the placental insertion site as possible. Cord traction is avoided, and the placenta is left in situ

Rh(D)-negative mothers — Anti-D immune globulin is administered to Rh(D)-negative mothers after delivery of the first sibling

Key outcomes of delayed delivery of multiple gestations are latency interval, perinatal mortality, neonatal morbidity, and maternal morbidity.

1. The duration of latency reported in the literature is extremely wide, ranging from 1 to 152 days[2,3,4]
2. **Perinatal mortality** In the 2016 systematic review including 128 cases of delayed interval delivery, the retained sibling had a survival benefit in delayed-interval delivery, irrespective of whether the birth of the first fetus was before or after 24 weeks of gestation[1] In some series, survival rates for firstborns delivered at >24 to 25 weeks was 53 to 64 percent and 74 to 100 percent for their retained siblings.[4,5]
3. **Neonatal morbidity** — Neonatal morbidity is primarily dependent on gestational age at birth; sparse information is available.
4. **Maternal morbidity** — Information on maternal morbidity is limited.

The Bottom Line

Following delivery of the first twin, the heart rate and position of second twin should be evaluated using ultrasound and electronic fetal monitoring. As long as the fetal heart rate tracing is reassuring, there is no duration of elapsed time from delivery of the first twin that necessitates intervention to deliver the second twin. Six to 25 percent of second twins will be delivered by cesarean after vaginal delivery of the first twin[16,17]

Knowing what's not known is important

- A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.
- A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is

a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

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Forthcoming Events

- CME on 20th June, 2:00pm-5:00pm. The Topics are 1. Medical Management of Endometriosis, 2. Role of DHEA in Female Infertility, organised by Gynae Forum IMA, Dwarka. Contact: Dr Neeru Kiran Banerjee Chairperson Gynae Forum Dwarka 9560293473
- Next AOGD Clinical Meeting on 29th June 2018, 4:00pm-5:00pm at Army Hospital Research & Referral, New Delhi
- CME by Adolescent Health Committee AOGD, on 10th July, 2018 at Guru Govind Singh Govt Hospital. Contact: Dr Shashilata Kabra
- 21st Practical course and CME by department of Obs & Gyne, MAMC, 7th-9th September 2018. Contact: Dr Deepti Goswami 9968604348/ Dr Sangeeta Bhasin 9873617591
- 40th Annual Conference of AOGD, 24th-25th Novemeber 2018, at India Habitat Centre. Contact: Dr Kiran Aggarwal 9312277346

CASE APPROACH

Twins with One Molar Pregnancy and Coexisting Live Fetus


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Introduction

Molar pregnancy constitutes a benign spectrum of gestational trophoblastic diseases. A particular form of clinical presentation of Gestational trophoblastic disease is twin molar pregnancy with a hydatiform mole and a coexisting live fetus. This condition is rare with reported incidence of 1 in 20000- 100000 pregnancy[2]. There has been increased incidence possibly because of use of ovulation induction in older women and rising incidence of multiple pregnancies. The associations of twin molar pregnancy with normal fetus has been divided into three types.[4]

- The first and the most common is a twin pregnancy with one normal fetus having a normal placenta and another complete mole.
- Twin pregnancy with normal fetus and placenta and another partial mole.

This condition is extremely rare, incidence of normal fetus and partial molar placenta has been reported to 0. 005 to 0.01 percent of all pregnancies 5 (Beischer, 1961: Jones and Lausen 1975).

- The third and most uncommon occurrence is the singleton normal fetus with partial molar placenta.

This condition is associated with several pregnancy complications listed in table 1 which leads to increase in both maternal and fetal morbidity and mortality. Hence early diagnosis and timely management is essential for this rare disease. Exact incidence of the following associated complications is not known because of difficulty in early diagnosis and rarity of situation. In few cases pregnancy can be continued beyond the period of viability. Overall likelihood of live birth rate has been reported to be around 16-56%[5,6] and incidence of persistent Gestational trophoblastic disease has been seen in 5-33% of cases which is not increased by continuation of pregnancy or advanced gestational age[5,6].

Table 1:

Complications of Twin molar gestation with coexisting fetus
• Spontaneous abortion,
• Preterm birth
• Intrauterine death and early neonatal death
• Early onset Preeclampsia
• Massive Haemorrhage
• Theca lutein cysts
• Hyperthyroidism and thyrotoxic crisis'
• Persistant trophoblastic tumor, Choriocarcinoma

Thyrotoxic crises occurs because alpha subunit of HCG is homologous to alpha subunit of TSH. So in these cases screening of thyroid function and treatment with antithyroid drugs and beta blockers is important to control the peripheral hyperthyroidism control thus avoiding thyrotoxic crisis.

Diagnosis

Several case reports and reviews describe the diagnosis of this condition by morphological criteria, DNA polyploidy or karyotype analysis (Jones et al 1975, Block and Merrill 1982). Prenatal diagnosis of this condition depends on clinical signs and symptoms, ultrasonography abnormal biochemistry. Clinically patient can present with hyperemesis, vaginal spotting, heavy bleeding, symptoms of thyroid crisis. O/E Patient can have tachycardia, pallor of varying degrees, fundal height will be more than period of gestation.

On Ultrasound diagnosis of twin molar pregnancy is clinically challenging, especially in first trimester. (sensitivity 18-49%)[7]. Diagnosis is mainly done by ultrasound between 12-14 weeks and despite advances the detection rate reported in literature is only around 68%[6]

This condition needs to be differentiated from partial hydatiform mole whose ultrasound diagnosis is difficult, focal vascular placental lesions like placental mesenchymal dysplasia and placental chorioangioma, degenerated fibroid and missed abortion,. Placental mesenchymal dysplasia is characterized by presence of placentomegaly, with multiple prominent cyst oriented perpendicularly to the choroidal plaque without atypical trophoblastic proliferation[11] Chorioangioma is characterized by increased vascularity inside the tumor and same pulsations as of umbilical cord.[12]

A partial Hydatiform mole occurs with mostly unviable fetus mostly and have associated triploid karyotype, congenital anamolies and asymmetric IUGR and thus gestation can be terminated. On the other hand placental mesenchymal dysplasia and the Twin molar pregnancy with complete mole can coexist with the presence of viable and normal fetus so in such cases pregnancy maybe allowed to progress. Therefore the differential diagnosis is crucial to prevent unnecessarily pregnancy termination and to decide about management, prognosis and follow up

Free Total BHCG is extremely high, beginning to peak in second trimester than in non molar gestation. Excesses production of B HCG can identify gestational trophoblastic disease in patients during pregnancy and also categories the patients who are higher risk of developing persistent mole. Alpha feto protein

is also increased but can be normal in some cases of complete mole with normal fetus. PAPP A and pregnancy specific beta 1 glycoprotein is also raised in both cases of complete and partial mole with coexisting fetus.[5,6] Use of high beta HCG, clinical sign and symptoms and ultrasonography has facilitated accurate prenatal diagnosis of coexistent mole and normal fetus

MRI is also an essential investigation to differentiate twin pregnancy with the hydatiform mole and coexisting live foetus from a placental mesenchymal dysplasia.

Cytogenetic analysis is crucial to diagnose twin molar pregnancy with coexisting fetus.. Chorionic villus biopsy combined with amniocentesis is advised to obtain genetic material from the suspected Placenta and the foetus with a normal appearance.

Prenatal testing of the fetal karyotype is required as it helps in deciding continuation and prognosis of the pregnancy. Termination of pregnancy is recommended for triploid fetal karyotype and where as a diploid fetal karyotype is usually associated with a viable foetus with normal placenta coexisting alongside molar tissue in which pregnancy can be continued with close monitoring Histopathological examination is important in distinguishing between the moles either by histopathology and or with ancillary methods like p57KiP2 immunostain P57 which is paternally imprinted can be used in flow cytometry or immunohistochemistry for discriminating complete from partial moles

Management

Management is complex, challenging and had still not been standardized. It remains problematic because as fair possibility of fetal survival should be weighed against risk of expected complications of molar pregnancy.

There is limited data to guide antenatal management of multiple gestation consisting of mole with coexisting fetus and only few cases and case series have been reported in literature over past two decades (table 2).

It is also uncertain whether management of this rare pregnancy has a greater risk of developing severe maternal complications if allowed to continue then immediate termination. Moreover since complete cytogenetic information on both the mole and the fetus is available only in small number of cases, so it is difficult to distinguish androgenetic complete mole coexistent with twin live fetus from triploid partial moles, especially in early stages of gestation (Obama at all 1985 Miller at all 1993

Some authors recommend immediate termination even in the absence of complications(Jones Lauerson 1975) and some authors support conservative management under strict Hospital based observation and follow up. Presence of common risk factors such as theca lutein cysts, elevated HCG levels and clinical complications associated with molar pregnancy increases the risk for post molar Gestational trophoblastic neoplasia.

The suspected or confirmed diagnosis of twin pregnancy with hydatidiform mole can lead to two strategies either elective termination of pregnancy due to high risk to the mother or comprehensive prenatal care in a referral centre.

Patients should be informed about potential risks such as bleeding, thyrotoxicosis and thyroid crisis, preeclampsia, preterm birth, gestational trophoblastic neoplasia. In addition counselling should be done on the increased risk of medical complication such as perforation during termination and importance of follow-up after the evacuation[8]. It has also been reported that occurrence of maternal complication before 20 weeks of gestation increases the chances of elective interruption of pregnancy and is associated with occurrence of post molar GTN.[9,10] They should be informed that probability of achieving a viable baby is around 40% as reported in various case series. It should be explained that serial beta HCG values should be checked and Long term follow-up with serum b-hCG levels is mandatory. for early detection and treatment of persistant GTD

Table 2: Case series in literature

Authors	Total no. of pts	Termination of pregnancy	Continuation of pregnancy	Live birth rates	Persistant GTN
Lin LH et al (2017) (1966-2015)	72 cases Of CMCHF	10 (13.8%)		35 (48.6%)	33 (46%)
Hides Matsui et al 2000	72 cases			21cases (30%)	21cases (30.6%)
Sebire et al 2002	71 cases	10cases (<14 weeks) 23cases (43%, < 24 wks)		29 (38%) 7 IUD, 1 neonatal death	15 (19%)
Weston et al (1998-2011)	90 cases	49cases (44%)	51 (45%)	29 cases out of 51 cases	24/90 pts (26.7%)
Vegenslev et al 1991	113 cases with no abnormality	15% electively terminated, complication in 30%	87 (52 cases, 59% proceeded to 28 weeks)	79 cases (70% continued, IUD 30%)	10 cases 9%
Matsui et al	18 cases	5 (27%) electively terminated	13 cases (10 terminated)		9 (50%), metastasis in 33% out of 9
Fishman et al	7 cases	5 cases (71%)		2 cases (28%)	
Stellar et al 1973-1994	8 cases	7 cases (78%)		1 cases (12%)	

Conclusion

Twin Pregnancy with Hydatiform mole and coexisting fetus is rare condition that poses a great diagnostic dilemma and challenge to treating obstetrician. The detection rates are low. Clinicians should be sensitized to keep high index of suspicion for early diagnosis and timely management to prevent morbidity and life threatening complications. There should be an clear discussion with the patient regarding the implications and prognosis of condition when deciding treatment strategy, Under close observation and in absence of complications, continuation of pregnancy can be considered

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Announcement for Election of AOGD President and Vice President (2020-21)

Elections

- Nominations are invited from eligible AOGD members for the posts of
- **President and Vice President of AOGD for the 2020 - 2021**
- The nomination should be Proposed by one AOGD life member and seconded by two AOGD life members.
- The last date of filling the nominations is **30th June 2018**.

