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JAYPEE HOSPITAL LIFE FIRST

JAYPEE MED REVIEW

April'16 - June'16
Vol. 1

Med Review published by Jaypee Hospital, Noida for Medical Professionals.

Challenging biventricular repair in a case of complex congenital heart disease

Dr. Rajesh Sharma - M.Ch. (Cardiac Surgery), Director,
Dept. of Paediatric CTVS

Dr. Vishal K Singh - MD, DNB (Paeds), Associate Director,
Dept. of Paediatric Cardiac Critical Care

Dr. Ashutosh Marwah - MD (Paeds), Associate Director,
Dept. of Paediatric Cardiology

A male child, 7 yrs and 4 months old with mild motor developmental delay was referred to our institute as a diagnosed case of complex cyanotic congenital heart disease. In the neonatal period, the patient had a history of chest infection requiring ICU admission with seizures and has been on anti-epileptics for the same. The child has been under regular neurological follow up for generalized tonic clonic seizures and currently receiving Levetiracetam. The patient had a history of increased bluish discoloration of lips and tongue over the last few months with mild breathing difficulty and was referred to our institute for further checkups. He was also operated for undescended testes at the age of 4 years.

On clinical examination, the patient had a heart rate of 110/min with NIBP 90/50 mm Hg and oxygen saturation 75% on room air. On auscultation, the child had a normal first heart sound with the soft second heart sound and a 3/6 systolic murmur in the left upper parasternal area. The child had generalized hypotonia but verbal interaction with parents and response to environmental stimulation was close to normal. The diagnosis was confirmed on 2D echocardiography with

The parents were counseled regarding the high risk of the biventricular repair and the extended recuperative period. With the parents consent, the child underwent the double patch repair of AVSD with the Rastelli Procedure wherein a conduit was placed between RV and PA, with a PDA ligation.

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color doppler as situs solitus, levocardia, a complete balanced atrioventricular septal defect (AVSD), Rastelli type A with Double outlet right ventricle with D-malposed great arteries and mild AV valve regurgitation with borderline high mean PA pressures with moderate valvular pulmonary stenosis with confluent good sized pulmonary arteries, confirmed by catheterization in Hyderabad.

The parents were counseled regarding the high risk of the biventricular repair and the extended recuperative period. With the parents consent, the child underwent the double patch repair of AVSD with the Rastelli Procedure wherein a conduit was placed between RV and PA, with a PDA ligation.

Postoperatively the child was shifted to the ICU with borderline hemodynamics supported by moderate inotropic supports. A 2D echo with color doppler was reviewed in view of the high left atrial pressures and low systemic blood pressure and revealed biventricular dysfunction with mild left AV valve regurgitation. The child was in Low Cardiac Output State (LCOS) with elevated left atrial pressures and hence was kept with balanced colloid and inotropy with inodilators (dobutamine, milrinone and low dose adrenaline infusion). The patient persisted in LCOS over the next 72 hours and subsequently stabilized. He required diuretic infusion to ensure the third spacing reduces and was optimized with albumin induced diuresis intermittently. Due to the persistent feeding intolerance, he also required Partial Parenteral Nutrition (PPN).

Once the child had secured stable hemodynamics with good urine output and documented improvement in myocardial contractility, the patient was gradually weaned and extubated on the 6th post operative day (POD). The patient required non-invasive ventilation due to early onset of respiratory fatigue due to poor nutritional status and critically balanced cardiopulmonary interaction. For initial few hours, the child maintained acceptable gas exchange but after a few hours, started desaturating with increased respiratory distress and hence was reintubated on the 8th POD. Due to diffuse atelectasis, the patient was ventilated as per the guidelines of lung protective strategy for Acute Lung Injury (ALI). A 2D echo was also repeated and revealed improved biventricular function with mild to moderate left AV Valve regurgitation and hence the afterload reduction was further optimized. The patient also had a SVT in this phase and required amiodarone therapy for the same.

Subsequently once the clinical and radiological improvement was documented,

Decision to go for a univentricular repair in view of the difficult route of the LV to aorta after VSD closure. But due to high PA pressure this was not a very encouraging option and hence it was decided that a high-risk biventricular repair would be a better long-term option with a better quality of life even though the postoperative course was expected to be stormy.

the patient underwent a tracheostomy to facilitate ventilator weaning on the 18th POD. In the interim, the patient had clinical evidence of gram-negative sepsis with fever thrombocytopenia and elevated procalcitonin levels. The antibiotics were modified and antimicrobial therapy was further streamlined based on the positive culture reports (XDR pseudomonas aeruginosa and chryseobacterium indologenes) and received antibiotics for a total duration of 21 days. While he was being gradually weaned and trained for respiratory effort on tracheostomy, building up his nutrition was a challenge due to recurrent feeding intolerance. The protein intake was strictly monitored in view of his single kidney. The patient was gradually weaned till oxygen by T-piece consistently for around 72 hours before he was successfully decannulated on the 32nd POD. He was continued on a high calorie diet with essential amino acid rich protein source based nutrition regimen. He gradually moved to oral feeds once when he was shifted to the ward. He required a prolonged rehabilitation exercise in the ward and was finally discharged on the 40th POD.

The specific challenges associated with this case scenario were:

Decision to go for a univentricular repair in view of the difficult route of the LV to aorta after VSD closure. But due to high PA pressure this was not a very encouraging option and hence it was decided that a high-risk biventricular repair would be a better long-term option with a better quality of life even though the postoperative course was expected to be stormy.

Our capability to assess the situation is one of the many reasons for the child being referred to our institute from Hyderabad and since Dr. Rajesh Sharma is one of the few surgeons in South Asia who deals with such cases, it was the right choice.

The patient had major feeding intolerance in the initial postoperative period due to LCOS and hence the nutritional targets were difficult to meet in spite of PPN due to restriction on the volume that can be administered.

Due to the preoperative poor neurological status and the postoperative immunosuppression, the patient had to go through nosocomial sepsis, which required prolonged high-end antimicrobial cover.

On discharge, the patient was on a high calorie (1500 k cal per day and high protein (40 gm per day) diet orally, mobilized and on the 2D echocardiography with color doppler the biventricular contractility was adequate with moderate Left AV valve regurgitation, medically managed with diuretics and ace inhibitors.

Life of a 15 year old girl saved in a 12-hour long rare heart surgery

Dr. Rajesh Sharma - M.Ch. (Cardiac Surgery), Director, Dept. of Paediatric CTVS
Dr. Smita Mishra - DNB (Paediatrics), Associate Director, Dept. of Paediatric Cardiology

A 15-year-old girl Neha who was born with inverted connection of the great arteries with multiple holes in the heart and obstruction in the blood flow to the lungs, received a new lease of life as a team of doctors, led by Paediatric Cardiac surgeon Dr. Rajesh Sharma performed a 12-hour long surgery in which she underwent Rastelli procedure along with Fontan removal and Biventricular repair. The girl is recovering well and till date only six such treatments have been reported worldwide and none so far from India prior to this surgery.

Prior to this surgery, Neha had undergone another heart surgery (a Fontan Operation) in another hospital in the year 2013. Although technically successful, this surgery worsened her condition. Fluid started collecting in the right side of her abdomen and chest, which resulted in increased swelling in her entire body. Later, she even started vomiting blood followed by serious infections in her body.

Many well known hospitals declined her case altogether on which Neha's father, Mr. Jayprakash said, "I had almost lost all hope to see Neha alive and healthy. But Jaypee Hospital's Dr. Smita Mishra (Senior Consultant, Paediatrc Cardiology), gave us hope".

Speaking about this rare surgery, Dr. Rajesh Sharma, Director, Paediatric Cardiac department said, "The patient was in an extremely critical condition and we didn't have the luxury of time. We decided to go ahead with the procedure of Fontan takedown and convert her into a biventricular repair".

After getting consent from the patient's parents, this complicated surgery was performed. Post-operation Neha was kept on ventilator for a few days and now she is showing excellent signs of recovery.

