

PIONEERED
MORE THAN

20

PROCEDURES

In the field of **Interventional Cardiology**
(An alternate to Open Heart Surgery)

by **Dr. Purshotam Lal**

Chairman - Metro Group of Hospitals



An internationally acclaimed Interventional cardiologist, Dr. Purshotam Lal has dedicated himself to the service of humanity, especially the poor and the needy.

Dr. Purshotam Lal has been trained at world renowned medical institutions of UK, Germany and USA. He is a Fellow of American College of Cardiology; American College of Medicine; Royal College of Physicians (Canada); Indian College of Cardiology & Society for Cardiac Angiography & Interventions (USA).

Dr. Lal has the unique distinction of introducing largest number of procedures in the field of Interventional Cardiology for the first time in the country (more than 20 **'FIRSTS'** to his credit) such as Slow Rotational Angioplasty, Coronary Atherectomy, diamond drilling of arteries (Rotablator), Non-Surgical Closure of Heart Hole, Non-Surgical Aortic Valve Replacement, etc. Dr. Lal has developed new techniques of Aortofemoral Bypass Support (Partial Artificial Heart) and opening of tight heart valves with Echo without Cath Lab.

He performed the world's first case of Non-Surgical Heart Hole Closure (ASD) with Monodisc Device and Aortic Valve Replacement with Core Valve (TAVI). He has been listed several times in the Limca Book of World Records.

**“Smile of
my patients
is the only
award I
cherish”**



Dr. (Prof.) Purshotam Lal

Padma Vibhushan & Dr B. C. Roy National Awardee
MD, AB (USA), FACM, FRCP (C), FICC, FSCAI (USA)
Chairman – Metro Group of Hospitals

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OF TRANSCATHETER AORTIC VALVE IMPLANTATION/REPLACEMENT (TAVI/TAVR) WITH CORE VALVE (WITHOUT SURGERY)

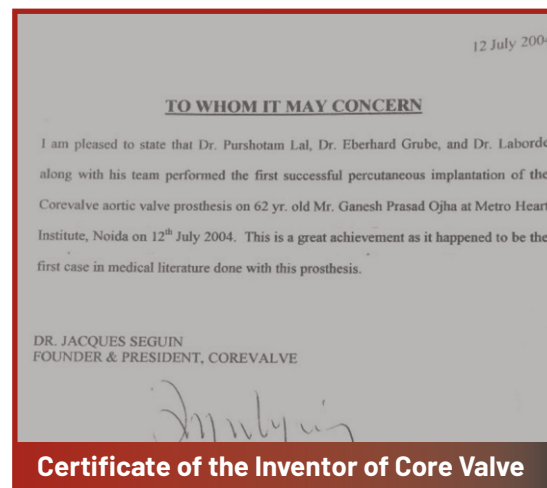
This case brought proud to not just Dr. Lal but to the whole country, when Dr Lal performed world's 1st Transcatheter Aortic Valve Replacement with Core Valve. It **was an unbelievable achievement in the field of interventional cardiology where the diseased** aortic valve can now be replaced by a new valve non-surgically. It made a history and this core valve has become so popular that it has been now implanted in lacs of people all over **the world. In this procedure the patient suffering from severe aortic stenosis, unfit for open heart surgery can now undergo non-surgical aortic valve replacement. The first non-surgical** aortic valve replacement was done by Dr. Alain Cribierin 2002 by using PHT valve and Dr. P Lal along with his team performed the First Case Of The World of Aortic Valve Replacement **using CORE VALVE without surgery.** The case made a history, got published in all major medical journals - both nationally as well as internationally, and paved way to a revolution of treating/replacing valve non-surgically. 15 years down the line, this the most common procedure in treating patients from severe aortic stenosis, who are not fit for open heart surgery and now go for Non-surgical way of valve replacement - TAVI/TAVR.