Eligibility criteria

1. President AOGD has to be a faculty of medical colleges / leading, multidisciplinary clinic hospital with Para-clinic and clinical departments (oncology, radiology, pathology etc.)
2. Experience of having been chairperson of sub-committee of AOGD / FOGSI or experience as Vice President / Secretary / Treasurer / Editor of AOGD.
3. Life member of AOGD having above 10years of experience in specialty after post-graduation and holding post of professor / senior consultant for more than 7 years.
4. Experience of conducting conferences, seminars or workshops etc.
5. In case of a tie after election, the senior most person out of the contestants will be nominated.

The application should be sent in writing to the AOGD Secretariat, Department of Obstetrics and Gynecology, **Lady Hardinge Medical College & SSK Hospital** New Delhi 110001 by **30th June 2018**.

Creating Happiness – A Choice ?

Mohit D Gupta
Professor of Cardiology, GB Pant Institute of Postgraduate Medical Education and Research, New Delhi


Dr Mohit D Gupta

Happiness is an Attitude. Whether we make our life miserable or happy; the amount of effort remains the same.

Most people in world want to be Happy; they also want to be successful. But the question is whether success comes before happiness or being happy leads to success! Let us all ask ourselves, are we

Working FOR Happiness or Working WITH Happiness

What is the right equation ? Probably, we all agree that it is important to WORK WITH HAPPINESS.

The problem today is only and only one: we have made happiness a GOAL. It is not a goal, Happiness is along the journey of Life. It is here and right now…when you are reading this article. We need to create in.

Pathway to happiness is often not travelled by many people. We feel that they are harder to navigate. The beginning may be often rocky and steep, enough to make most people turn back. And parts of the road are downright impassable. But for those willing to put in the work, those seemingly impassable roads eventually lead to easier streets. Let us today examine some facts of life that can make our life naturally happy and we can be source of same to others.

1. **Are we really living in Present:** Most of us live our life thinking about past or worrying about future. There is nothing worse than getting caught in past or constantly worrying about what future has in store for us. This destroys the beauty of present. This affects our performance, our state of mind and takes away our joy. Let us introspect: does worry helps us in performing better ? Does it increases our efficiency? Whatever has happened is not in our hand now and what future has in store for us can be created by us now. ARE WE READY TO CREATE A BEAUTIFUL TOMORROW ?

   Practice: Today, let me delete a word "WORRY" from my dictionary. Let be in present and enjoy doing everything. In this way, I choose to be happy to create a beautiful future.

2. **Am I a Happiness seeker:** How many of us seek happiness from others? Commonest reasons for us to loose our joy are because people and situations are not working my way. When someone says something to me that I don't like: and I start carrying those memories with me. Thinking about it again and again will destroy my inner peace and I will loose my happiness. Let us ask ourselves, how many times people will do the way I want or even I do the way people expect from me. Such a phenomenon will always lead to unfulfillment of our desires and will steal our happiness.

   Practice: People and situations may not be my way. But I practice maintain stability of my mind and choose to be happy. Let me live a Lotus life.

3. **Am I effectively managing my time?** When we don't effectively manage our time, we increase our likelihood for stress, anxiety, fear, and worry. We get so caught up in the day-to-day act of responding to life's stressors, that we're unable to tackle the things that will help to avoid crises and emergencies in the future. One habit that will influence both your happiness and your overall success in life, is the ability to manage time effectively. Effective time managers have a handle on their obligations in life, and know just how to juggle things in order to get ahead.

   Practice: Let me identify priorities in my schedule and give them space rather than wasting my time on small things that often don't require my attention and can be ignored. Let me not generate thoughts, words and actions on everything that is happening around. Then there will be peace and happiness.

4. **Am I focusing on my Health and Well being?** Health and wellbeing are an important part of the happiness-and-success formula. When we do things compromising our well being, then, not only does it have an adverse effect on our bodies, but also on our minds. We have to ensure that day needs to start in a healthy way and remain so as much as possible. This involves detoxifying our mind and our body. Eating healthy food and creating positive, powerful and purposeful thoughts remains the key.

   Practice: Let me choose to start my day with a session of mindfulness and meditation. 30 minutes of meditation and relaxation charges me for rest of the day. Let me also do physical exercises for our body. 30-45 minutes of exercise is equivalent to adding 30-45 minutes to our age.

It is time that all of us understand:

Happiness cannot be travelled to, owned, earned, worn or consumed. Happiness is the spiritual experience of living every moment with love, grace and gratitude.

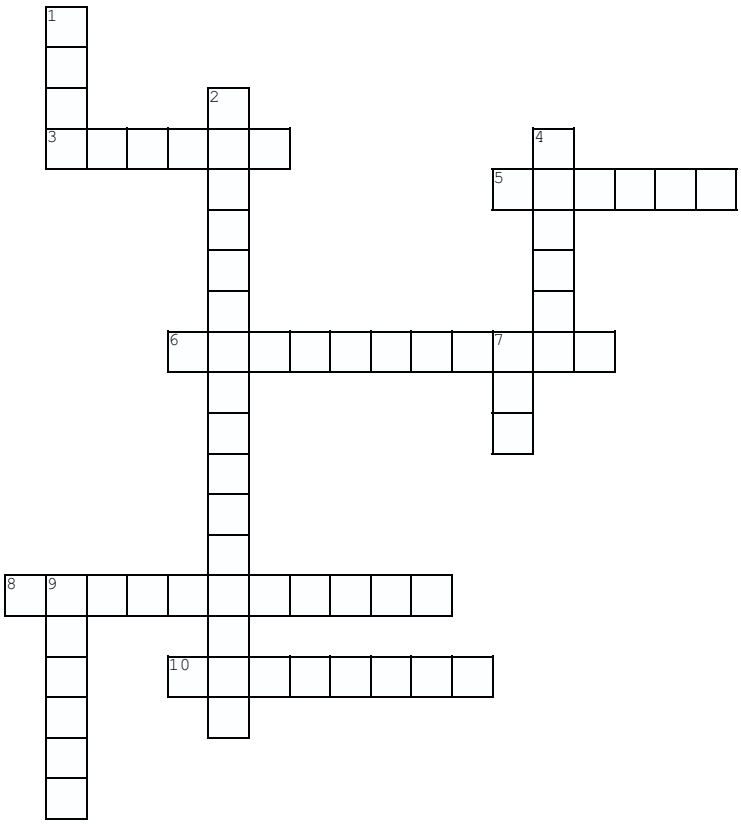
Wishing you all a Happy life- at this moment, today and always !!

CROSSWORD

The Maze of Knowledge

Swati Agrawal
Associate Professor, Department of Obs & Gynae, LHMC & SSK Hospital, New Delhi


Dr Swati Agrawal



Down

1. Rare complication of monochorionic twin pregnancies
2. Vanishing twin
4. Ultrasound sign of dichorionicity
7. Most common drug used for selective fetal reduction
9. Open laparoscopic technique

Across

3. Point for primary left upper quadrant laparoscopic access
5. Knotless surgical suture
6. Uterine manipulator for TLH
8. Advanced energy device using integrated bipolar & ultrasonic technology
10. Staging of twin to twin transfusion syndrome (TTTS)

PICTORIAL QUIZ

A Picture is Worth a Thousand Words

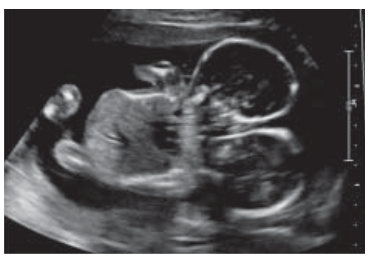


Figure 1:

Q1. What does the ultrasound picture show?
Q2. What is the incidence of this condition?
Q3. What is the management of this condition if diagnosed before 20 weeks?

Figure 2:

Q1. What is the device shown in the picture?
Q2. What is the main drawback of the above device?
Q3. What does R- NOTES stand for?

Whatsapp your answers to 9953938995 with your name and designation.
The names of first correct 3 entries will be acknowledged in our next bulletin.

Refer page 46 for Previous answer key.

Events Held

- Cervical Cancer Awareness Programme for Paramedics: Cervical Cancer Prevention Camp by Cervical Cancer and Breast Cancer Awareness Committee of AOGD on 25th & 29th April 2018.



- Gynae Video Endoscopy Workshop and Hands on Training on 5th May 2018.


- FOGSI Force Rajdhani, PG Education Program under aegis of Medical Education Committee FOGSI & AOGD on 5th-6th May 2018 at SJ Auditorium LHMC.




- CME on "Evidence Based Management of High Risk Pregnancy", Organised by Fetal Medicine Subcomittee at AIIMS on 13th May 2018 under aegis of AOGD

- CME on Molecular Pathology of Gynecologic Oncology on 18th May 2018 at Indraprastha Apollo Hospital

- CME on Preeclampsia: Current update on 19th May 2018 at Lady Hardinge Medical College on Occasion of World Hypertension Day



- Monthly Clinical Meeting at B L Kapur Hospital on 25rd May 2018.

- CME on Adolescent Health at Acharya Bhikshu Hospital on 29th May 2018 by Adolescent Committee.

STANDARD OF CARE

Basic Settings of Equipment in Laparoscopy and Hysteroscopy

Dr Renu Misra

Renu Misra

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Former Additional Professor, AIIMS

Laparoscopy and hysteroscopy have now become integral procedures in gynaecological day-to-day practice. They are not restricted now to a few practitioners as a super-speciality, which is a positive sign as the masses can avail the benefit of minimal access surgery. But it also raises the issue of training, as complications are more likely to happen in the hands of inadequately trained surgeons. Training is still a major bottleneck and endoscopic procedures are being performed without adequate training leading to complications which are essentially avoidable.

Video-endoscopic surgery involves the use of advance technology requiring a number of gadgets. The training should therefore not only involve developing hand-eye coordination skills, but also working knowledge and the settings of the equipment, and some amount of troubleshooting. This article focusses on the basic setup of an endoscopy OT and the settings of the equipment used in laparoscopy and hysteroscopy in gynaecological surgery.

Laparoscopy

OT Setup

Operation room setup should be such that the surgeon can operate with maximum efficiency and least fatigue. Surgeon should reach the OT early to help position the patient, ensure that critical equipment required for surgery is available and working, and placed appropriately for best surgeon ergonomics.