Dr. Rajesh Sharma performed a 12-hour long surgery in which she underwent Rastelli Procedure along with Fontan removal and Biventricular repair. The girl is recovering well and till date in six such treatments have been reported worldwide and none so far from India prior to this surgery.

An inspiring tale of revival in a case of Coronary Calcification.

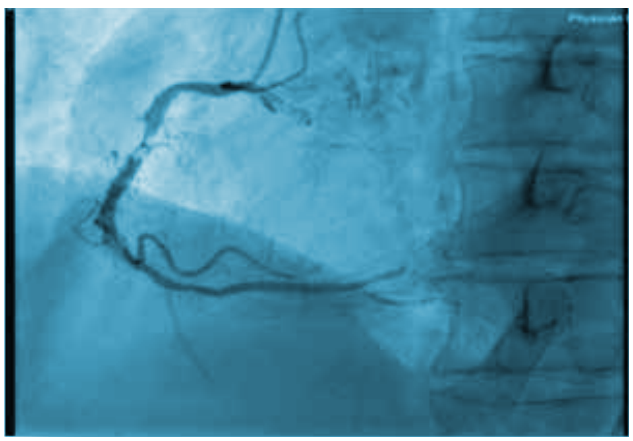
Dr. Sanjiv Bharadwaj - DM (Cardiology), Associate Director, Dept. of Interventional Cardiology (Adult)
Dr. Mithilesh Kumar - DNB (Cardiology), Attending Consultant, Dept. of Non-Invasive Cardiology (Adult) & ICCU

INTRODUCTION :

Coronary calcification is a common phenomenon of coronary artery disease. In cases of significant calcification coronary lesion becomes resistant, in-distensible and difficult to dilate. Hence, one has to change the Percutaneous Coronary Intervention (PCI) procedure while dealing with this type of calcified lesion. Direct stenting procedures are not suitable when the calcification is visible and pre-dilation with a balloon catheter is mandatory before stenting. Inappropriate pre-dilation of calcified lesion carries the risk of inadequate stent expansion. Lesions that can not be dilated with a balloon catheter due to lesion rigidity may also be amenable to Cutting Balloon Angioplasty (CBA) and Rotational Atherectomy. We will now describe a case in which coronary calcification was present and stenting was done after repeat balloon dilatation with buddy wire technique.

CASE REPORT

A 65-year-old hypertensive, chronic smoker male presented with complaints of retrosternal chest pain of 3 hours duration. Chest pain associated with breathlessness and sweating with no radiation. On evaluation his vitals were stable (Pulse – 60/minutes, BP – 140/80 mm Hg).



ECG showed ST Elevation in lead II, III and a VF with reciprocal ST-T changes in lead V2 – V3. He was diagnosed as a case of Acute Inferior Wall Myocardial Infarction. Patient was taken for Primary PCI.

His coronary angiogram showed proximal RCA having 99-100% lesion with thrombus in mid RCA and calcification also present, PLV has 90% Proximal lesion with thrombus. LAD showed proximal to mid calcification with proximal 70% and mid 70-80% lesion. Primary PCI was planned and lesion was accessed with Judkins Right (JR) 3.5 7F guiding catheter and All Star coronary wire. Thrombosuction was tried with thrombuster II 7F aspiration catheter but catheter couldn't cross. The lesion was predilated with a balloon (2.0 x10 mm) and (2.5 x 12 mm) sequentially up to 10 ATM. Yukon choice PC stent (3.5 x 18 mm) was advanced but it failed to cross the lesion so stent was withdrawn. A BMW (buddy) wire (0.014) was advanced into the same vessel. Then another balloon (2.75 x 8mm) was taken and inflated up to 10 ATM for 20 seconds. A Yukon choice PC stent (3.5 x 18 mm) was advanced with some difficulty and stent was successfully deployed at 10 ATM with deep inspiration. Post dilatation was done with Non Compliant Sapphire (NC) balloons of 3.5 x 12 upto 18 ATM of inflation. Intracoronary Inj. ReoPro 5ml was given followed by ReoPro infusion for 12 hours.

TIMI III flow achieved with good end result with residual thrombus in mid RCA & PLV. Check Angiography done at 48 hrs revealed patent stent with minimal residual thrombus in mid RCA & PLV.

DISCUSSION

Calcified lesions carry the risk of inadequate stent expansion because of rigidity and reduced vessel distensibility. Therefore, the proper selection of lesions is of

crucial importance for stenting. In our case, the calcification was initially noted during the angiogram.

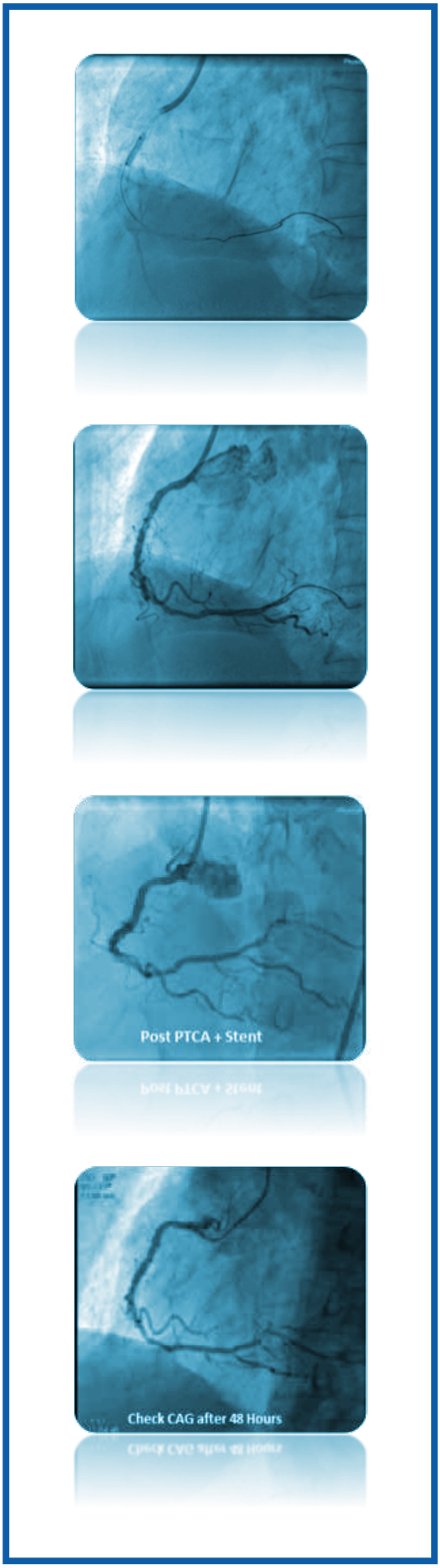
The buddy wire technique is used to treat resistant lesions. With this approach, a coronary guide wire is passed alongside a conventional balloon catheter. When the balloon is inflated at high pressure, the adjacent wire creates a focused force like the microblade of a Cutting Balloon. It is important that the parallel guide wire is in front of a rigid atherosclerotic plaque. In our case when balloon failed to expand the lesion & stent was failed to cross the lesion, we used this technique with conventional balloons of different sizes.

The Cutting Balloon has also been used to treat resistant lesions. This catheter has 3-4 atherotomes (microsurgical blades) longitudinally attached to the balloon with which balloon inflation induces cutting or incision of the atherosclerotic plaque. These microtomes, approximately 0.25 mm in height are 3-5 times sharper than conventional surgical blades. The microtome edge initiates an indentation into the plaque, after which the shear force applied by the balloon inflation propagates the crack. Depending on balloon size, the cutting force at the blade edge is enhanced 200,000-400,000 times. Previous studies demonstrated successful Cutting Balloon Angioplasty in resistant lesions with and without calcification that had been undilatable with conventional balloon catheters inflated at high pressure. Because of the microblades, the cutting balloon is less flexible and has a larger profile than conventional balloon catheters, which makes delivery failure to be more frequent with the Cutting Balloon compared to conventional balloon catheters. Scoring balloons are also being used to treat resistant lesions and in-stent restenosis. Cutting balloon and scoring balloon may be different in effect as they are structurally different. However there is no head-to-head comparison. Scoring balloon integrates at least one or more flexible stainless steel wires adjacent to the dilatation balloon.