Dr Lal was invited across the world to present the case, the procedure, to train doctors on this World's 1st TAVR with Core Valve. To name few:

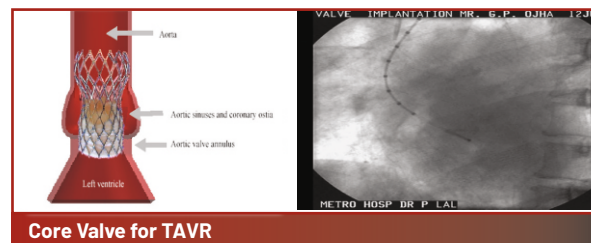
- China Conference on Valve, Hangzhou, China
- Conference on Structural Heart Disease, by CSI Germany
- International Conference on Interventional Cardiology, JIMS, Milan, Italy
- Ethiopian Conference by CSI Germany



Still Image from Procedure



Certificate of the Inventor of Core Valve



Core Valve for TAVR

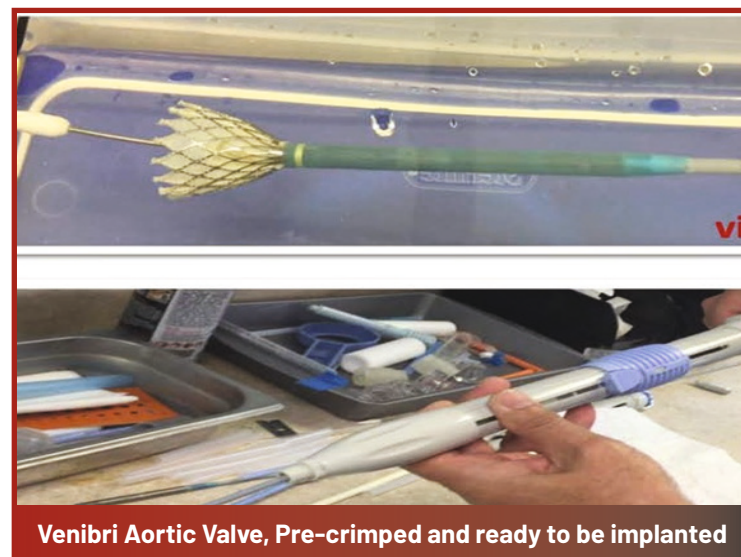
PUBLICATION

- Papers Presented and published in Indian Heart Journal (1st Scientific Paper of the Country)
- First-In-Man Experience of Percutaneous Aortic Valve Replacement Using Self-Expanding Core Valve Prosthesis – P Lal, PT Upasani, S Kanwar, A Parihar, R Arora, E Grube, JC Laborde : Ind Heart J 63: 3, 241-244, 2011



VENIBRI VALVE (PRE-CRIMPED) USED FOR AORTIC VALVE REPLACEMENT (TAVR) ALONGWITH STENTING OF THE MAIN ARTERY

It was done on Nov, 6th 2016 at Metro Heart Institute, Noida by Dr. P. Lal. Pre-crimped ready to use venibri aortic valve of Venus Medtech was used for the First Time In The World at Argentina and the second case of TAVR with Venibri aortic valve was performed at Metro Heart Institute, Noida (Delhi NCR) by Dr. Lal. The patient also underwent Angioplasty with Stenting of her critically blocked main artery (LAD) at the same time in less than 45 minutes. Thus making this hybrid procedure (Venibri TAVR+ PTCA with Stenting of main artery) as the First Case Of The World.



Venibri Aortic Valve, Pre-crimped and ready to be implanted



Dr. P Lal with Patient, day after procedure

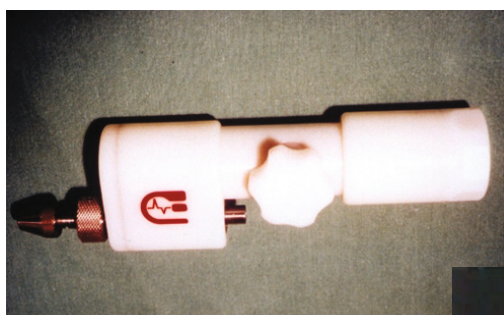




SLOW ROTATIONAL ANGIOPLASTY

The first case of Slow Rotational Angioplasty (Rotacs) in India was performed in Nov, 1989 by **Dr. Purshotam Lal** at Apollo Hospital, Chennai on a 33 years old patient who himself has been General Surgeon and had 100% blocked main artery (LAD) of the heart. He was recommended bypass. After a period of 29 years of procedure the patient is doing well from cardiac front.

It helped in opening 100% blockage, a breakthrough procedure where conventional method fails. A catheter is attached to a motor to drill open a blocked artery of the heart at a slow speed.



Equipment Used



Still Image from procedure

'Breakthrough' in treating heart attack

Express News Service
Madras, Nov 13: In a unique operation, doctors at the Apollo Hospital here used a catheter (a small tube) attached to a motor to "drill" open a blocked artery of the heart in a patient who suffered a heart attack.