Optimal OT setup should have the following considerations:

- Operation table should be at a height to ensure that while operating, the surgeon's shoulders are down and relaxed, arms by the side and elbows at 90 degrees. If table does not go down enough to achieve this, steps may be used to stand and gain height. This is extremely important to avoid fatigue at the level of shoulders and neck.
- Video monitor should be straight ahead to avoid axial rotation of the spine. It should be positioned slightly lower than the eye level, generally 15 degrees lower, to avoid neck extension and strain.

Positioning the patient

For pelviscopy or gynaecological laparoscopy, patient is positioned with legs apart but supported. The thighs should be at an angle of 180 degrees with the abdomen, so that ports can be made in the lower abdomen and instruments can be manipulated with ease. The arms should be tucked on the sides to provide mobility to the surgeon and assistant. They should be wrapped completely to avoid the hand getting crushed between the table and the leg supports and reduce the risk of electric burns by preventing contact with metal stirrups.

Laparoscopic equipment

The equipment necessary for laparoscopic surgery include:

- CO2 insufflator
- Light source
- Video camera
- Energy source – electrosurgical unit, vessel sealer, harmonic scalpel
- Recording system

CO2 insufflator. Introducing the primary trocar is the first and foremost step in laparoscopy. This can be done with or without creating pneumoperitoneum. Most surgeons however prefer to insufflate the abdomen before trocar placement which increases the distance from the abdominal wall to the aorta. Electronic insufflators are nowadays used for this purpose. It is important to know and understand the features on the insufflator. The panel shows four parameters:

1. Pre-set pressure – This is the pressure you set, which once achieved the insufflator will automatically interrupt further gas flow. Before the primary port entry, it can be kept between 12-25 mm Hg, higher the intra-abdominal pressure greater is the distance between the abdominal wall to the aorta, thereby reducing the risk of major vascular injury during the blind entry. It is therefore recommended as per the RCOG guidelines that a pressure of 20-25 mmHg to be attained before the inserting the first trocar. There is no cardio-respiratory embarrassment at this pressure as long as the patient is supine, but the pressure must be reduced to 12-15 mm before changing the position to Trendelenburg.
2. Actual intra-abdominal pressure – This is the actual pressure in the abdominal cavity in mmHg. If it is lower than the pre-set pressure, gas flow will be initiated to achieve the target level.
3. Flow rate – reflects the flow of CO2 in the insufflator tubing in litres per minute. The average Veress needle allows a maximum flow rate of 2.5 litres per

minute. The flow rate is therefore kept at 2-3 litres per minute when Veress is inserted, and later the flow rate can be increased as required when the trocar is placed. Newer high-speed insufflators can deliver gas at up to 30 litres per minute which maintains the pre-set pressure while suctioning. However, with flow rate exceeding 7 litres per minute, patient has a risk of hypothermia due to rapid flow of cold gas and consequent drop in core temperatures. The latest generation of insufflators are designed to overcome this problem and they are equipped to deliver CO2 which is warmed, filtered and humidified (Thermoflator® by Karl Storz, Germany – Figure 1). This maintains core body temperature and reduces fogging of the telescope lens and post-operative pain.

Figure 1: Thermoflator™ Karl Storz

4. Total volume of insufflated gas – In an average built person, it takes about 4-5 litres of gas to achieve a pressure of 12 mmHg. The total volume of gas used varies on the duration of surgery and the amount of suction done during surgery. However, leaking trocars or incisions may add to the total volume of gas used for laparoscopy.

Light source. A good light source is important in laparoscopy as it determines the visual quality of the picture. The most common light sources used for laparoscopy utilise two types of lamps – halogen or xenon. Xenon light is more natural, brighter compared to halogen and the lamps have a longer life. More recently LED lights are replacing the older versions as they are more efficient and cost effective due to longer life span of the bulbs. On an average a halogen, xenon, and LED light last for 50 hours, 500 hours, 30,000 hours respectively.

Video camera. There are a variety of cameras available from very basic standard definition video cameras to high definition cameras which have better resolution and picture clarity. 3-D video cameras are also available now which give a 3 D image with a better depth perception to the surgeon but are significantly more expensive. A good endovision system comprising of the camera and light source is imperative if advance endoscopic procedures need to be performed efficiently. The real test of the endovision system is seen when there is bleeding during surgery, as blood absorbs light and the picture quality drops with a low resolution camera. The specifications of the camera must be clearly understood and a training for the surgeon and the staff is important to optimally use the equipment.

Recording system – is almost obligatory now. It provides documentation of important operative findings. Surgeries can be reviewed in case of a complication and saved for teaching and training purposes. Many endovision systems come with in-built recording facility, else recording can be done with external video recording devices attached to the video camera control unit.

Energy sources – It is an essential part of the laparoscopy equipment if operative laparoscopy has to be undertaken. It is a replacement for suturing in open surgery to ligate vessels and achieve haemostasis. Although endo-suturing can be done, it is far more cumbersome than in open surgery. A diathermy or electrosurgical unit is mandatory, but it is certainly an advantage if additional energy sources like vessel sealer and ultrasonic are available which add to the efficiency of the surgeon. Lasers have lost popularity in gynaecological laparoscopy because of their high cost and maintenance. Some features of different energy sources are described below.

Electrosurgical unit / Diathermy – ESU has a unipolar and bipolar mode. It is important to understand the basic principles of electrosurgery to utilise electricity effectively and prevent complications.

Unipolar mode is used most commonly. The current enters the patient's body at the contact point of the hand instrument and exits at the return electrode or patient plate. An improperly applied patient plate can result in burns at the pad site or a remote site at the point of exit.

Unipolar current has two different waveforms popularly called cutting and coagulation current. Cutting current provides continuous flow of electricity with a low voltage which implies that there is less thermal spread around the point of cautery. Contrary to common myth, it is also more efficient since the current continues to flow as long as the pedal is activated giving better in-depth desiccation of a vascular pedicle. Coagulating current or the blue pedal on the other hand gives intermittent flow of current with a high voltage or amplitude. As a result, the current disperses in a wider area increasing the risk of thermal injury to the adjacent tissues. It also causes more surface charring as it comes in boluses and tissue penetration is poor.

Bipolar mode is safer than unipolar since the current flows from one prong of the instrument to the other via the tissue which is held in the grasper for cauterization. It does not flow through the patient's body thereby eliminating the risk of remote site burns.

Vessel sealer - These are advance bipolar systems with higher frequency and even lower voltage compared to the conventional bipolar, which means that the current is denser and gives very effective vessel sealing and lower thermal spread. It is customised therefore to provide vessel sealing upto 7 mm. The New LigaSure Advance™ is a multifunctional device that offers both monopolar and advanced bipolar energy. It is a vessel sealer with a monopolar tip.

Ultrasonic - Uses ultrasonic energy to produce motion at the tip of the instrument at a speed of 55,000 times per minute. It provides precise cutting and coagulation with minimal thermal spread making it safe to be used in vicinity of vital structures. Cordless ultrasonic instruments are now available which give greater freedom of mobility to the surgeon.

Hysteroscopy

It is a natural orifice endoscopy which provides diagnostic and therapeutic options to deal with intrauterine pathology. The endovision system is the same as used in laparoscopy. **Uterine distension** is a pre-requisite to visualisation of uterine cavity on hysteroscopy. The different media used for uterine distension include:

- Gas - CO2
- Electrolyte solutions – Normal saline, Ringer lactate
- Non-electrolyte solutions – Glycine, dextran, dextrose, mannitol

CO2 for uterine distension is not used nowadays because of its limitation to diagnostic hysteroscopy. However, if it is being used for diagnostic hysteroscopy, a word of caution is to use the hysteroflator dedicated for use with hysteroscopes and not to use the laparoscopic insufflator.

Suction irrigation systems – A continuous flow of fluid is required to maintain clear vision during hysteroscopic surgery. The irrigation pressure should be set below the mean arterial pressure to avoid overdistension of the uterus thereby increasing the risk of fluid overload. The systems commonly used to control flow and irrigation are:

Gravity fall of liquid. By hanging the fluid bag about 100 cm above the perineum, a pressure of about 70 mmHg can be obtained. The outflow can be simply allowed to drain through the outlet or attached to a very slow suction.

Pressure cuff. These are cuffs which can be put around the fluid bag like a sphygmomanometer and pressure raised to 80 mmHg. The pressure has to be maintained constantly as the pressure drops as the bag slowly empties.

Electronic suction irrigation pump. These are motorised suction irrigation systems in which the flow rate of fluid and the pressures for irrigation and suction can be set. Usual settings are a flow rate 200-250 ml/min, irrigation pressure 80-100 mmHg and suction pressure at 0.2-0.25 bars.

At the end of the day, the surgeon needs to understand that besides learning and mastering the surgical techniques, it is equally important to get adequately trained on the equipment that is used for surgery. The surgeon is not only liable for surgical complications, but also entirely responsible for any mishaps occurring due to faulty or inappropriate use of equipment and instruments.

Suggested Reading

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RECENT ADVANCES

Endoscopic Pelvic Reconstructive Procedures


Dr Aruna Nigam

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Introduction

Minimally invasive surgery is the most significant revolution in surgical technique since the early 1900s. There have been significant advancement in minimal-access surgery in last decade. Although no evolving technology has demonstrated better outcomes or less complications than the conventional laparoscopy, the introduction of the robotic surgical techniques has significantly improved the outcomes in the gynae oncology surgeries. The operative time and cost were higher in these procedures initially when the technology was first introduced however newer studies demonstrate an equivalent or improved robotic surgical efficiency with increased experience. Single-port hysterectomy has no significantly effect on postoperative pain or subjective cosmetic results but evolving platforms with flexible, articulating instruments may improve the uptake of single-port procedures including **Natural Orifice Transluminal Endoscopic Surgeries (NOTES)**.[1]

Pelvic reconstructive surgery for the prolapse of pelvic organ consists of transvaginal, open, laparoscopic, and robotic-assisted approaches. In pelvic surgery, although the transvaginal route may offer the most natural route to a minimally invasive technique, advancements in the gynecologic laparoscopy have documented advantages over conventional routes retaining safety profile, potency, and high patient satisfaction.[2] In latest decades, pelvic minimal invasive surgery has progressed from a simple diagnostic tool to a complex armamentarium of advanced surgical procedures. Advantages include superior visualization, magnification, reduced blood loss, decreased postoperative pain, decreased adhesion formation, and fewer wound complications.[3-5]

Principles of reconstructive surgery

Reconstructive surgery focuses to place genital organs and tissues back together in a way that makes them more useful, and with lesser clinical symptoms. It results to reduce potential problems and side effects from primary operative procedures and improve patients' quality of life. Nonetheless, reconstructive surgery needs high level of expertise, fine instruments, fine maneuvers, prolong time, and fine energy modalities.