These wires focus the balloon's dilatation force to create longitudinal expansion planes in the coronary plaque and / or score the lumen surface and stabilize the balloon across the target lesion.

Several other techniques including rotational atherectomy and hugging balloon technique have been used for the treatment of calcified and resistant lesions. Rotational atherectomy is known to debulk calcified lesions effectively, resulting in increased compliance and a cylindrical geometry of the treated vessel. Hugging balloon inflation technique which requires crossing the lesion with two guide wires and two balloon catheters followed by simultaneous inflation of both the balloon catheters in a lesion.

In conclusion, our case showed that it is important to check for the presence of calcification at the lesion prior to performing PCI. In the presence of calcification try every effort to break it and prepare the vessel for stenting before deployment. Once the calcified lesion becomes stented, it becomes more resistant and may not respond to best defined techniques.



Keep a healthy heart, so we won't be apart.

Dr. Gunjan Kapoor - DM (Cardiology), Director, Dept. of Interventional Cardiology (Adult)

Myths about heart disease in Women:

Ask a woman to name the disease she fears will most likely kill her and great majority think of Cancer. However the fact is while one in 31 women die of breast cancer whereas heart disease kills one in three. Also it is not a disease of old and sedentary women, rather it can even affect young or yoga-loving, work-out freaks if they have certain risk factors. Another worrisome fact is that for more than fifty percent women the first presentation of heart disease may be sudden cardiac death, even higher than men. It is true that the first presentation of heart disease in women may be approximately ten years later than men and peaks after menopause, but then it tends to rise rapidly. Also death from heart disease is rising rapidly in women.

Are Indians more prone to heart disease?

Asian Indians worldwide have 50% to 400% higher incidence of Coronary Artery Disease (CAD) as compared to people of other ethnic origins. India today is in the middle of an epidemic for coronary artery disease and urban Indians have four times the incidence of coronary artery disease as compared to Americans. In last thirty years, the CAD rates halved in the West whereas they doubled in India with no signs of downturn yet.

Wake up call for Young India:

The average age of first heart attack has decreased by 20 years in India. About half of all heart attacks in Indians occur under the age of 50 years and one-fourth under the age of forty years. This premature CAD in Indians is due to genetic susceptibility. About one-third of Indians have high levels of Lipoprotein(a) which magnifies the adverse effects of lifestyle factors associated with urbanization, affluence and changes in diet.

How are women different from men in terms of Coronary Artery Disease?

Scientific studies have shown that females may often have symptoms of angina but less of obstruction in the coronary arteries. And one may find normal coronary arteries on angiography. Also, almost forty percent of women may not have chest pain during heart attack and may more commonly have breathlessness and extreme weakness. The pain may also radiate to back or shoulders more commonly. Diabetes increases the risk of heart attack almost three times. Obesity and metabolic syndrome is more common in women. If a woman has high blood pressure during pregnancy or polycystic ovary disease it increases her chances of getting a heart attack. Smoking is particularly harmful for women and even minimal smoking increases the risk. Women smokers have six times the risk of heart attack compared to three times in men. Low levels of good cholesterol (Low HDL) and high triglycerides rather than high levels of bad cholesterol are more predictive of heart disease in women.

How to reduce the risk of heart disease?

By doing just 4 things – eating right, being physically active, not smoking and keeping a healthy weight, you can lower your risk of heart disease by as much as 82 percent.

Enterococcus Faecalis Endocarditis of Bicuspid Aortic Valve with AML Perforation

Dr. Biswajit Paul - DNB (Cardiology), Sr. Consultant, Dept. of Non-Invasive Cardiology (Adult) & ICCU
Dr. Samina Ashfaq - PGDCC, Attending Consultant, Dept. of Non-Invasive Cardiology (Adult) & ICCU

CARDIOLOGY

A 60-year-old male, chronic smoker, alcoholic, normotensive, non-diabetic, presented to the emergency department with the complaints of breathlessness and cough with expectoration for 4-5 days. He gave history of one episode of fever which was low grade not associated with chills or rigors. He had no history of chest pain and denied any prior surgery. Patient was conscious, oriented and had a heart rate of 106 bpm, BP - 136/5 mm Hg. On auscultation, a systolic and diastolic murmur were audible over the precordium.

Transthoracic Echo revealed:

Severe MR, Severe AR with a mass attached to aortic cusps raising the suspicion of a vegetation, estimated RVSP was 60 mm Hg. LV dimensions were high normal with normal LVEF.

Patient was taken up for Transesophageal Echocardiography for the evaluation of mass in aorta and to rule out infective endocarditis.

TEE done revealed:

Bicuspid aortic valve with severe AR, Oscillatory mass in relation to aortic cusp suggestive of vegetation, Perforation in aortic cusp, Severe MR (Perforation in AML), Oscillatory mass in relation to AML, Ruptured chordae, Vegetation, Estimated

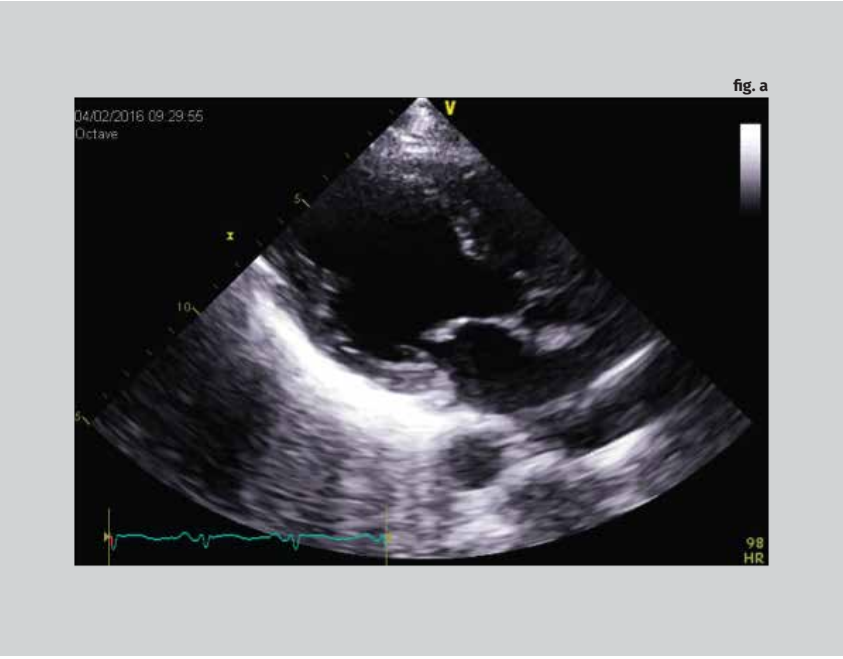


fig. a

fig. b

fig. c

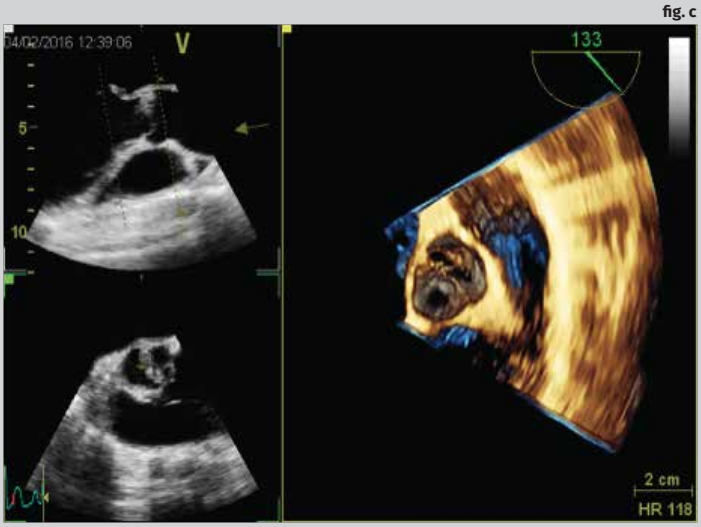


fig. d

RVSP=70 mm Hg, No RWMA, EF=60%, Dilated LA/LV, No atheroma in aortic arch.