Described as a "breakthrough" in coronary angioplasty, the procedure was employed by Dr. Purushotham Lal and Dr. Suresh Chivara, consultant cardiologists at the hospital, on Saturday, because the patient's LAD (the most important of the three arteries of the heart) was totally blocked.

Conventional balloon angioplasty (the use of catheters with balloons attached to clear arterial blocks) cannot be performed in patients with such blocks. The only other option for the patient, 33-year-old general surgeon Rakesh Bhandal from Punjab, would have been a coronary bypass surgery.

Dr. Bhandal was treated at PGI, Chandigarh, for the heart attack. The "vascular drill" has restored blood flow in the jeopardised heart wall. He is doing well and is likely to be discharged on Sunday. He can start leading a normal life in a few days, hospital sources added.

This particular system of angioplasty was invented recently by a German cardiologist Kuttanbach, who trained the two Apollo doctors.

1st CASE OF SLOW ROTATIONAL ANGIOPLASTY
BY DR. PURSHOTAM LAL WHILE AT APOLLO, MADRAS
INDIAN EXPRESS,
MADRAS EDITION,
NOVEMBER 13, 1989.

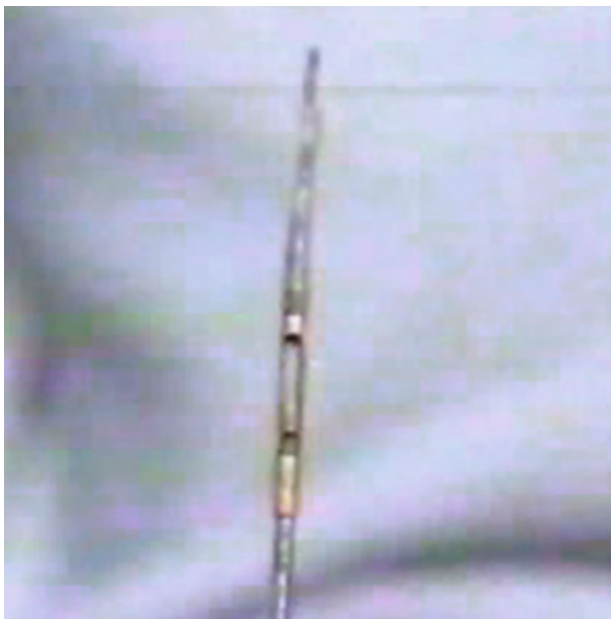
PUBLICATION

- Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country on Slow Rotational Angioplasty).
- Lal P. et al: Slow Rotational Angioplasty – Application to Chronic Total Coronary Occlusions (Abstract). Indian Heart Journal Vo.43, No.4, 1991; 138.