Reconstructive surgery should follow the principles of microsurgery which consists of

- Avoiding serosal insults e.g. tissue trauma, infection, ischemia, foreign body reaction, hemorrhage and leaving raw surfaces.
- Minimal tissue trauma by using atraumatic techniques
- Meticulous hemostasis,
- Complete excision of abnormal tissues
- Precise alignment & approximation of tissue planes.

Reconstructive Laparoscopic Myomectomy (LM)

Commonly LM is associated with a shorter hospital stay, rapid recovery and decreased blood loss but it needs lot of expertise. The use of diluted vasopressin, suturing of uterine artery before performing the myomectomy, use of barbed sutures have certainly revolutionized the myomectomy procedure. This surgery needs lot of expertise and suturing skills. The use of morcellation for removal of specimen is still controversial but one can use the 'bag' for the same. One should take the written informed consent with the risk of recurrence to avoid any later legal problems. Higher patient satisfaction rate with small operative scar after LM and as well as reproductive outcome and fertility satisfaction has been reported by various authors.[6]

Reconstructive Hysteroscopic Myomectomy (HM)

Recently HM represents the standard minimally invasive surgical procedure for treating symptomatic submucous fibroids.[7] Nonetheless, this technique is related with the significant risks of increased bleeding, longer operative time required for removing the myoma into bits of tissues and removing them, high risk of fluid overload, and the likelihood of partial resection and perforation.[8] To decrease these risks, more effective patient selection and improved techniques are necessary. Newer modality like hysteroscopic morcellation has come which decreases the operative time as well as problem fluid overload but the instrument is costly.

Laparoscopic Pelvic Reconstructive Surgeries

Laparoscopic pelvic reconstructive surgeries are commonly done for pelvic organ prolapse and laparoscopic sacrocolpopexy is the most commonly done procedure. Laparoscopic approach has many advantages including better anatomic visibility as a result of magnification, insufflation, and improved hemostasis. Other advantages include shorter hospitalization, decreased postoperative pain, and better cosmeses of smaller incisions.

Concept of mesh repair: Treatment of pelvic organ

prolapse (POP) with the use of vaginal meshes has resulted in increased success rates in anatomic reconstruction.[9] However, extensive use of vaginal meshes remains debatable due to possible serious complications.[10] Beneficial results have been documented in both safety and efficacy profiles after sacrocolpopexy procedures using the recent light weight Y-shaped mesh.[11,12] Laparoscopic mesh repair is the best possible method of pelvic floor repair as the accurate anatomical placement of mesh is entailed by this procedure. Sacral promontory and muscles like levator ani are used as a fixed bony points, leading to lifelong correction of the pelvic floor defect.

Laparoscopic sacrocolpopexy/sacral colpopexy:

The "gold standard" procedure for apical prolapse remains the abdominal sacral colpopexy that slings the vaginal vault by strengthening the anterior and posterior vaginal fibromuscularis with mesh attached to the anterior longitudinal sacral ligament. Many studies compared the laparoscopic sacral colpopexy (LSC) and total vaginal mesh (TVM) and showed the highest satisfaction rate with reduced perioperative morbidity and reoperation rates and costs.[13,14] Major complications related with this procedure are unusual and includes rectal injury, small-bowel obstruction, bladder injury, vascular injury, and mesh complications. Use of Type I macroporous polypropylene mesh is recommended.

Laparoscopic Hysteropexy (Uterosacral Hysteropexy, Sacrohysteropexy or Sacrocervicopexy):

Synthetic mesh is used to suspend the "distal uterosacral ligaments and posterior endopelvic fascia to the anterior longitudinal ligament of the sacral promontory." Laparoscopic hysteropexy technique uses a bifurcated polypropylene mesh wrapped around the anterior cervix through bilateral broad ligament windows and fixated to the sacral promontory. Significant subjective improvements in prolapse symptoms, sexual wellbeing, and quality of life were observed.

Patients who are interested in uterine preservation for the only reason of desiring future fertility must be aware of the probable deleterious effects that pregnancy may have on the durability of reconstructive procedures. Furthermore, hysterectomy in future for any pathology may be more difficult after these pelvic floor reconstruction procedures.

Procedure: During laparoscopic surgery, 3 or 4 ports are used. The posterior peritoneum overlying the sacrum is incised medial to the ureter exposing longitudinal ligament covering the sacral promontory. Then the peritoneal incision is prolonged along the right pelvic wall up to the pouch of Douglas. The peritoneum is dissected from the vagina, with care taken to avoid injury to the bladder. The pouch of Douglas is incised between the left and right utero-sacral ligaments and the recto-vaginal space is dissected along the posterior vaginal wall. Polypropylene meshes can now be secured to the anterior and posterior vaginal wall respectively with Ethibond interrupted sutures. Meshes from the vagina are fixed to the longitudinal vertebral ligament with non-absorbable suture (Ethibond) or with the laparoscopic tackers in order to lift the prolapsed vaginal walls without tension. Reperitonization is done than to hide the mesh beneath the peritoneum. If one is doing sacro hysteropexy, "Y" shaped mesh is used

Laparoscopic paravaginal cystocele repair

Paravaginal repair for lateral cystocele is the surgical approach where repair is done by suturing the "lateral sulci to the white line of the pelvic fascia". It has been seen that lateral defects are correlated with the cystocele development and hypermobility of the bladder neck.[15] Aim of the paravaginal defect repairs is to correct defects by restoring the fibromuscular tissue of vagina that has broken from its lateral attachment to the arcus tendineus fascia pelvis.

As an isolated procedure paravaginal repairs performed laparoscopically, the literature is limited. Multiple studies highlighted the clinical significance of reimposing apical Level I support when anterior and paravaginal repairs are being done.[16] Limited available literature suggest that paravaginal repairs which are being performed laparoscopically have similar anatomic success rates (76 %) which is comparable with the open and vaginal paravaginal repair (76-100 %).[17]

Laparoscopic Uterosacral Colpopexy (Native tissue repair)

The laparoscopic technique imitate the currently accepted "gold standard" vaginal approach as a suspension of the apex of the vagina as narrated by Shull.[18] This technique involves positioning of consecutively higher sutures from each uterosacral ligament to the anterior and posterior vaginal wall.[19] However, ureteral compromise was the most remarkable surgical risk distinctive to this procedure with a reported risk as high as 11 % in one small series.[20] Therefore, intraoperative cystoscopy is universally recommended in these cases. Uterosacral colpopexy avoids the intrinsic risk of mesh augmented procedures while reposing a more anatomic vaginal axis with moderate durability and high patient satisfaction.

Uterosacral suspension of the vault should be done in all total laparoscopic hysterectomies so as to avoid future vault prolapse. In presence of enterocele both the uterosacral ligaments can be tied together after visualization of ureter. Laparoscopic obliteration of the enterocele sac can also be done as in open surgery (Muscowitz procedure).

Concomitant Continence Procedures:

Whenever needed the prolapse surgeries can be combined with laparoscopic Burch procedure in presence of urinary incontinence in the same setting. Cooper's ligament can easily be identified after dissecting the space of Retzius which is the bloodless space. 3 stitches

from the urethral neck in the paravaginal area are taken to attach it to the cooper's ligament on either side to perform the procedure.

Robotic Assisted Surgery

Robotic technology has been acquired rapidly over the past 4 years in Asian countries like India. This technique allows a surgeon at a console to operate remote-controlled robotic arms, which may allow the performance of laparoscopic procedures.

Multiple number of procedures are now being performed by means of robot-assisted surgery. For the procedures which are being more commonly performed by open surgeries, the introduction of robotic technology may influence the cost as well as the volume of surgeries being performed. Robotic surgical systems have high fixed costs. The systems also need costly maintenance and demand the use of additional consumables (single-use robotic appliances). The use of robotic systems may also require more operating time than alternatives.[21]

Robotic Assisted Sacrocolpopexy (RASC)

Recent literature on robotic sacral colpopexy have reported equivalent advantages over the open procedure as earlier demonstrated by conventional laparoscopy in terms of reduced blood loss, shorter hospitalizations, and reduced pain while maintaining successful anatomical outcomes with relatively low complication rates.[22]

The advances in robotic-assisted laparoscopic surgery have made this approach to mesh Sacrocolpopexy not only feasible, but also quite popular. It is definitely possible that, with longer follow up and more studies comparing open to RASC, a minimally invasive approach could replace the open sacrocolpopexy as the 'gold standard'.

Posterior Compartment Laparoscopic Rectocele Repair (Colpoperineopexy, Abdominovaginal Rectocele Repair)

Similar to paravaginal defect repairs, literature on laparoscopic rectocele repairs, as an isolated procedure, are limited. In this technique the abdominal sacral colpopexy posterior mesh extended down to the rectovaginal septum and perineal body, thereby correcting posterior defects and providing perineal support.

Abdomino-Vaginal Laparoscopic Sacral Colpoperineopexy (AV-LSCP) that uses a biograft interlay between the polypropylene mesh and the posterior vaginal muscularis. It is used in cases where there is excessive perineal mobility.

Laparoscopic Enterocele Repair (Culdoplasty)

Recent literature on laparoscopic enterocele repairs remains descriptive only. Laparoscopic enterocele repair surgical principles are identical to the open and vaginal procedures.

Laparoendoscopic Single-Site Surgery (Less) for Pelvic Prolapse:

Single-port laparoscopy, also known as Laparo-Endoscopic Single Site (LESS) surgery, is an attempt to further enhance cosmetic benefits and reduce morbidity of minimally invasive surgery.

The literature on this technique was limited to few case reports only. Larger studies ae needed to decide whether this approach provides any benefit over conventional or robotic-assisted laparoscopic approaches.[23]

Laparoscopic Vaginoplasty

Reconstruction of a neovagina is the next step for female with an absent vagina with the prior failed vaginal dilator therapy. Conventional operative techniques such as skin grafting or intestinal substitution have major disadvantages including prolonged recovery time and significant scarring. Laparoscopic vaginoplasty is a safe treatment for vaginal agenesis, and short term results are encouraging.

Laparoscopic Vecchietti Technique

The principle of this technique is to create a neovagina by gradual stretching of the patient's own vaginal skin. This involves placing an olive-like bead onto the vaginal dimple, which is pulled up gradually by threads that run through the olive from the perineum into the pelvis and out through the abdomen where they are attached to the traction device.[24]

Laparoscopic Davydov technique

The principle of this technique is to create a neovagina using the patient's own peritoneum as the lining. Here incision is given on the medial side of ureter over the peritoneum and extended anteroposterior direction and rectum is separated from the vaginal mucosa area. Then incision in the perineum and the mucosa is stitched to the peritoneum so that now the rectum is forming the posterior vaginal wall. This neovagina gradually epithelizes. This laparoscopic approach to vaginal reconstruction is safe and effective in situations where vaginal dilation has failed.

It offers reduced morbidity compared with the classical available procedures. Postoperative vaginal dilation is essential to prevent vaginal stenosis. Short-term results for both techniques are encouraging, but further studies are needed to assess long-term functional outcome.