In view of the TEE findings, blood samples were sent for blood culture which were positive for gram positive Cocci (Enterococcus Faecalis).

Thus diagnosis of infective endocarditis was confirmed. Patient was put on antibiotics sensitive for the organism.

DISCUSSION

Bicuspid aortic valve is the most common congenital cardiac malformation affecting 1-2% of the population. The incidence of infective endocarditis in the bicuspid aortic valve population ranges from 10-30%. Bicuspid aortic valve is associated with significant morbidity and mortality specially after the fourth decade of life. In patients who have bicuspid aortic valve, IE causes 43-60% of cases of severe AR from cusp perforation in most instances and often requires intervention. Variety of secondary lesions can develop on Mitral Valve including partial thickness ulcerations, perforations, vegetations and aneurysm. MR can also result from aneurysm, perforation or from mass effect produced by lesion critically located along the lines of leaflet closure.

Number of mechanisms have been invoked to explain this:

- AR jet striking the ventricular surface of AML
- Vegetation prolapse into LVOT (kissing lesions)
- Contiguous spread of infected tissue

Treatment is generally antimicrobial therapy along with surgical consideration after stabilization.

a) PLAX View showing mass in aorta

b) SAX View showing mass attached to aortic cusp

c) TEE Image showing bicuspid aortic valve and vegetation attached to aortic cusp

d) Perforation in AML and severe mitral regurgitation

Now age is no bar for joint replacement

Dr. Sanjay Gupta - M.Ch. (Ortho & Joint Replacement), Associate Director, Institute of Bones & Joints
Dr. Anshumali Choudhary - MD (Anesthesia), Associate Director, Dept. of Anesthesia

104 year old Mateshwari Devi is older than Edith Dewhurst from Greater Manchester, who is the oldest person in the world to have partial hip replacement surgery as per Guinness World Records.

104 year old Mateshwari Devi is older than Edith Dewhurst from Greater Manchester, who is the oldest person in the world to have partial hip replacement surgery as per Guinness World Records.

Today, most people have this misconception that complex surgery at advanced age is not good. This belief prevents required surgery for patients who need it to improve their quality of life and they continue to suffer for rest of their lives. Recently, a 104-year-old woman underwent complex and complicated hip replacement surgery at Jaypee Hospital, Sector-128, Noida.

Mateshwari Devi, 104 year had a fall which led to fracture and traumatic arthritis of hip joints. Team of doctors under the mentorship of Dr. Sanjay Gupta (Joint Replacement Surgeon) and Dr. Anshumali Choudhary (Head of Anaesthesia & Pain Management) performed this surgery and patient was discharged in 5 days. Patient is now doing daily activity comfortably.

"It was challenging for us to take a decision for the surgery due to the age of the patient and specially to convince the patient's relatives. Prior to surgery, we conducted whole body examination and review by Cardiologists, Chest Physicians and Nephrologists to ensure safety", said Dr. Sanjay Gupta, elaborating on this complicated case.

According to Dr. Anshumali Choudhary, Anaesthetist at Jaypee Hospital, "Administering anaesthesia at such an advanced age involves high risks. This particular patient suffered from irregular heartbeat, low level of thyroid hormones, kidney problems, feeble hearing and shortening of the backbone. However, with support from our doctors and team of experience anaesthetists, we had seamless procedure with no complication during and after the surgery".

The son of the patient, enthusiastically tells, "My mother is now completely fit. Initially, it was very difficult to convince myself and my entire family for her surgery, but today we have no regrets. Rather, we are happy that we took a right decision".

"It was challenging for us to take a decision for the surgery due to the age of the patient and specially to convince the patient's relatives. Prior to surgery, we conducted whole body examination and review by Cardiologists, Chest Physicians and Nephrologists to ensure safety", said Dr. Sanjay Gupta, elaborating on this complicated case.

Broken Hip Replacement - A Case Report

Dr. Sumit Bhushan Sharma - MS (Ortho), Consultant, Institute of Bones & Joints
Dr. Pankaj Singh - DNB (Ortho), Attending Consultant, Institute of Bones & Joints
Dr. Raj Bhadur - DNB (Ortho), Attending Consultant, Institute of Bones & Joints
Dr. Naren Pratap - DNB (Ortho), Attending Consultant, Institute of Bones & Joints

As the longevity of life increases and also the quality of prosthetic implants, number of hip and knee arthoplasty surgeries continue to rise. With the increase in number of primary surgeries, our generation of orthopaedic surgeons will also see an increase in number of revision arthoplasty surgeries being performed.

We report one such rare case of hip replacement where not only there was a fracture through the bone but the fracture extended through the implant too.

History and exam

An 81-year-old male sustained a significant traumatic right hip after a fall. He had a cemented hemi hip replacement done 3 years back which too broke with the fracture proximal femur (Pic 1). Past history was also significant for Diabetes Mellitus, Hypertension, CABG done 2 years ago. He consumed blood thinners for 2 years which required to be stopped in any surgical procedure. Tenderness at fracture site and evident shortening was there. Patient was immobilized in a crammer wire splint.

Inflammatory markers ESR was raised slightly. CRP was within normal limits. CBC and Urine analysis were normal. A single stage revision procedure was planned looking at the medical comorbidities the patient had. For a redo case the planning surgical map was laid down.

Difficulty Anticipated:

- Intraop evidence of infection
- Need for ETO (Extended Trochanteric Osteotomy) for proximal fragment
- Need for cortical window for distal fragment
- Removal of cement plug
- Periprosthetic fracture
- Medical comorbidities and surgical time
- Osteosynthesis of fracture need for cable, grafts and LCP
- Use of monolith or modular stem system

Approach:

Hip joint was exposed using a standard posterior approach. Lateral decubitus position was used.

The proximal part of the prosthesis was dislocated. Special cement cutting burr was used to remove the cement collar and proximal prosthesis was removed without an osteotomy of proximal femur. Through the fracture site the distal end of the prosthesis was removed. The distal fragment was loose and it obviated the need for a cortical window. Fracture was exposed, ends freed and reduction achieved with bone clamps. 16 GSS wires were used to hold the fracture in place. The wire loops were tightened that much to keep the fracture in place while flexing, adduction and internally rotating the thigh. Keeping in view the fragility of the bone, the wire loops were not tensioned. The proximal femur was exposed and all the cement debris cleared with a burr. Size 12, 14 cortical reamer was used to ream proximal as well as distal fragment and push the cement restricter distally. The position was confirmed using C-arm and the restrictor was well distal to the final length of the stem chosen. A beaded guide wire was then inserted till distal most part of the femur and sequential reamings were done till size 16 mm with standard AO reamers. Final reaming was done with a cortical reamer of 16 and 16.5 mm after removal of the guide wire. At this stage, the wire loops around the fracture were tightened again. At no point during surgery we removed the bone clamps which gave stability holding the fragment in place. Choice of Stem was 10 inch solution stem (Depuy, J&J) with 16.5 mm dia (fully porous coated stem with a bow to adjust femur geometry). Final tensioning of wires was done at this stage and clamps were released to see the stability. We did not use any bone graft or plate to aid fracture stabilization. The stem was press fit and gave stability at proximal and distal fits. Surprisingly socket was in a relatively good condition. We went ahead with a bipolar cup over a solution stem.