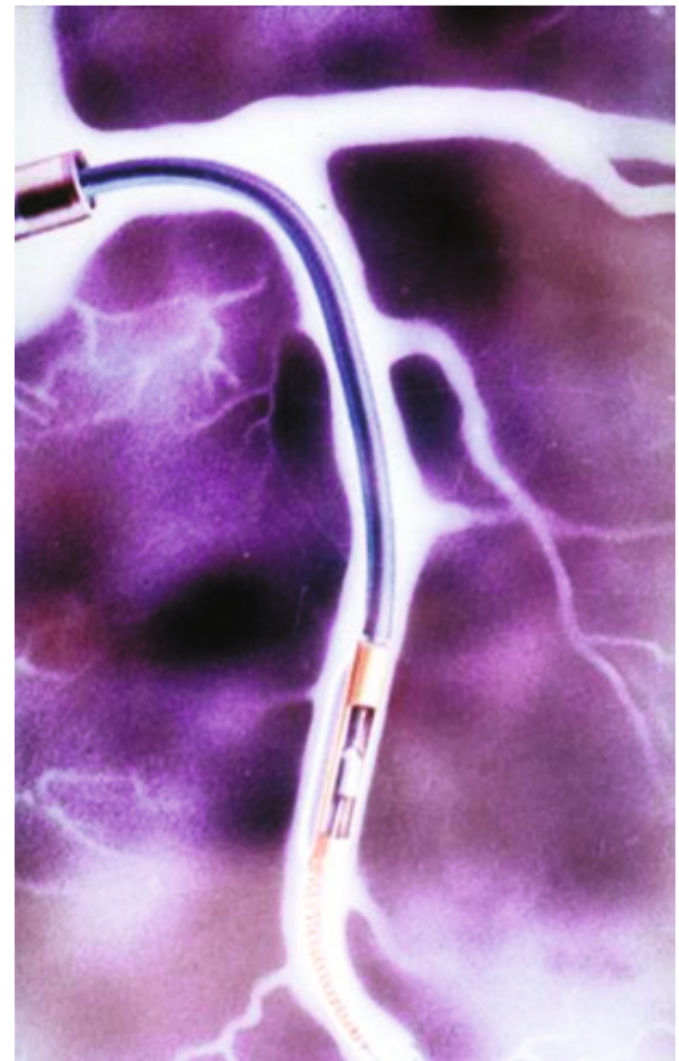


CORONARY ATHERECTOMY

India's 1st Coronary Atherectomy (Shaving of fatty tissue) was performed by Dr. P. Lal in September 1990 at Apollo Hospital, Chennai on a patient Haridwar working at BHEL. This Device helps in removing fatty tissues from the blocked arteries in difficult cases where balloon does not work.



Equipment Used



Still Image from Procedure

PUBLICATION

- Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country on Coronary Atherectomy).
- Lal et al. Coronary Atherectomy – A New Approach for the Treatment of Obstructive Coronary Artery Disease (Abstract). Indian Heart Journal, Vol. 43, No.4, 1991; 140.

New procedure to clear blocked arteries

Express News Service
Madras, Sept. 10: Close on the heels of balloon angioplasty (a procedure to remove block from the coronary artery without resorting to surgery), has come a new procedure called coronary atherectomy, which sucks out fat deposits from the artery, by using an instrument with tiny rotating blades.

Dr. M.R. Ginnath, chief of the cardio-thoracic department of the Apollo Hospital, said on Saturday that for the first time in Asia, this procedure was successfully tried out

on a patient at the hospital on Wednesday by Dr. Parshotam Lal, a cardiologist at the hospital. The patient, a 49-year-old man from Uttar Pradesh had developed two blocks in his coronary artery. While the first block could be removed through balloon angioplasty, by dilating the blood vessel through an inserted balloon, and crushing the block, the second block, which was longer and irregular, was not suitable for angioplasty. So Dr. Lal decided to try out coronary atherectomy.

A take-off from angioplasty, this procedure involved the insertion of an instrument called Simpson Coronary Atherocath (named after the cardiologist who pioneered this procedure) into the artery, through a catheter, activating the rotating blades with the help of a motor, and chipping off the fat deposits. This was collected in a collection chamber within the instrument. The blades rotated at a speed of 2,000 revolutions per minute. The procedure was done under local anaesthesia and the patient could be discharged in two days.

A similar procedure was attempted by Dr. Samuel Mathew, cardiologist at the hospital, on a 55-year-old priest from Sri Lanka on Saturday.

According to Dr. Lal, the advantage of atherectomy over angioplasty was that it probably had a smaller recurrence rate, and it could be used to open up vessels which were totally blocked. The cardiologist, who had been trained at Harvard in this procedure, said that there were only 10 centres in the world doing this procedure at the moment.

Dr. Ginnath said the cost of this procedure would be around the same as that of balloon angioplasty, which now costs about Rs. 5,000 at this hospital. Instruments used in angioplasty were not only expensive and have to be imported, but were also not freely available.

Dr. Lal had earlier done slow rotation angioplasty, which involved drilling out the fat deposit from a

completely blocked blood vessel. Three weeks ago, he did mitral valvuloplasty, which involved dilation of the mitral valve with a balloon. This eliminated the need for open heart surgery. This procedure had been successfully done on three patients, he said.

Dr. Ginnath added that the Apollo Hospital had completed 680 angioplastics, which was the highest to be done by any centre in the country.

INTRODUCED DIRECTIONAL ATHERECTOMY
1ST TIME IN INDIA,
INDIAN EXPRESS,
SEPTEMBER 11, 1990

News Paper Coverage

Latest surgical technique to correct narrowing of arteries

MADRAS, Sept. 7.

Coronary atherectomy, removal of fatty tissues causing blocks in the arteries, described as the state-of-the-art technique in interventional cardiology was performed on a patient at the Apollo Hospital on Wednesday.