Endoscopic Tubal recanalization procedures: Due to the advantage of the greater magnification during laparoscopy, tubal recanalization can also be done easily and precisely.

Conclusion

The idea of minimally invasive reconstructive surgery continues to evolve as advancing biomedical technology

not only facilitates but also challenges earlier established surgical techniques. The experienced surgeon must continue to individualize risks, benefits and alternatives of various skill-sets in order to optimize the patients' overall surgical outcome.

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CONTROVERSY

Laparoscopic Management of Ovarian Cancer


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Introduction

Ovarian cancer is the leading cause of death among gynecologic malignancies. At present only 25% to 30% of all patients are diagnosed as early-stage ovarian cancer[1].

Ovarian cancer requires complete surgical staging for prognostic information, which dictates postoperative adjuvant treatment. Traditionally, adequate staging involves total abdominal hysterectomy, bilateral salpingo-oophorectomy, omentectomy, peritoneal biopsies, pelvic and aortic lymphadenectomy, and peritoneal washing. In patients with right ovarian disease, an appendicectomy is also recommended.

Over the last several years, laparoscopic and robotic-assisted surgeries have replaced open abdominal procedures for the treatment of gynecologic malignancies in early stages. However, the laparoscopic approach remains still controversial for the treatment of ovarian cancer, even in the early stage of disease due to possible staging inaccuracy and the risk of tumor cell spill. Most of all, the laparoscopic skill set of gynaecologists worldwide to undertake laparoscopic omentectomy and paraaotic lymphadenectomy is lacking. As a speciality the gynaecologists are still in the learning curve for performing these two procedures laparoscopically. In addition the numbers of early ovarian malignancy is low preventing a rapid growth in learning of these procedures. Those gyne-oncologist who are blessed with advanced laparoscopic skills are at an advantage despite the paucity of early ovarian cancers.

Laparoscopy offers advantages over laparotomy by way of smaller incisions, improved visualization, less blood loss, reduction in the need for analgesics, decreased morbidity, and a more rapid recovery. An additional advantage is early initiation of adjuvant treatment after the surgery. With adequate training, once established laparoscopic staging of early ovarian cancers will be irreplaceable. The history of laparoscopy with myomectomies will repeat itself with ovarian malignancy and get established as the preferred mode of surgical access.

Laparoscopy in Borderline Ovarian Tumors

Borderline ovarian tumors occur predominantly in younger women aged 30 to 50 years with 50% to 85% diagnosed as stage I and typically have an excellent prognosis[2]. Fertility-sparing options may be offered to these patients ranging from cystectomy to adnexectomy. This is where the laparoscopic approach will score over laparotomy since it is associated with less postoperative adhesion formation compared with laparotomy, which may theoretically or even realistically enhance fertility.

In the largest case series to date, 107 patients underwent laparoscopic treatment of borderline ovarian tumors. The mean follow-up was 27.5 months with 100% survival and only 4 having evidence of recurrent disease[3].

A retrospective review was subsequently conducted of 113 patients diagnosed with borderline ovarian tumors, of whom 52 underwent laparoscopy and 61 underwent laparotomy. No difference occurred in progression-free survival between the 2 groups with a mean 44-month follow-up[4].

The longest documented follow-up (78 months) reports a survival of at least 83%. The remaining patients were lost to follow-up.[5]

All these imply an advantage of the laparoscopic approach in borderline malignancies where laparoscopic surgical staging is as for invasive disease.

Laparoscopy in Early Stage Invasive Ovarian Cancer

The first case report of laparoscopic staging in early stage invasive ovarian cancer, reported in 1994, included complete pelvic and infrarenal paraaortic retroperitoneal lymph node dissection in a case series of 9 patients undergoing restaging procedures for either ovarian or fallopian tube cancers. This case series revealed a mean blood loss of less than 300 ml and average hospital stay of only 2.8 days[6]. This study was among the first to show the feasibility of a complete laparoscopic staging procedure in early ovarian cancer.

Three large case-control series were conducted in 2005 through 2008. The first case-control series reported 20 laparoscopic patients with 30 laparotomy patients who underwent primary or restaging procedures. They reported no difference in nodal yield, omental specimen size, rate of upstaging, or complication rates. Estimated blood loss and hospital stay were notably less, but a longer operative time also occurred with a mean value of 321 minutes for laparoscopy compared with 276 minutes during laparotomy[7]. This could possibly be attributed to even pioneer laparoscopic gynaecologists being in the early phase of their learning curves. It is likely that with increasing experience this will decrease

several fold as seen with other laparoscopic procedures over time.

Another case-control series of 34 patients showed no difference between laparoscopy and laparotomy in terms of nodal yield, likelihood of detecting metastatic disease, or complication rate[8].

Park et al[9] reported the additional advantage of a more rapid return of bowel function amongst patients undergoing laparoscopy compared with laparotomy. In the laparotomy group a higher postoperative complication rate with 2 febrile morbidities, 3 wound dehiscence's, and 4 cases of ileus was seen.

From a scientific point of view, only a randomized clinical trial can definitively assess whether laparoscopy should replace laparotomy in early ovarian cancer, as was the case for the laparoscopic approach in endometrial or colon cancer patients[10,11].

However, in early ovarian cancer a randomized clinical trial is not feasible because of the difficulty in recruiting a sufficient number of patients[12]. Therefore, the comparison between laparoscopy and laparotomy can only be done through indirect or level 3 evidence. Suggested modes of obtaining evidence can be through surrogate markers as follows.

1) After the staging surgery, proportion of upstaging could be an index for the performance of appropriate radical procedures. Park et al[13], in a meta-analysis published in 2013, showed that laparotomy and laparoscopy have a similar rate of upstaging, ranging between 7% and 30%.

   In a retrospective multi-institutional study[14] including 300 patients with presumed early ovarian cancer, the rate of upstaging was 16% and obviously more frequent in cases of poor grade of differentiation in laparoscopy.

2) Second, there is the question of inadequate staging, particularly with regard to the number of lymph nodes obtained through laparoscopy. This is surprising since the enhanced magnification should actually result in a better yield. Other causes are inappropriate instrumentation and hesitancy in being more aggressive laparoscopically for fear of complications. All these will be overcome with increasing experience over time. Transmitted tactile sensation in the initial stages is compromised with laparoscopy.

   Inadequate staging may occur in cases with low intraoperative suggestion for malignancy, inaccurate frozen section evaluation, or in institutions where gynecologic oncology support may be limited. However, in cases where frozen section confirms cancer (and in the appropriately consented patient), complete laparoscopic staging should be possible in the hands of an experienced laparoscopic gynecologic oncologist. Adequacy of staging may be defined by nodal yield or rate of up- staging.

   Unfamiliarity and apprehension in approaching both the hepatic and splenic flexures and performing supracolic omentectomy via laparoscopically may explain the decreased yield. However these are the very factors which will benefit once the laparoscopic gynaecologist becomes comfortable with the procedure. A thorough knowledge of intraabdominal anatomy and spaces is mandatory to enable better results.

   Several studies with a large number of patients have demonstrated the safety and adequacy of laparoscopy for lymph node dissection in the surgical staging of gynecologic malignancies

Table 1: Comparison of nodal yields between laparoscopy and laparotomy

	Laparoscopy	Laparotomy	p
Chi et al 2005 [15]			
Total pelvic lymph nodes (mean)	11.14	14.7	>0.5
Total paraaortic lymph nodes (mean)	6.7	9.2	>0.5
Omental size (cm^3)	186	347	1.00
Ghezzi et al 2007[16]			
Total pelvic lymph nodes (mean)	25.2	25.1	.96
Total paraaortic lymph nodes (mean)	6.5	7	.78
Park et al 2008[17]			
Total pelvic lymph nodes (mean)	13.7	19.3	.052
Total paraaortic lymph nodes (mean)	6.4	8.9	.187

3) The third perceived problem of laparoscopy was supposed to be due to high-risk tumor spillage. However, the risk of tumor spillage is similar in laparoscopy to that in laparotomy, which was reported to be 11.4% to 30.3%. This can be minimized by using better grasping instruments like larger sized laparoscopic Babcock forceps and removal in bag.

   Moreover, surgical spillage of tumor cells does not appear to have a negative impact on survival outcomes of women with stage I ovarian clear cell carcinoma who received R3 cycles of adjuvant platinum-based chemotherapy[18]. This must be clearly understood by the patients. Adequate and detailed counselling is very essential preoperatively especially when performing procedures not yet established as standard of care.

   Currently, the largest study addressing cyst rupture consists of a retrospective, multicenter study of more than 1500 patients. A cyst or mass rupture was an independent predictor of disease free survival. However, this study is limited as most patients had incomplete staging procedures, which may influence disease-free survival[19].

   In contrast, no difference existed in survival among a retrospective review of 394 patients[20].

   Regardless of these study limitations, one should aim to avoid spillage of cancer cells during extraction of

an ovarian mass using an endobag or drainage of mass in the bag.

4) Fourth, port site metastasis was considered a serious complications of laparoscopy in patients with ovarian cancer.

   In cases of borderline ovarian tumors, only a few cases of port-site metastases were reported. Of the 9 reported cases, surgical excision was performed with a 100% overall survival at 6 to 72 months of follow-up[21].

   In contrast, invasive ovarian cancer has port-site metastasis reported in up to 16% of cases[2]. However, the overall prognosis was not affected with these metastatic lesions as they tend to respond to chemotherapy without relapse [23].

   Port-site metastases can be avoided by removal of an intact specimen in endobag, layered closure of the trocar sites and thorough washing of the port sites. Some suggestion also exists that subsequent trocar site excision may also be beneficial[24].

5) Finally, offering the fertility sparing treatment to the younger patients with early stage ovarian cancer is emerging. Laparoscopic staging may offer reproductive benefits in terms of reduced adhesion formation[25,26].

6) Lymphadenectomy correlates to an increase risk of morbidity and the occurrence of lymphatic complications (such as lymphoceles, lymphorrhea, and lymphedema). Various studies have shown that minimally invasive surgery correlates with a reduction of lymphatic complications after retroperitoneal staging[27,28]

Place of Laparoscopy in Advanced and Recurrent Disease.

A review by the National Cancer Institute, including 3 large randomized trials by the GOG, suggested that the use of intraperitoneal therapy was associated with a 21.6% decrease in the risk of death leading to a 12-month increase in overall median survival[29]. Placement of intraperitoneal catheters was traditionally performed blindly or via laparotomy. However, with advances in laparoscopic instrumentation and technology, authors reported the initial case series of 8 patients who underwent laparoscopic intraperitoneal catheter placement without complication at 12-month follow-up, suggesting the feasibility of this procedure[30].

Authors reported a surgical technique for laparoscopic peritonectomy with intraperitoneal catheter placement preceding hyperthermic intraperitoneal chemotherapy in an animal model[31].