Standard posterior hip precautions were maintained and patient was allowed graduate to full weight bearing 3 weeks post surgery. Simulatneous treatment for osteoporsis was started.

Follow up:

3 months post op fracture united (Pic 2a,b) and patient was walking with full weight bearing as well as sitting cross leg after the surgery (Pic 3).


Pic 1

Pic 2a

Pic 2b


Pic 3

Painless Hair Transplant

Dr. Ashish Rai - DNB (Plastic Surgery), Sr. Consultant,
Institute of Plastic, Aesthetic & Reconstructive Surgery
Dr. Saurabh K Gupta - M.Ch. (Plastic Surgery), Associate Consultant,
Institute of Plastic, Aesthetic & Reconstructive Surgery

Introduction

Hair transplant is one of the most common aesthetic procedures performed in the male population. Techniques have evolved in the last 50 years, resulting in more natural (and aesthetically pleasing) hair transplants. In androgenic alopecia, the follicle reduces in size and the number of dormant follicles increases. These atrophic follicles take a more superficial location, and the visible hair shaft thins. Hair follicles are still present in these bald areas, but they are atrophic and essentially nonfunctional. It is also done in other problems such as cicatricial alopecia, eyebrow reconstruction after burn injury and in females with severe loss of hair due to some reasons. Hair in the occipital region are genetically programmed to stay longer than the front one, so the hairs are harvested from the back and in scarcity they can also be harvested from the beard area and the chest as well.

Anatomy of a normal hairline

A critical anatomic landmark in the mature male hairline is the frontal–temporal recession. This landmark is formed by the emergence of two convex lines making up the frontal and the temporal hairlines. A hair restoration in which this rule has not been observed leads to an extremely unaesthetic appearance, especially in the mature adult. Young males usually do not have this recession and this is one characteristic that distinguishes the child from the adult pattern. As baldness progresses, the frontal–temporal recession increases, forming an acute angle. Both women and children tend to have a continuous line

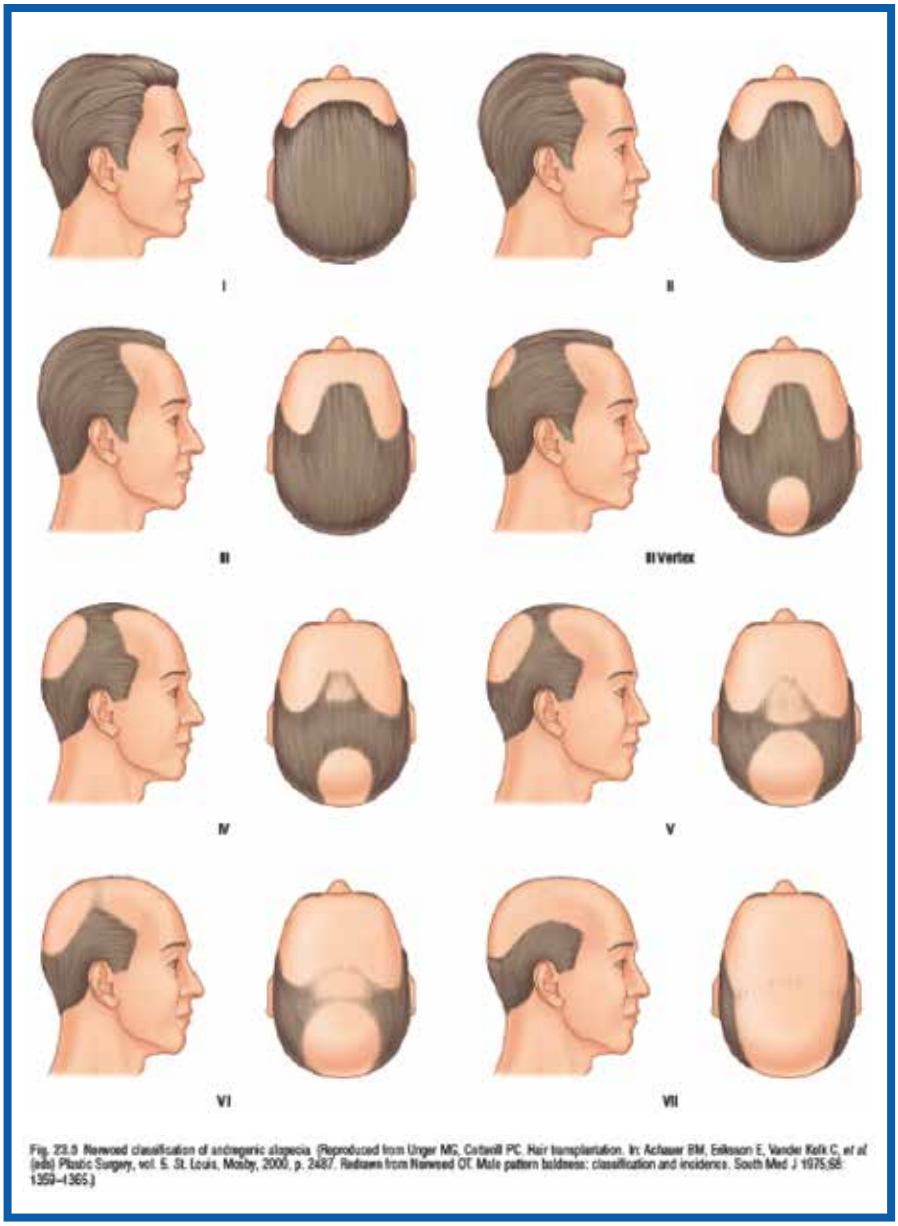
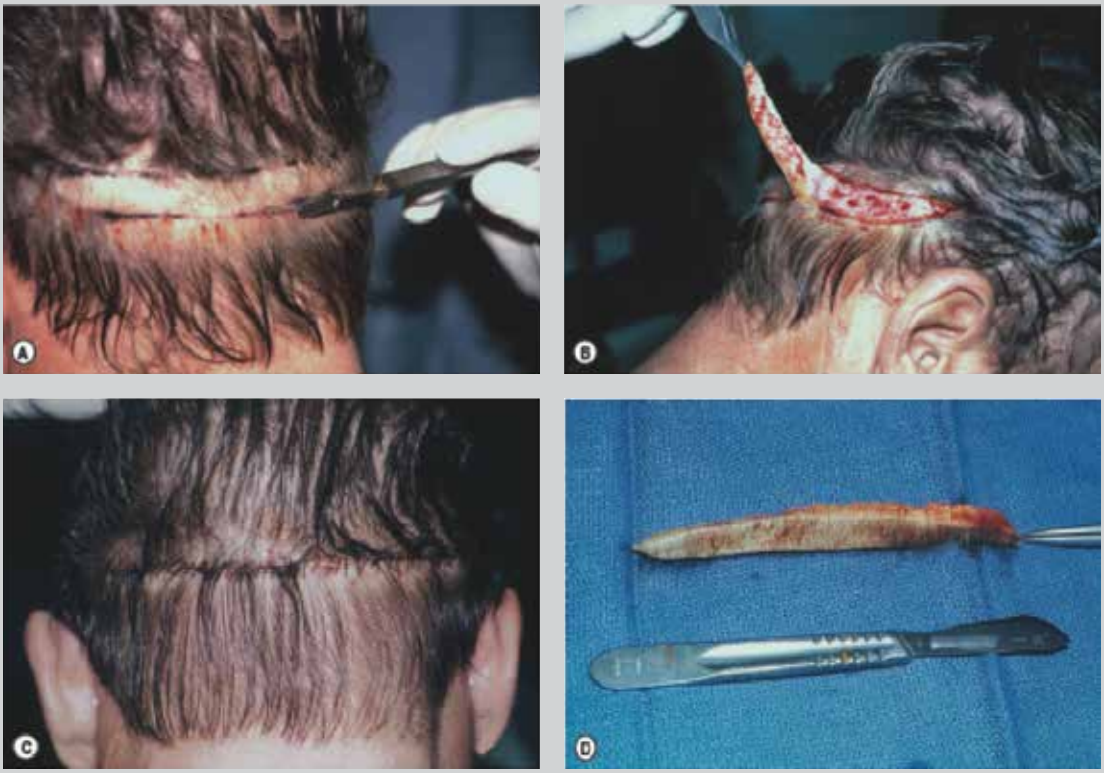


Fig. 23.9 Norwood classification of androgenic alopecia. (Reproduced from Unger MG, Cotterill PC. Hair transplantation. In: Achauer BM, Eriksson E, Vander Kolk C, *et al* (eds) Plastic Surgery, vol. 5. St. Louis, Mosby, 2000, p. 2487. Redrawn from Norwood OT. Male pattern baldness: classification and incidence. South Med J 1975;68:1359–1365.)

between the frontal and temporal areas without this recession. Another important characteristic of a natural hairline is the transition from fine hair to more dense hair with a degree of irregularity along the margin. Natural hairlines are not straight and regular.