The patient, Mr. G. N. Saxena of Hardwar, U.P. was suffering from blocks in two different coronary arteries. While the smaller block was opened with the routine balloon catheter, the other being long and irregular required the latest technique, according to Dr. Parshotam Lal, consultant interventional cardiologist of the Hospital.

Atherectomy catheter has tiny rotating blades which shave off the plaque deposited on the arterial walls whereas the balloon catheter stretches the artery and cracks the fatty substance without actually removing it.

The atherectomy proved more beneficial to the patients because of better results and has probably less chances of re-narrowing of the arteries, a major limitation in the routine balloon angioplasty. Dr. Lal, who has earlier performed slow rotational angioplasty to open up completely blocked arteries on patients, said the technique had put India on the global map in interventional cardiology as there are only 10 centres in the world outside Asia doing similar technique, he said.

Balloon angioplasty had shown results similar to by-pass open heart surgery but certain limitations such as opening of the total blocked artery, and re-narrowing after successful angioplasty had posed major challenges, he said.

Dr. Parshotam Lal told *The Hindu* that narrowing of mitral valves by rheumatic heart disease was very common in India and more than 6 million suffered from these complications. This is the common cause of heart failures and used to be corrected only by surgery. Now with another latest interventional cardiology technique called mitral valvuloplasty could return home the next day after having their valves widened by a relatively simple procedure.

Dr. Lal had earlier used a catheter attached to a motor to "drill" open a blocked artery of the heart in a patient who suffered a heart attack.

INTRODUCED DIRECTIONAL ATHERECTOMY
1ST TIME IN INDIA,
THE HINDU,
SEPTEMBER 8, 1990

News Paper Coverage



ATHREO-ABRASION (ROTABLATOR - DIAMOND DRILLING)

It was performed by Dr. P. Lal in February, 1992 at Apollo Hospital on Mr. S. P. Jindal, a **bank employee from Dhuri, Punjab for the critical ostial block of the circumflex**. This device helps in dealing with calcified arteries where balloon angioplasty is not possible.

Dr. P Lal has been performing largest number of Rotablator procedures (Diamond Drilling) for **heavily calcified arteries as a single operator in the Country over the years**.



Equipment Used



Still Image from procedure

INTRODUCED "ROTABLATOR"

1ST TIME IN INDIA,

INDIAN EXPRESS,

MADRAS EDITION,

FEBRUARY, 1992.

Athero abrasion' heart procedure done in City

EXPRESS NEWS SERVICE

MADRAS - Perhaps for the first time in the country, the athero abrasion procedure - grinding of the fatty tissue lying in the artery - was performed by Apollo Hospitals interventional cardiologist Parshotam Lal on Wednesday.

Talking to presspersons on Thursday, Dr Parshotam said the procedure was performed with a drill run by a turbine with the help of compressed air. The rotation rate was as high as 1,75,000 rpm and that helped in breaking the fatty tissue into millions of small particles. The size of the particles thus broken was not more than the usual size of blood elements. "At the end of the drill is the burr, embedded in diamond chips. The burr, incidentally is available in different sizes and can be used on patients depending upon the size of the artery," he said.

The procedure was first performed on Mr Santosh Jindal (50), a bank employee from Punjab, who had "a block at the origin of the artery near the main artery," he said. It was felt that the balloon angioplasty could not be done in Mr Jindal's case, as it would cause dissection of the main artery, leading to complications.

The drill could be applied on patients having long, diffused and calcified blocks. The technique might cost up to Rs 20,000, he said, adding "Of all the rotating devices, this one is getting popular as the chances of re-accumulation of the fatty tissue are lower".

Over 100 medical centres throughout the world are performing this procedure and Dr Parshotam, trained in the US last year, performed the procedure on three other patients on Thursday.

News Paper Coverage



13 November 2018

To Whom It May Concern,

This is to verify that Dr. Purshotam Lal is known as a Pioneer of Interventional Cardiology, both nationally and internationally.

In view of his expertise, the inventor of the Rotablator in the USA, selected Dr. Lal to perform the first case of Rotablator (Athero abrasion) in India. Dr. Lal performed the first case of Rotablator in India in February, 1992.

It was a great achievement.

I, Paul Rieff, have been in the field of Interventional Cardiology for more than 40 years, and was the one who arranged this procedure for Dr Lal on behalf of Heart Tech, the founder company for Rotablator.