As far as the surgical treatment of invasive ovarian cancer is concerned, laparoscopy can be applied as a diagnostic tool in order to evaluate the feasibility of laparotomic cytoreduction in advanced disease with peritoneal spread [32] and in selected cases of patients with recurrent disease.[33]

Challenges in laparoscopic staging

During laparoscopic evaluation, size or extension of the disease is a limiting factor. In any case in which any abdominal space cannot be properly evaluated or during the cytoreduction will leave residual disease because of technical difficulties, the conversion to laparotomy must be performed. The disease location can be extremely important. For example, performing a peritonectomy in the Douglas pouch seems to be easier than resecting a peritoneal nodule in the retrohepatic space where surgeons have to mobilize the organ in order to resect the disease completely.

Conclusion

Currently worldwide with relatively small number of cases available, it is premature to pronounce judgement on the laparoscopic approach. As we see it, time and experience will demonstrate the tremendous advantage of the laparoscopic approach in early and borderline disease simply from the great precision offered by laparoscopy and greater access to areas such as subdiaphragmatic areas and the splenic flexures. And all of that through tiny abdominal incisions without the added morbidity of huge abdominal incisions. Particularly important and relevant is in obese patients, those with multiple surgeries and those with compromised healing with diabetes, anemia and immunity issues.

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CASE APPROACH

Deeply Infiltrating Endometriosis

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Introduction

The estimated prevalence of endometriosis is 5% to 15% among all women of child-bearing age. 20% to 48% of women suffering from infertility have endometriosis. Apparently, there are three types of endometriosis: superficial endometriosis, ovarian endometrioma and deeply infiltrating endometriosis (DIE). DIE is defined in histological terms as endometriotic lesions extending more than 5 mm underneath the peritoneum[1,2]. DIE is responsible for painful symptoms[3], whose severity is strongly correlated with the depth of the DIE lesions[2,4].

Etiology

According to the transplantation hypothesis, viable endometrial cells enter the abdominal cavity through retrograde menstruation and become implanted there[5]. This hypothesis fails to explain why endometriosis does not affect all women. Currently favoured etiological hypothesis for endometriosis is tissue injury and repair (TIAR) concept[6]. Microtrauma can occur at the interface between different layers of uterine tissue, e.g., in the region of the fundo-cornual raphe, as a consequence of the estrogen driven increase in peristalsis[6]. The repair mechanisms that come into play are associated with local hyperestrogenism because of aromatase overexpression that leads to paracrine estrogen induced uterine hyper and dysperistalsis with desquamation and dislocation of the basal endometrium through the Fallopian tubes and out into the abdominal cavity[6,7]. On the other hand, cells of the basal layer can also continually infiltrate the myometrium, giving rise to the fully developed clinical picture of uterine adenomyosis.

Diagnostic evaluation

Role of history taking

The most frequent symptoms of pelvic endometriosis are dysmenorrhea, dyspareunia, dyschezia, chronic pelvic pain (CPP), and infertility[8,9]. The symptoms of endometriosis are related to the number and/or location of implants and adhesions[10] and has poor correlation with stage of endometriosis[11].

Fauconnier et al. (2002)[12] retrospectively studied 255 women to see whether specific types of pelvic pain were correlated with the anatomic locations of DIE. Deep dyspareunia was correlated with involvement of the uterosacral ligament, painful defecation with the vagina, noncyclic pelvic pain with the bowel, lower urinary tract symptoms with the bladder, and GI symptoms with the bowel and the vagina.

Examination

Despite its low accuracy, the pelvic examination remains an important step in the initial assessment of DIE as it allows a better understanding of disease extent which is vital for planning surgery and other therapeutic interventions.

Investigations & Management

The GDG recommends that clinicians should assess ureter, bladder, and bowel involvement by additional imaging if there is a suspicion based on history or physical examination of deep endometriosis, in preparation for further management. ESHRE GPP

Serum CA125 levels may be elevated in endometriosis. However, compared with laparoscopy, measuring serum CA125 levels has no value as a diagnostic tool. RCOG level B.

The management of severe/deeply infiltrating endometriosis is complex. Surgery is usually required and multiple organs are sometimes involved. Therefore, if disease of such severity is suspected or diagnosed, referral to a centre with the necessary expertise to offer all available treatments in a multidisciplinary context, including advanced laparoscopic surgery and laparotomy, is strongly recommended. RCOG A

Positive histology confirms the diagnosis of endometriosis; negative histology does not exclude it. Whether histology should be obtained if peritoneal disease alone is present is controversial. RCOG GPP

Case based management

Endometriosis of the bladder

The diagnostic assessment includes history-taking, vaginal palpation, vaginal ultrasonography with a full bladder, and magnetic resonance imaging (MRI). Invasive diagnostic techniques include cystoscopy and laparoscopy. Transurethral resection (TUR) is contraindicated in endometriosis, because endometriosis infiltrates transmurally from the outside in, i.e., toward the endothelium, and thus cannot be removed through the urethra. Intravesical lesions can be biopsied through the cystoscope, and ureter stents can be inserted cystoscopically if necessary.

The primary treatment modality for symptomatic endometriosis of the bladder is surgery. First, the infiltrated portion of the bladder should be dissected free of the body of the uterus or the cervicoisthmic junction until the macroscopically disease-free vesico-

uterine space is reached. Next, a whetstone- or orange-slice-shaped partial vesical resection is performed. The trigone of the bladder near the ostium, together with its neural structures, is the most vulnerable part of the bladder whenever partial vesical resection is performed, either open or laparoscopically. Nonetheless, an R0 resection should be the goal. The bladder is then closed with a seromuscular suture and tested for leak tightness by retrograde filling with methylene blue dye. Transurethral urinary drainage is recommended for six days after surgery. The most serious complication of this operation is a so-called neurogenic bladder: vesical denervation, caused either by endometriosis or its treatment, may necessitate either permanent catheterization or the implantation of a vesical neurostimulator in a young female patient. Adjuvant anti-endocrine therapy is given in accordance with the current national guidelines for deep infiltrating endometriosis.

Rehabilitation measures or treatment in specialized facilities is indicated for many women who suffer from endometriosis as a chronic disease.

Endometriosis of Ureter

Endometriosis of the ureter can be either intrinsic or extrinsic. These two types often cannot be reliably distinguished from each other before surgery. In the external type, which is more common, the ureter is compressed by the shrinkage of endometriosis tissue that encompasses it on the outside; this finding is typically described in cases of bilateral ovarian endometriosis ("kissing ovaries," as named by Michel Mueller of Bern). The site of least resistance is the point where the sacrouterine ligament, the ureter, and the uterine artery cross. Intrinsic ureteric endometriosis is rarer and infiltrates multiple layers of the ureter. It is present in less than 0.3% of all women with endometriosis. Its manifestations range from nonspecific pelvic pain to flank pain, renal obstruction (usually unilateral), and asymptomatic hydronephrosis, with loss of function of the affected kidney(s). Recommended studies for diagnostic evaluation include renal ultrasonography, an intravenous urogram, or MRI excretion urography, if available. Renal function should be assessed with laboratory tests (creatinine, blood urea nitrogen) and/or renal scintigraphy. Surgery for deep infiltrating endometriosis, or for pelvic adhesions secondary to endometriosis, carries an elevated risk of ureteric complications. These can include urinoma formation or uroperitoneum leading to infection or other adverse consequences for the involved kidney. Complex operations should be planned and carried out in an interdisciplinary collaboration. In extrinsic ureteric endometriosis, the goal of surgery is freeing (ureterolysis) and decompression of the ureter. In intrinsic ureteric endometriosis, an additional objective is partial resection of the ureter with end-to-end anastomosis or direct ureteric neoimplantation, e.g., with the psoas hitch technique. The ureter often must be freed of surrounding tissue all the way to its junction with the bladder to allow safe resection of the infiltrated parametria. At the same time, the retroperitoneal course of nerves lying in the operative field (such as the hypogastric, splanchnic, femoral, and obturator nerves) must be laparoscopically exposed, so that a neurogenic bladder-emptying disturbance can be avoided. After extensive surgery in the area of the ureters, it is recommended that ureteric stents should be left in place for four to six weeks.

Rectovaginal Endometriosis

Rectovaginal endometriosis is usually easy to see in the posterior vaginal fornix, and easy to palpate in the rectovaginal septum.

For optimally precise preoperative diagnostic evaluation, history-taking and rectovaginal gynecological examination should be supplemented by transrectal ultrasonography, in combination with rectosigmoidoscopy, to determine whether the mucosa is involved. (Evidence Level 2) Rectosigmoidoscopy should ideally be performed during periods .Invasive foci can be documented by MRI, which can also provide very clear evidence of uterine adenomyosis. Tissue is obtained for histological diagnosis and staging either by laparoscopy or by laparotomy.

Surgery is currently the treatment of choice for symptomatic rectovaginal endometriosis. Many operative techniques have been developed for this purpose, all of them with the goal of an R0 resection. Regardless of the surgical approach used, the infiltrated rectosigmoid or sigmoid must be mobilized away from normal and pathological adhesions and then resected, after which an end-to-end anastomosis is performed. The patient must, of course, be fully informed about the nature of the procedure before it is performed. Special attention must be paid to the problem of suture-line dehiscence leading to rectovaginal fistula formation. As far as the treatment of pain is concerned, the data from clinical trials published to date have not led to the widespread adoption of laparoscopic uterine nerve ablation (LUNA) or other nerve-ablation techniques. Any adjuvant and/or experimental treatments that might be proposed should be discussed with the patient individually, in the light of her particular clinical circumstances and living situation.

Endocrine treatment

Once the diagnosis of endometriosis is histologically confirmed, endocrine pharmacotherapy can be used as a neo-adjuvant or adjuvant measure, as well as for the treatment of recurrences. Surgeons generally do not favor neo-adjuvant endocrine pharmacotherapy because of its unfavorable effect on tissue planes. In cases of extensive endometriosis, and particularly in deep infiltrating endometriosis, an R0 resection can

only rarely be achieved. It therefore makes sense to give adjuvant endocrine pharmacotherapy with the goal of transient therapeutic amenorrhea. The following options are available at present:

a. Gestagens
b. Oral contraceptives
c. GnRH analogues
d. Pain therapy
e. Combinations of the above
f. Experimental treatment approaches.

Conclusion

Endometriosis is a chronic, hormone-dependent disease of the uterus, with a highly variable clinical course. Thus, the treatment should be designed according to the patient's individual needs. This does not mean that it should be chosen arbitrarily. The physician should discuss with the patient whether the primary reason for treatment is acute or chronic endometriosis-related pain or an as yet unfulfilled desire to bear children. The best treatment for endometriosis is generally surgery combined with pharmacotherapy.