Types and patterns of male baldness

The most common type of hair loss in both men and women is referred to as androgenic alopecia. The mechanism of androgenic alopecia is inherent in each individual hair



follicle as it responds to external stimuli, essentially androgens. The progressive loss of hair is predetermined by genetic characteristics associated with these responsive scalp follicles. Numerous classifications of hair loss have been described on a morphologic basis, which compares the hair-bearing with the nonhair-bearing area. Most commonly used is Norwood classification in which hair loss pattern is classified into six or seven types.

In the initial consultation with a patient, certain variables or parameters can be evaluated that assist the physician in decision-making and help the patient establish a set of realistic expectations.

Evaluation of the patient

Compared with other areas of aesthetic surgery, hair restoration is unique in that hair loss is not only progressive but also unpredictable. In aesthetic surgery there are generally areas of the face where one can predict with some accuracy the effects of the aging phenomenon. In male-pattern baldness, although there is some ability to predict hair pattern changes on the basis of family history, there is also a great deal unknown as far as the evolution of any particular patient's hair loss. Therefore, evaluation of the patient must take into consideration the progressive nature of hair loss postoperatively during the ensuing decades. It is critical in the early phases of a patient's evaluation to design a hair pattern that will be appropriate not only as the patient ages but also on the basis of progressive hair loss.

Role and effectiveness of medications

Minoxidil in a local application and finasteride administered orally have been used in the medical management of hair loss. It is believed that minoxidil works primarily by increasing blood flow, which promotes hair regrowth or hair stabilization in those follicles that are being affected genetically by androgenic alopecia. Finasteride, which is an oral medication, is a selective inhibitor of 5 alpha reductase type-II. The use of finasteride has clearly been shown to stabilize hair loss and there can be some reversal, although it primarily has its best effects on the vertex area of the scalp. Although both finasteride and minoxidil can be effective, finasteride may be more useful in younger patients and therapy must be long-term.

Female Hair Transplant : Upto 40% of hair loss sufferers are women, yet there is a double standard in the way female pattern baldness is perceived. Culturally baldness in females is not as socially accepted as in males. Women lose hair throughout the scalp and can be caused by a underactive thyroid gland, anaemia, pregnancy, significant illness, certain medications such as chemotherapy for cancer.

Technique

The instrumentation for hair transplanta-

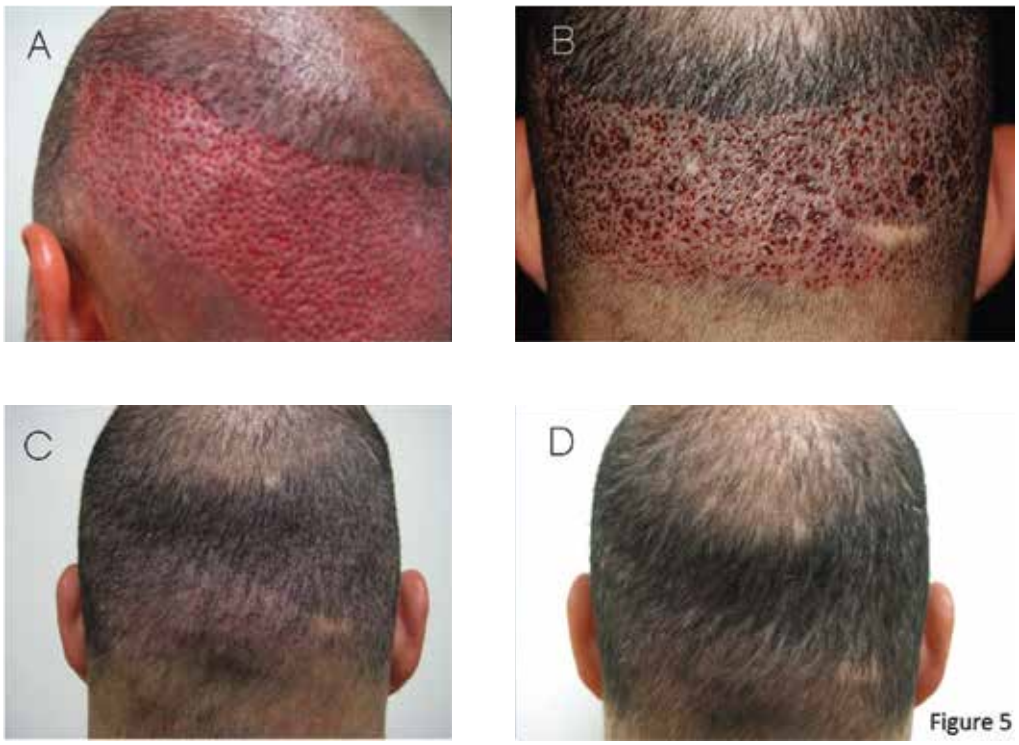


Figure 5

tion is relatively simple. Although many instruments and devices have been developed during the last few decades, the current technique as developed by Carlos Uebelin Brazil and others has significantly simplified the technical aspects of the procedure.

Two techinques are now followed – FUE & FUT

FUT (Follicular Unit Transplant) – The donor site is harvested as a transverse strip by use of a standard no. 10 knife blade from the posterior scalp. Proper angulation of the knife blade is critical in harvesting the donor site to avoid damaging the donor hair follicles. After strip is harvested from the back of the scalp, the wound gap is approximated. Hair follicles are extracted from the strip and transplanted onto the desired area.

FUE (Follicular Unit Extraction) - In FUE, single follicles are extracted from the scalp at a time and transplanted. Thus the scar on the back is avoided.

Procedure

In Jaypee Hospital, we follow a hair transplant procedure with which the patient is comfortable, either FUE or FUT. Patient pictures are taken from different angles and serially followed up to monitor the result. The procedure is painless and patient is given awake analgesia by experienced anesthetists. Hair transplant is made a simple process by following routine steps. Patient comes in the morning with a very light breakfast. Marking is done and patient shifted to the OT. Patient is given awake analgesia by experienced anesthetists. In strip method, after harvesting, very fine trichophytic closure is done and patient is allowed to have breakfast and lunch till the team separates the individual follicles. Follicles are kept in the ice tray and minimal time spent keeping them outside the body. After transplantation, a dressing is done which is removed after 72 hours. Patients are adviced after the procedure and patient can resume his work on 3rd day of surgery.

Follow up

Patient is advised to visit the clinic once monthly for monitoring. Initially the hairs fall because of shock loss. It is generally after 4 months the growth is seen. The initial hairs are thin but gradually they become stronger. The full effect of hair transplant is seen after 8 to 9 months.

Outcome, prognosis, and complications

With current techniques of 1500–3000 grafts, many patients with limited hair loss require only two procedures. Complications are relatively few for most patients. In healthy individuals, it is reasonable to expect 90–95% of the grafts to grow successfully.

Martinez Universal Perineal Interstitial Template (MUPIT) implant in a case of recurrent Carcinoma Endometrium.