Dr. Lal operated on 3 patients with Rotablator on the same day, and another patient on the following day.

I congratulate him on being the first in Asia to make clinical use of Rotablator.

Yours faithfully,
GETZ HEALTHCARE (HONG KONG) LTD.

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A member of The Getz Group of Companies

The statement of Paul D Rieff,
Managing Director of Getz Healthcare about the
achievement of Dr. P Lal

PUBLICATION

Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country on Directional, Rotational and Extraction Coronary Atherectomy).

- Lal et al. Directional, Rotational and Extraction Coronary Atherectomy - Initial Experience. Indian Heart Journal; 1992: 44: 14(A).
- P Lal, PT Upasani : Role of Rotational Atherectomy in Percutaneous Coronary Interventions - Chapter written in Cardiological Society of India-Cardiology Update 2014 edited by Dr. HK Chopra published by Japye Brothers Medical Publishers OOPD Ltd. 2015



CORONARY STENTING

It made of Tantelum (Strecker Company) was imtpanted in about July, 1991 by Dr. P. Lal. This helps in preventing re-occurrence after the angioplasty. It was implanted on 52 yrs old patient Mr. Ismail Maniku from Maldives (Father in Law of the President of Maldives). Patient complained of unstable angina and underwent balloon angioplasty of RCA. Patientsuffered from **acute occlusion of the Right Coronary Artery. A stent was implanted successfully** as a bailout device at Apollo Hospital, Chennai.

1. A stent was implanted successfully as a bailout device. The procedure was done by Dr. Lal at Apollo Hospital, Chennai around about in June 1991. The patient is now 79 yrs. old and still comes to Dr. Lal for follow-up in Metro Hospital & Heart Institute, Noida. **(Certificate for 1st time in India is attached).**

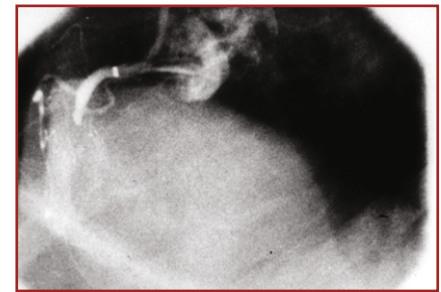
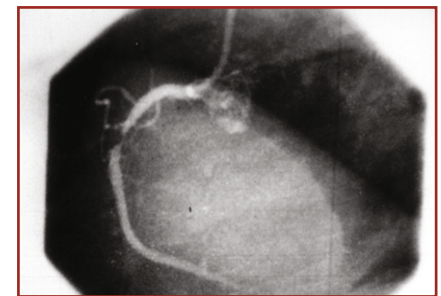
Dr. Lal was trained in Germany along with Dr. H. Sievert to such kind of procedures. The following were the presentations given by **DR. LAL about CORONARY STENTING FOR THE FIRST TIME IN THE COUNTRY :-**

a) Role of stent in unstable angina at the annual meeting of Cardiological Society of India held in Hyderabad in 1991 where Dr. Lal demonstrated the use of coronary stent as a bailout situation in setting of acute occlusion of the artery the incidence of which used to be 1-3% following the balloon angioplasty.

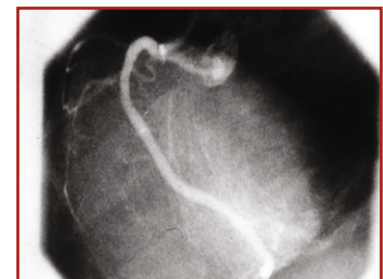
b) Dr. Lal presented the Scientific paper on coronary stenting for the first time in the country.

c) Dr. Lal delivered the first lecture of the country on coronary stenting at the main hall during annual meeting of Cardiological Society of India in 1992.

d) Dr. Lal also presented the actual procedures of stenting and advantage of Tentalum stents over other metallic stents due to its ratio-opacity during his Dr. V.V. Shah Oration awarded Cardiological Society of India in 1992.



1st Coronary Stent of the Country.