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Journal Scan

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Fetoscopic Laser Photocoagulation for Twin–Twin Transfusion Syndrome

Haruhiko Sago, Keisuke Ishii, Rika Sugibayashi, Katsusuke Ozawa, Masahiro Sumie, Seiji Wada

Introduction

Twin–twin transfusion syndrome (TTTS), which affects 10% of monochorionic (MC) twin pregnancies, results in high perinatal morbidity and mortality. MC twins share the same placenta and vascular anastomoses allow blood to flow between the two fetuses. The etiology of TTTS is thought to be a hemodynamic and probably hormonal discordance secondary to a chronic blood flow imbalance between twins through placental vascular anastomoses. Fetoscopic laser photocoagulation (FLP), which occludes placental vascular anastomoses, is thought to be useful for treating TTTS by directly coping with the underlying pathophysiology. Retrospective studies have noted that FLP resulted in high survival rates and low rates of neurological complications. The prospective randomized trial by the Eurofoetus group demonstrated that FLP is a superior and more effective first-line treatment than serial amnioreduction. A meta-analysis also showed that FLP is associated with better outcomes than serial amnioreduction. FLP is widely accepted and routinely offered for TTTS to improve the survival rate and neurological outcomes in fetal treatment centers across the world.

The purpose of this review: To update the knowledge regarding FLP related to our clinical practice. We reviewed the procedures, outcomes and complications of FLP for TTTS

Fetoscopic laser photocoagulation (FLP) procedure

The procedure is illustrated in Figure 1. FLP uses intrauterine fetoscopy with a laser fiber. Under adequate anesthesia (regional or local), a small skin incision is performed. A 3.8-mm cannula is percutaneously inserted into the recipient sac under ultrasound guidance either directly using reusable trocars with pyramidal tips (Karl Storz) or by the 'Seldinger' technique for vascular access. The site of entry on the maternal abdomen is crucial when performing the procedure. Although optimal positioning is sometimes limited by the location of placenta, a site not covered by the placenta that maximizes the chance of visualizing the vascular equator of the placenta should be chosen whenever possible. The virtual vascular equator of the placenta can be envisioned based on the two cord insertion sites and the body axis of the donor.

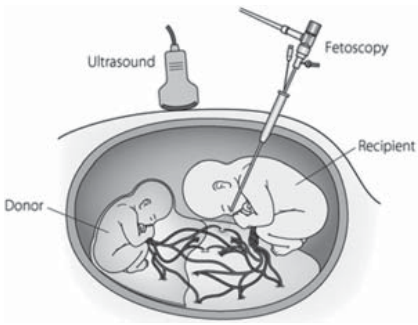

Figure 1

A schematic representation of fetoscopic laser photocoagulation for twin–twin transfusion syndrome. A fetoscope is percutaneously inserted into the recipient sac through a cannula.

Most operators use a 2-mm fetoscope with a 3-mm sheath (Karl Storz). Some operators use a 3.5-mm diagnostic and a 3-mm operating fetoscope (Richard Wolf). A 1.3-mm fetoscope is also used for cases lesser than 20 weeks of gestation. A rigid fetoscope with a straight sheath is used for a posterior placenta, and a semi-rigid fetoscope with a curved sheath is used for an anterior placenta. A 600-μm laser fiber is passed through the operative channel of the sheath of the fetoscope, and a neodymium: yttrium–aluminum–garnet (Nd:YAG) laser or diode (semi-conductor) laser is used. Although a diode laser is cheaper, an Nd:YAG laser is more commonly used.

All communicating vessels between the twins on the chorionic plate of the placenta (including arteriovenous [AV], arterioarterial [AA] and venovenous [VV] anastomoses) are coagulated using an output of 20–60 watts with a nontouch technique. The goal of surgery is to ablate all intertwin anastomoses.

Coagulation methods

Advances in the coagulation methods have been made. Initially, all vessels crossing the dividing membrane were coagulated (nonselective coagulation). While this method interrupts vascular anastomoses between the twins, many vessels that are not involved in anastomoses are also coagulated. Unnecessarily coagulated vessels result in a reduced vascular territory, which leads to a higher risk of fetal death. To overcome this problem, only communicating vessels between the twins are coagulated (selective coagulation), a process that was

first described by Quintero *et al*. These authors reported a sequential selective coagulation technique, in which the order of coagulation was determined by the type of anastomoses in order to reduce donor hypotension. A modified sequential selective coagulation technique was proposed by Nakata *et al*., involving the reversal of the order of coagulation of AA or VV anastomoses in the sequential coagulation. Coagulation of AV anastomoses follows that of AA and VV anastomoses. The ideal order of coagulation is still being debated. For selective coagulation, all vascular anastomoses must be identified. However, it is sometimes difficult to observe all of the vascular equator, in which communicating vessels are found, due to its location under the donor body. Thus, most procedures are performed as a combination of selective and nonselective coagulation.

The recent modification of coagulation referred to as the 'Solomon technique' that coagulates the entire vascular equator has been reported. This technique was developed to reduce residual anastomoses that cause recurrence of TTTS or twin anemia–polycythemia sequence (TAPS). It was shown that the 'Solomon technique' was associated with a reduction in TAPS (3% vs 16% for the standard treatment) and recurrence of TTTS (1% vs 7%) by an open-label randomized controlled trial. The 'Solomon technique' involves initially completing coagulation of all visible anastomoses and then performing coagulation to connect the anastomoses' ablation sites from one edge of the placenta to the other (Fig.2). This method enables MC placenta to be dichorionized by coagulating placental vessels and the surface of placenta. Although the occurrence of TAPS following FLP using selective coagulation was found to be low in our study (2.6%), we expect it to be further reduced using the 'Solomon technique'.

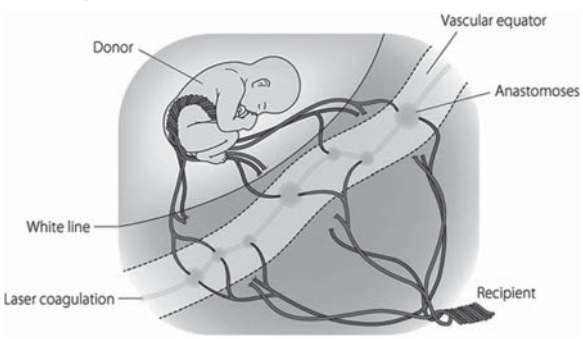

Figure 2: A schematic representation of the 'Solomon technique'. Initially, all visible anastomoses are coagulated, and then coagulation is performed to connect the anastomoses' ablation sites from one edge of the placenta to the other.

Survival outcomes

We reported our initial 181 consecutive cases of TTTS subjected to FLP at four centers in Japan between 2002 and 2006. The mean gestational ages at FLP and delivery were 21.2 and 32.9 weeks, respectively. The survivals of both twins and at least one twin at 6 months of age were 61.9% and 90.1%, respectively, and those in 148 cases between 2003 and 2009 at our center were 71.6% and 93.2%, respectively. A systematic review reported that the perinatal survival following FLP improved significantly with the evolution of the coagulation technique such as selective coagulation and the 'Solomon technique' and with a learning curve effect after the introduction of FLP in 1990. The mean survival of both twins increased from 35% to 65% and that for at least one twin from 70% to 88% over the past 25 years in a total of 34 studies including 3868 cases. The mean gestational age at delivery remained stable over the years at 32 weeks of gestation. The largest single-center experience for FLP in TTTS with 1020 cases was reported. The survival of both twins increased from 50% in the first 200 cases to 69.5% in the latter 220 cases. The survival of at least one twin increased from 80.5% in the first 200 cases to 91.8% in the latter 220 cases. Thus, with the recent significant improvement of survival rates, survival rates of 70% for both twins and more than 90% for at least one twin can be expected after FLP.

Neurological outcomes

Despite an improved survival rate, TTTS treated with FLP is still associated with neurological abnormalities, including severe cerebral injury and neurodevelopment impairments. Severe cerebral injury such as intraventricular hemorrhaging, cystic periventricular leukomalacia, porencephaly and ventriculomegaly can be detected by ultrasound and/or magnetic resonance imaging in the short-term follow-up. However, neurodevelopment impairments, such as cerebral palsy, severe development delay, blindness and deafness, require a long-term follow-up to be assessed. The incidence of severe cerebral injury in the recent cohort ranged from 2.9% to 6%. Two systematic reviews with pooled studies revealed the incidence of neurodevelopment impairment to be 11.1% (140/1255) and 13.3% (83/624).

Complications

Preterm premature rupture of membranes (pPROM), which leads to preterm labor, is a common complication after FLP. The incidence of pPROM within 7 and 28 days after FLP was 3.9–6% and 7.7–9%, respectively. Chorioamniotic membrane separation, an iatrogenic complication, occurs in approximately 20% of patients following FLP and is associated with pPROM before 28 weeks of gestation. No effective therapies to treat and prevent iatrogenic pPROM have yet been developed.

Maternal complications have also been reported in 10.7% of 150 FLP cases, with 6.0% classified as major and 4.7% as mild. Major maternal complications included placental abruption, accounting for the majority, as well as amniotic fluid embolism and Mirror syndrome. We experienced one case of placental abruption and two cases of Mirror syndrome in 181 FLP cases. Mild maternal complications able to be managed conservatively included intraperitoneal amniotic fluid leakage and

bleeding from the uterine wall. Attention for maternal complications should be paid in the management of pregnancy and labor of MC twins following FLP.

Conclusion

More than 25 years have passed since the first attempt at FLP, and 15 years have passed since the introduction of the FLP program in Japan. Great progress has been made over time, with a number of advances made in techniques for FLP for the treatment of TTTS. FLP is the optimal treatment option for TTTS at 16–26 weeks of gestation. The outcomes following FLP have been dramatically improved, with survival rates of more than 90% for at least one twin and 70% for both twins. However, there is still an 11–14% risk of long-term neurodevelopment impairment. FLP may be a therapeutic option for FFTS in triplets and TTTS after 26 weeks as well as for sIUGR associated with AREDV in UA and oligohydramnios. FLP is the most commonly performed and successful fetal intervention to date. Focus in the near future should be placed on improving the neurodevelopmental outcomes.

Editor's Comment: Laser photocoagulation is superior to other methods for management of TTTS. However there is risk of single or both fetal demise which has decreased over time due to improvement in techniques of photocoagulation. Selective has higher survival rates than non selective photocoagulation but lower as compared to Solomon's technique of photocoagulation of entire vascular equator and this technique also has the advantage of less rate of neurological morbidity associated with single fetal demise. However long term follow up is required to evaluate the neurodevelopmental outcomes in the various procedures to decide on the most effective and safe method.

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Colorectal Endometriosis

Jenny-Claude Millochau, Emanuela Stochino-Loi, Basma Darwish, Carole Abo, Julien Coget, Rachid Chati, Jean-Jacques TuechHorace Roman

Study Objective

To report postoperative outcomes after dual digestive resection for deep endometriosis infiltrating the rectum and the colon

Design

A retrospective study using data prospectively recorded in the CIRENDO database (Canadian Task Force classification II-2).

Setting

A university tertiary referral center.