Dr. Sandeep Jain - MD (Radiation Oncology), Sr. Consultant, Dept. of Radiation Oncology
Dr. Vikash Kumar - MD (Radiation Oncology), Consultant, Dept. of Radiation Oncology
Vikraman S., Arun C., Pawan Kumar, Mausumi N.

A 57-year-old postmenopausal female with no known co-morbidities presented with dull aching pain in lower abdomen and bleeding per vaginum of 4-5 months duration in October 2011. Histopathology of the endometrial curettage showed mixed endometrioid carcinoma with focal squamous differentiation and clear cell Adenocarcinoma. CECT Abdomen revealed bulky uterus 5.8 x 5.4 x 5.8 cm with intramural collection with well-defined endometrial/myometrial junction. She underwent extrafascial hysterectomy with pelvic lymphadenectomy in December 2011. She was discharged in stable condition and no adjuvant treatment was offered. She remained asymptomatic till September 2015 when she developed bleeding per vaginum with lower backache. There was no associated weight loss or decrease in appetite. On examination she had irregular vault with ulcerative growth of approximately 5 cm size extending till lower vagina (Fig.1). A biopsy from the vault was taken and the histopathology was suggestive of predominant necrotic tissue with entrapped fragments of Adenocarcinoma. CECT abdomen showed 6.6 x 5.8 x 6.2 cm well-defined heterogeneously enhancing mass with large necrotic component in uterocervical region suggestive of recurrence. She was started on upfront chemotherapy, received 3 cycles of Paclitaxel and Carboplatin. Subsequently she was planned for External Beam Radio Therapy (EBRT) with concurrent chemotherapy followed by Vault Brachytherapy. She received 5000 cGy in 25 fractions of EBRT to the whole pelvis with concurrent chemotherapy till January 2016 elsewhere and was referred for Vault Brachytherapy at our institute. On systemic examination no abnormality was detected, local examination revealed partial response to treatment with approximately 2 cm residual in the region of vault. CECT Pelvis showed 1.9 x 1.7 cm residual disease in vault (Fig.2). The case was discussed in multidisciplinary tumor board and considering significant residual, she was planned vault for Martinez Universal Peritoneal Interstitial Template (MUPIT) implant (Fig.3,4), two sessions with curative intent. After informed consent, patient underwent perineal implant under spinal anaesthesia two sessions one week apart. The treatment planning was done on Varian's Eclipse™ planning system. The dose prescribed to the Planning Target Volume (PTV) was 900 cGy per session and the maximum point dose to bladder and rectum were less than 50% of the prescription dose. Treatment delivery was done with Varian's Gamma Med Plus™ HDR. The entire procedure was carried out on day care basis for both sessions and the patient was discharged same day without any complication.

Fig. 1

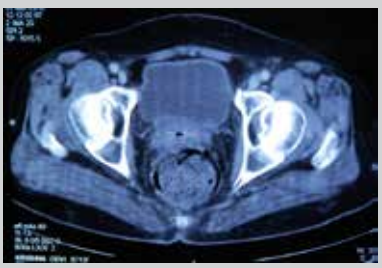


Fig. 2

Fig. 3

Fig. 4

Surgery performed for coffin area of the oral cavity

Dr. Pawan Gupta - M.Ch. (Surgical Oncology), Additional Director, Dept. of Surgical Oncology
Dr. Ashish Rai - DNB (Plastic Surgery), Sr. Consultant, Institute of Plastic, Aesthetic & Reconstructive Surgery
Dr. Saurabh K Gupta - M.Ch. (Plastic Surgery), Associate Consultant, Institute of Plastic, Aesthetic & Reconstructive Surgery

Mr. Brajesh, 57 year old is a highly health conscious man from Reva. The only habit that he could not get out was tobacco which he had started with his friends while in college 28 years ago. Every year he had thought of quitting it but the resolution would be postponed for the next year.

He would regularly get himself examined and had a complete health check up done recently. He even had a recent visit to a dentist who had given him a 'clean chit' that all is fine. So again the quit tobacco program was postponed for the next year.

And then it happened. Three months back he noticed blood while brushing teeth. He looked all around his oral cavity & could not find anything. The dentist had seen him a few days back and he had a preventive health checkup done at a reputed hospital of Delhi. After 15 days, it happened again. This time the bleeding was substantial and alarming. He was referred to Jaypee Hospital by a friend who got treated here. On a casual examination, nothing was noticed anything except for some submucosal fibrosis affecting the buccal mucosa because of long tobacco usage. On further examination, under the tongue - between the posterolateral oral tongue and inner side of jaw bone, a deep ulcer in the lateral floor of mouth what we call as COFFIN AREA of oral cavity.

The patient was further investigated and found to have cancer of the lateral floor of mouth. He was operated by our team which required removing the left side of the jaw bone, floor of mouth, part of the tongue and neck nodes. Reconstruction was done with microvascular free flap from the leg bone for making the jaw bone and soft tissue by a team of Plastic Surgeons at Jaypee Hospital.

Surviving against all odds

A CASE REPORT

Dr. Ashu Sawhney - DNB (Paediatrics), Sr. Consultant, Dept. of Neonatology

Extreme preterm babies (<28weeks) and very low birth weight babies (<1000gm) have poor chances of survival. India has the highest number of premature babies born in the world and the lack of feasible, cost-effective care decreases the chances of survival even further. This case report highlights the importance of a level III Neonatal ICU with multidisciplinary specialities in helping these babies survive with minimal morbidity.

A 700 gram female child, 2nd of twins was born to a 45-year-old mother at 26 weeks of gestation.

The mother was G2PIL0. She had previously given birth to IVF conceived twins at 28 weeks gestation, who had not survived the neonatal period. This time too she had conceived triplets following IVF and had undergone fetal reduction to twin pregnancy at another center. At 25 weeks of gestation she developed premature rupture of membranes and was bleeding profusely and was referred to our hospital for further checkups. She was managed conservatively with tocolytics for a week but delivered preterm twins vaginally at 26 weeks by vaginal delivery.

Twin 1 was an extreme preterm male with a very low birth weight (1040 gms). He was given surfactant by INSURE technique and subsequently was started on HHFNO (Humidified High Flow Nasal Oxygenation). No ventilator support was needed. HHFNO was continued for 24 days. Since then baby remained off oxygen with no respiratory distress. He had no significant morbidity and was discharged in stable condition on breast feeds at 7 weeks of age (33 weeks gestation) weighing 2100 grams.

Our Index case was second of twins. She was an extreme preterm female with extremely Low Birth Weight of 704 gms. The baby's condition was critical. She had severe respiratory distress and required intubation and mechanical ventilation immediately at birth. Surfactant was given soon after. She was extubated on the 2nd day of life and was started on nasal CPAP. Due to multiple episodes of apnoea she was reintubated on the 6th day of life. She required high ventilator support and on the 11th day developed pneumothorax for which intercostals drain was inserted. This was removed after 2 days following the resolution of pneumothorax. Echo was done for murmur and on the 12th day, revealed patent ductusarteriosus, which was initially managed with medical management and failed. She could not be weaned off the ventilator because of the persistence of PDA. Paediatric cardiac surgery team operated on her to close PDA at 4 weeks of age. She weighed 1 kg during that time. The surgery was successful and she was finally weaned off the ventilator onto nasal CPAP. She remained stable thereafter and nasal CPAP was subsequently weaned off.

She was initially on Total Parenteral Nutrition. Feeds were gradually started but she developed NEC (Necrotising Enterocolitis) on the 6th day of life. This was resolved with conservative management and gradually feeds were re- established.

She was also on antibiotics for sepsis which were guided by lab and clinical parameters.

ROP (Retinopathy of Prematurity) screen was done which showed bilateral Zone 2, stage 3 disease & plus disease, for which Laser Photocoagulation was done by ophthalmologist.

She was discharged with a weight of 2.1 kg after a three and a half month of NICU stay. She has been gaining weight subsequently and doing well.