Still Images from the Procedure of the patient Mr. Ismail in 1-4 Parts

14th November 2018



Patient
Ismail Maniku

TO WHOM IT MAY CONCERN

Reg. Implantation of first coronary stent in the country

It is my pleasure to confirm that I have been a patient of Dr. P.Lal since 1991 when I suffered some cardiac problems. He did angiography in the month of June 1991 followed by balloon angioplasty to address the block on the right artery of my heart. After 3-4 days I had chest discomfort, and he performed an angiography again and found that the same artery was blocked. To save my life he placed a stent in my right coronary artery successfully. I fully remember that it was the first coronary stent in the entire country that he placed in my heart and his achievement was celebrated. I felt very proud and happy for him too. Since then I have been coming to consult Dr. Lal from Maldives to Noida periodically. I was 52 yrs at that time when the stent was placed and now I am 79 yrs and in excellent health. Dr. Lal is a great doctor and I wish him all the best.



Ahmed Ismail
NO. 23 ST KILDA'S LANE
COLOMBO, SRI LANKA

Certificate from the Patient who underwent First
Coronary Stenting in India

PUBLICATION

Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country on Coronary Stenting

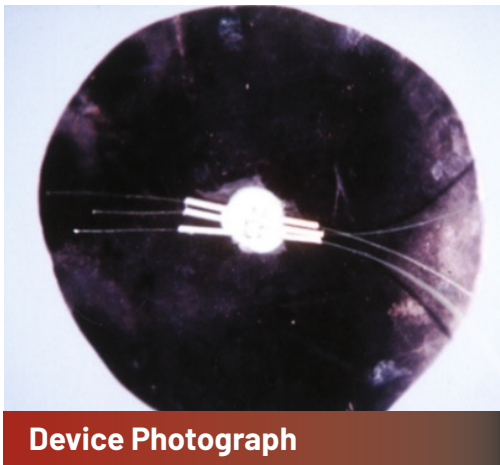
- Lal et al. Out Initial Experience with Tantalum Coronary stent (Abstract). Indian Heart Journal, Vol. No, 1991; 135.
- **P Lal, P Jain, PT Upasani:** Intracoronary Stenting Using Long Stents (Abstracts). Indian Heart Journal 48:538, 1996
- **P Lal, PT Upasani, SM Sachdeva, S Kanwar:** Non-Randomized Comparison of Various Treatment Modalities for Restenosis Following Coronary Angioplasty (abstract) Int. Journal of Cardiovascular Interventions 4 (Supl 1) : 34, 2001.
- **P Lal, PT Upasani, AK Pandey, S Kanwar :** Initial Experience with Lunar Starflex (Iridium Oxide-Coated) Coronary Stent for Prevention of Restenosis after Coronary Angioplasty (abstract). Indian Heart Journal 54:598, 2002.
- **P Lal, Upasani AK Pandey, S Kanwar:** Use of Stenting for In-Stent Restenosis – Is it **Justified (abstract)**
Ind. Heart Journal 54:597, 2002
- **P Lal, PT Upasani, AK Pandey, SC Manchanda, P Arora, S Kanwar :** **Efficacy of Drug** Eluting Stents in Patients with Diabetes Mellitus. Indian Heart Journal 55:448, 2003



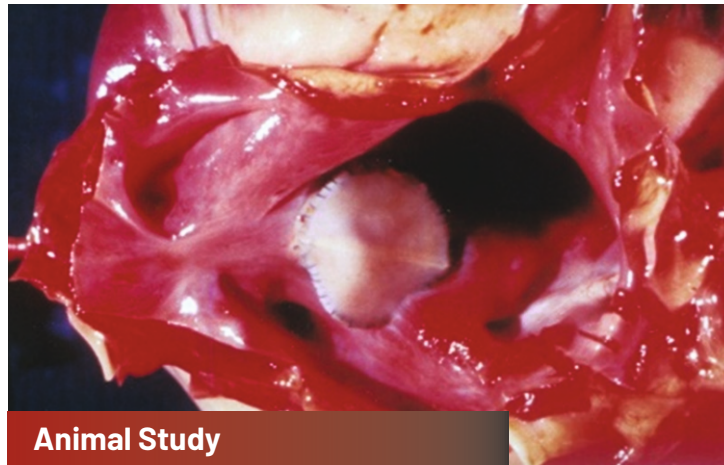
A NON-SURGICAL HEART HOLE (ASD) CLOSURE BY USING MONODISK DEVICE

19 YO Suresh (son of a tailor & studying at Lyola Hospital, Chennai), suffering from Atrial Septal Defect, visited Dr. Lal in September 1991. Dr Lal performed a non-surgical closure of hole - ASD using monodisk (a device of nylon mesh), which was the 1st time, not just in India but in Asia.