Patients

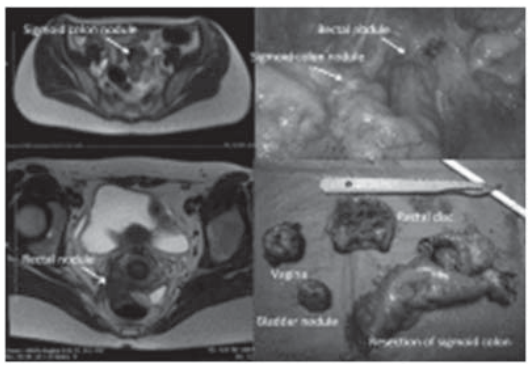
Twenty-one patients managed for multiple colorectal deep endometriosis infiltrating nodules.

Interventions

Concomitant disc excision and segmental resection of both the rectum and sigmoid colon.

All women referred to our department for deep endometriosis were clinically examined by a senior surgeon experienced in endometriosis (H.R.) and underwent magnetic resonance imaging. The women answered a questionnaire concerning clinical history and symptoms. When deep endometriosis was suspected, an endorectal ultrasound examination was performed to check for rectal involvement and to estimate the depth of rectal wall infiltration. In cases with colorectal involvement, a computed tomographic–based virtual colonoscopy was used to check for digestive tract stenosis and associated digestive tract localizations. Complementary examinations, such as cystoscopy and unenhanced helical computed tomographic imaging, were performed in women with associated involvement of the urinary tract.

Each nodule was removed separately. Low and midrectal nodules were treated by disc excision using either a circular stapler, a semicircular stapler or short segmental resection of the rectum. Upper nodules of the sigmoid colon or rectosigmoid junction were removed by either short colorectal resection or disc excision. Segmental resection was performed using a standardized technique, which has already been described by various authors. Care was taken to preserve at least 5 cm of intermediate healthy bowel normally vascularized in order to avoid bowel necrosis



Figure

Disc excision of the midrectum and short segmental resection of the sigmoid colon for multifocal colorectal deep endometriosis nodules using the semicircular stapler.

When deep endometriosis also infiltrated the posterior vagina, resection was performed by either the

laparoscopic or vaginal route. In these latter cases, omentoplasty was always performed in order to separate rectal and vaginal sutures. A diverting stoma was routinely created in patients who had both rectal and vaginal sutures and was usually closed 3 months later if a rectal barium enema ruled out rectovaginal fistula or leakage. Conversely, in patients with rectovaginal fistula, primary repair was attempted by the vaginal or transanal route. When this procedure failed, an abdominal approach was used by performing either suture of the rectal opening or segmental resection. The stoma was closed only when the barium enema confirmed complete fistula healing.

At the end of the procedure, the surgeon filled in a dedicated form, and the data were recorded in the CIRENDO database. Postoperative complications were recorded using the Clavien-Dindo classification. Patients were asked to fill in follow-up self-questionnaires 1, 3, and 5 years after the procedure. Prospective recording of data and their use in studies has been approved by the French authority CCTIRS (Advisory Committee on Information Processing in Healthcare Research).

Observation & Results

The assessment of postoperative outcomes was performed. Rectal nodules were managed by disc excision and segmental resection in 20 patients and 1 patient, respectively. Sigmoid colon nodules were removed by short segmental resection and disc excision in 15 and 6 patients, respectively. The rectal nodule diameter was between 1 and 3 cm and over 3 cm in 33% and 67% of patients, respectively. Associated vaginal infiltration requiring vaginal excision was recorded in 76.2% of patients. The mean diameter of the rectal disc removed averaged 4.6 cm, and the mean height of the rectal suture was 5.8 cm. The length of the sigmoid colon specimen and the height of the anastomosis were 7.3 cm and 18.5 cm, respectively. The mean operative time was 290 minutes, and the mean postoperative follow-up averaged 30 months. Clavien-Dindo 3 complications occurred in 28% of patients, including 4 with rectal fistulae (19%). The pregnancy rate was 67% among patients with pregnancy intention.

Conclusion

Our data suggest that combining disc excision and segmental resection to remove multiple deep endometriosis nodules infiltrating the rectum and the sigmoid colon can preserve the healthy bowel located between 2 consecutive nodules. However, the rate of postoperative complications is high, particularly in patients with large low rectal nodules.

Editor's Comments: Colorectal endometriosis may necessitate the removal of affected segment of the colon. Technical modifications are being developed to improve the efficacy and safety of procedure. Discoid resection offers an advantage over segmental resection in terms of lesser sacrifice of colonic wall enabling easy application of circular or semicircular staples with more secure closure of defect. However complications like rectal fistulae still occur in around 28% and further improvement in techniques is required to minimize complications.

Clinical Proceedings of AOGD Clinical Meeting held at BLK Hospital on 25th May, 2018

Cesarean Scar Ectopic Pregnancy

Dinesh Kansal[1], Pooja Gupta[2]
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Introduction

Cesarean Scar Ectopic Pregnancy (CSEP) is a pregnancy implanting within the scar from a previous cesarean delivery. The incidence of cesarean scar pregnancy is thought to be 1 in 1800-2216 pregnancies. But frequency is increasing due to the increasing number of cesarean sections being performed. Also, increased detection due to the widespread availability of better imaging facilities is cause behind the increased number. CSEP can be divided into two types so that prognosis and specific management can be provided. Type I is caused by progression towards the cervico-isthmic space. Type II is caused by deep implantation into the isthmic myometrium and causing a bulge from the uterine serosal surface as the pregnancy advances. If undiagnosed, Type II may result in uterine scar rupture with life threatening hemorrhage. Thus, timely management with an early and accurate diagnosis is of paramount importance.

Case Summary

A 32 years old G6 P2 A3 (both LSCS) was admitted with pain in lower abdomen on right side and bleeding PV. Her vitals were normal and general condition satisfactory. The patient had taken MTP pills 34 days back for 5 and 1/2 weeks pregnancy. She underwent suction evacuation due to incomplete abortion 11 days back. A repeat D and C under USG guidance was done 3 days prior as she continued bleeding and ultrasound revealed continuing incomplete abortion. Due to profuse bleeding during the procedure, Foley's tamponade was done and Inj. Methotrexate 75 mg. was given intra-muscularly. Patient was transferred to our hospital. Her beta HCG level was 2909 units and MRI revealed Type II CSEP on right lateral side of the previous caesarean scar. Her routine preoperative investigations were normal.

On hysteroscopy, uterine cavity was found to be empty and few clots were present at right lateral aspect of isthmic lumen. Laparoscopy did not reveal any bulge of CSEP till the right round ligament was cut and anterior leaf of broad ligament opened. Due to extreme proximity of the mass to the uterine vessels and ureter, decision was taken to ligate the right uterine artery at its origin by using a clip. An incision was taken over the mass and RPOC removed in an endobag. Suction and irrigation was carried out to avoid persistent ectopic pregnancy in future. The scar was repaired and the right round ligament reconstructed. Hemostasis ensured.

The patient's symptoms and anxiety of rupture of CSEP were alleviated completely and she was discharged within 24 hours. She did not require any blood transfusions or Injection Methotrexate. Here beta HCG levels disappeared within two months.

For Type I CSEP, Hysteroscopically or USG guided suction curettage appears to be a reliable treatment option. Whereas, Laparoscopic ecacuation, resection and repair of the implantation site for Type II CSEP is associated with a high success rate (≥96%) and a low risk of hemorrhage.

Early diagnosis with Beta HCG, trans vaginal color Doppler USG and MRI allows for fertility sparing management of this life threatening condition.

Recurrent Parasitic Fibroids

Alka Sinha
Senior Consultant BLK Hospital, New Delhi

We present a case of recurrent parasitic fibroids following laparoscopic myomectomy with morcellation for a large intramural fibroid. A year after the surgery she presented with soft tissue mass in the right subcostal region. The mass was removed by laparoscopic approach and histopathology diagnosis of leiomyoma made. A year later she again developed a fibroid and was taken up for laparoscopic myomectomy at another hospital. However surgery was deferred due to presence of large serpentine vessels. During laparotomy done by our team the parasitic fibroid was seen to be growing into the sigmoid mesocolon deriving its blood supply from the inferior mesenteric artery and partial resection of the colon had to be done while removing the mass. Disseminated fibroids were seen. Abdominal cavity and the intestines were thoroughly explored and all fibroids were removed. Histopathology confirmed fibroids without any neoplastic change. Six months later she was diagnosed with another fibroid in the adnexa for which she received Ulipristal. She is at present in her 7th week of pregnancy and fibroid has increased to 14cms in size.

A Rare Case of Huge Broad Ligament Fibroid

Poonam Khera, Laxmi Mantri, Kanika Garg, Neeti Chaturvedi

Fibroids are the most common pelvic tumours present in 20% woman in reproductive age. Among these broad ligament fibroids are very rare (<1 %). Broad ligament fibroids have the tendency to grow to enormous sizes. We present a case of true broad ligament fibroids in post-menopausal woman.

Case Report

A 54-year-old, P4L4 post-menopausal lady presented with complaints of increasing abdominal distension and pain in abdomen for past one and half year. Abdominal examination revealed a firm mass of 36 weeks size arising from the pelvis. USG abdomen showed a large well circumscribed mass lesion of 29 x 26 x 21 cm in abdominopelvic region which was inseparable from the uterus. On CECT, the mass was reported as giant uterine leiomyoma with degeneration.

Patient was taken up for laparotomy. Intraoperatively, a true broad ligament fibroid of 32 x 30 x 16 cm and weighing 10.14 kg was lying in the abdominal cavity. It was carefully dissected out within the capsule and send for frozen section. The report came as benign. Right tube and ovary were normal. Left tube and ovary were adherent to mass. Total abdominal hysterectomy with left salpingo-opherectomy was done . Bilateral ureters were traced and normal peristalsis of both the ureters was seen. Histopathology report came as leiomyoma with areas of cystic change and no abnormal mitosis.

Thus, Giant True Broad Ligament Fibroids are very rare. It may mimic malignant tumours clinical and on imaging may present a diagnostic challenge. The definitive management is hysterectomy, whereas myomectomy is considered in patients who want to preserve fertility.

Answer Quiz: May Issue

Congratulations

Congratulations to Dr. Anita Rajorhia for successfully answering the quiz and crossword correctly!!

Answer Key for Crossword may issue

Down: 1. Myoinositol, 2. Stein leventhal, 3. Drospirenone, 5. Rotterdam, 7. Hydralazine

Across: 4. Cortical, 6. HELLP, 8. Ferriman Gallway, 9. Endothelial, 10. PRES

Answer Key for pictorial quiz may issue

Figure 1: 1. MRI brain showing cerebral edema in bilateral occipital lobe, 2. PRES syndrome, 3. Headache, confusion, seizures and visual loss, 4. Blood pressure control, symptomatic and supportive management.

Figure 2: 1. Acanthosis nigricans, 2. Insulin resistance, 3. PCOS, Cushing's disease, 4. Topical or oral retinoids, Laser therapy.

Save the Dates

First Announcement

40th Annual Conference of Association of Obstetricians & Gynaecologists of Delhi (AOGD)

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Venue: **India Habitat Centre**

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