At the last routine check up, at a corrected age of 3 ½ months, she has achieved neck holding, making eye contact and is cooing and smiling (milestones appropriate for the age).

Total Laparoscopic Hysterectomy for large uterus with cervical fibroid

Dr. Jyoti Mishra - MD (Obs & Gynae), Diploma (Gynae. Endoscopy), Associate Director, Dept. of Obstetrics & Gynaecology

Hysterectomy by laparoscopic route has become well established in the last few decades. Laparoscopic surgery gives the benefit of minimally invasive approach with smaller scars, reduced pain and fast recovery. Most gynaecologists with adequate training can do the procedure well, mimicking the steps of an open surgery. But in challenging situations of a very large uterus, large fibroid & previous multiple surgeries, it needs immense expertise to avoid complications.

Similar case of TLH for large uterus with a 13 cm cervical fibroid was performed. Patient was a 46-year-old lady with severe dysmenorrhoea and heavy menses. Uterus was of 14-16 weeks size. USG revealed a large cervical myoma of 13 cms. Following is a brief summary of specific surgical steps, which were taken to overcome the challenge of large size & increased vascularity of the uterus, with less working space.

Uterus 14 – 16 weeks

Ureters dissected

Paravesical Space

Ports were placed at a higher level than usual. Myoma spiral was used to manipulate the uterus. As the cervical fibroid had expanded into the broad ligament, ureters were dissected to safeguard them by direct visualization throughout surgery.

Lack of space was a challenge & could limit free movement of the instruments. As dissection proceeded, the position of myoma spiral was changed frequently to facilitate adequate exposure.

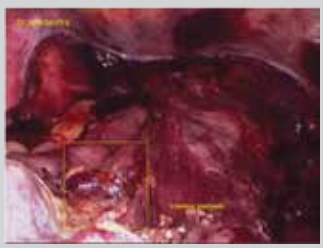
Opening the uterovesical pouch revealed large bunch of prevesical venous plexus, which was left untouched & bladder fibres were gently dissected.

Uterine vessels were largely dilated & showed many collaterals deeply embedded in the myometrium. Precoagulation with bipolar was followed by cutting of the vascular pedicles with harmonic ace. Colpotomy was done with harmonic active blade. Uterus was morcellated & the vault was closed with vicryl 1 intracorporeal sutures taking care to include the uterosacrals. Patient stood the surgery well.

Total duration of surgery was 150 minutes. The specimen weighed 1010 gms. Total blood loss was 250 ml. Patient had an uneventful postoperative recovery & was discharged within 48 hours.

Conclusion – Laparoscopy today is a route of choice for most gynaecological surgeries. It is a recommended approach even in challenging cases, when done with proper care. Surgeon's expertise, team work, well-equipped infrastructure & preparation for anticipated problems can lead to a successful surgical outcome in almost all cases.

Prevesical venous plexus



Uterine Vessels

Vision restored in a young girl with Idiopathic Intracranial Hypertension (IIH)

Dr. Dinesh Rattnani - M.Ch. (Neurosurgery), Sr. Consultant, Dept. of Neurocritical Care & Neurosurgery

A 20-year-old girl presented with complaints of headache for 4 months which was not associated with nausea or vomiting and diminution of vision in both eyes for 2 days.

Her morphology was of an obese girl and her mother and massi also appeared to be obese. On fundus examination, there was papilledema in both eyes and visual acuity was significantly reduced in both eyes. Her extraocular movements were full. Her MRI brain revealed chinked ventricle and a probable diagnosis of benign intracranial hypertension was documented and lumbar puncture was done. Her opening pressure was high-25 cm. Her CSF was normal on examination.

Patient was advised Theco-peritoneal or VP shunt under navigation but patient refused for surgery and her vision further worsened. Later the attendants gave consent for surgery and VP shunt was placed under highly advanced Neuronavigation system as the ventricles were chinked. Post-Surgery her vision improved remarkably and fundus examination revealed resolution of papilledema.

Idiopathic Intracranial Hypertension (IIH), sometimes called by the older names Benign Intracranial Hypertension (BIH) or Pseudotumor Cerebri (PTC), is a neurological disorder that is characterized by increased intracranial pressure (pressure around the brain) in the absence of a tumor or other diseases. The main symptoms are stroke-like headache, nausea and vomiting as well as pulsatile tinnitus (sounds perceived in the ears, with the sound occurring in the same rhythm as the pulse), double vision and other visual symptoms. If untreated, it may lead to swelling of the optic disc in the eye which can progress to vision loss.

IIH is diagnosed with a brain scan (to rule out other causes) and a lumbar puncture; lumbar puncture may also provide temporary and sometimes permanent relief from the symptoms. Some respond to medication (with the drug acetazolamide but others require surgery to relieve the pressure. The condition may occur in all age groups, but is most common in women aged 20–40.

"Idiopathic" means "of unknown etiology". Therefore, IIH can only be diagnosed if there is no alternative explanation for the symptoms. Intracranial pressure may be increased due to medications such as high-dose vitamin A derivatives (e.g. isotretinoin for acne), long-term tetracycline antibiotics (for a variety of skin conditions) and hormonal contraceptives. There are numerous other diseases, mostly rare conditions that may lead to intracranial hypertension. If there is an underlying cause, the condition is termed as "Secondary Intracranial Hypertension". Common causes of secondary intracranial hypertension include obstructive sleep apnea (a sleep related breathing disorder), SLE, chronic kidney disease and Behçet's disease.

Treatment

The primary goal in treatment of IIH is the prevention of visual loss and blindness as well as symptom control. IIH is treated mainly through the reduction of CSF pressure and wherever applicable, weight loss. IIH may resolve after initial treatment, may go into spontaneous remission (although it can still relapse at a later stage) or may continue chronically.

The first step in symptom control is drainage of cerebrospinal fluid by lumbar puncture. If necessary, this may be performed at the same time as a diagnostic LP (such as done in search of a CSF infection). In some cases, this is sufficient to control the symptoms and no further treatment is needed. The procedure can be repeated, if necessary. The best-studied medical treatment for intracranial hypertension is acetazolamide (Diamox), which acts by inhibiting the enzyme carbonic anhydrase and it reduces CSF production by 6 to 57%.

Two main surgical procedures exist in the treatment of IIH: Optic Nerve Sheath Decompression and Fenestration and Shunting. Surgery would normally only be offered if medical therapy is either unsuccessful or not tolerated. The choice between these two procedures depends on the predominant problem in IIH.

Optic Nerve Sheath Fenestration is an operation that involves the making of an incision in the connective tissue lining of the optic nerve in its portion behind the eye. It is not entirely clear how it protects the eye from the raised pressure, but it may be the result of either diversion of the CSF into the orbit or the creation of an area of scar tissue that lowers the pressure. The effects on the intracranial pressure itself are more modest. Moreover, the procedure may lead to significant complications, including blindness in 1–2%. The procedure is therefore recommended mainly for those who have limited headache symptoms but significant papilledema or threatened vision or for those who have undergone unsuccessful treatment with a shunt or have a contraindication for shunt surgery.

Shunt surgery, usually performed by neurosurgeons involves the creation of a conduit by which CSF can be drained into another body cavity. The initial procedure is usually a lumboperitoneal shunt which connects the subarachnoid space in the lumbar spine with the peritoneal cavity.

If the lumboperitoneal shunt needs repeated revisions, a ventriculoatrial or ventriculoperitoneal shunt may be considered. These shunts are inserted in one of the lateral ventricles of the brain, usually by stereotactic surgery and then connected either to the right atrium of the heart or the peritoneal cavity, respectively.

As there is a fair amount of chance of getting the lumboperitoneal shunt blockade and we had facility of neuronavigation, we did VP shunt under neuronavigation with excellent results.

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Jaypee Hospital, Sector 128, Noida 201304, UP, India

0120 412 2222 | +91 901 536 5555 | www.jaypeehealthcare.com | Follow us