World's 1st case of ASD Closure without surgery by using Umbrella Device, was performed in 1975 on 17 YO girl in Louisiana, USA by The King-Mills. Post that, many types of devices have been used during such procedures. The heart hole closure (ASD) performed on Suresh was done by using Monodisk Device, happens to be 1st case of the World.



Device Photograph

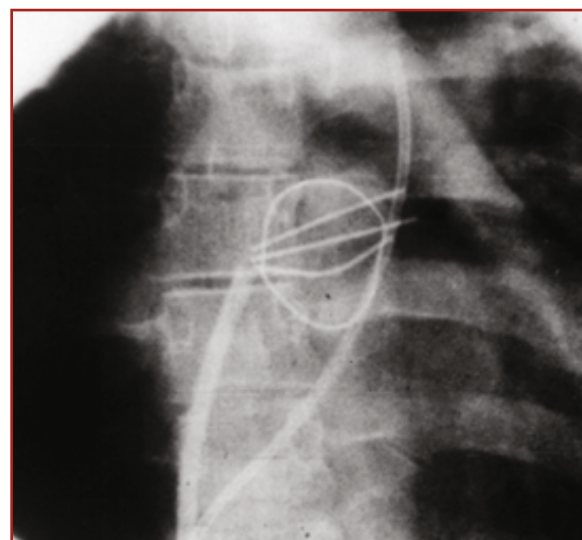
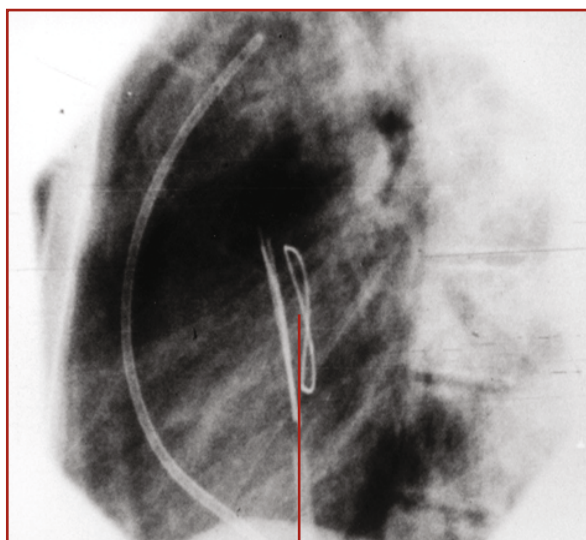


Animal Study

PUBLICATION

Paper Presented and published in Indian Heart Journal (1st Scientific Paper of The Country on the ASD Closure without Surgery).

- Lal P. et al. Monodisk – A new Atrial Septal Defect Occlusion device, one year Followup. Indian Heart Journal; 1993 : 306: 387 (A).
- P Lal, PT Upasani, P Jain : First Clinical Experience with Transcatheter ASD Closure Using Monodisc Device : Immediate and Long -Term Results (abstract) Ind Heart J. 48:476, 1996
- P Lal, PT Upasani: First Clinical Experience with Transcatheter ASD Closure using Monodisc Device : Immediate and Long -Term Results (abstract) J. Intern Cardiol, Volume 11, Issue Supplement S5-S136, 1998.
- P Lal, PT Upasani : Percutaneous Therapy for Secundum ASD and Valvular Pulmonic Stenosis (abstract) J Inter Cardiol Volume 11, Issue Supplement S5-S136, 19998
- P. Lal, PT Upasani : Transcatheter Atrial Septal Defect Closure with Various Devices A Comparative Study Ind. Heart J 50:611, 1998.



Monodisk device fitted across the ASD

**CLOSED FIRST ASD NON SURGICALLY
FIRST TIME IN INDIA
NEWS TODAY,
MADRAS EDITION,
OCTOBER 1992**

**Pioneering effort of cardiologist
at Apollo Hospitals**

Heart hole closure without surgery

Madras, Oct. 16: Without surgery and anaesthesia, the heart hole in a 20-year-old man was closed by a cardiologist team led by Dr. Parshotam Lal at Apollo Hospitals. And the "unique operation" was carried out even as the patient, Suresh Babu, was fully awake.

For the first time in the country and perhaps Asia, the non-surgical heart hole closure procedure was conducted at the hospital.

Using a special device imported from the US called monodisk made of nylon wire mesh, the atrial septal defect, a congenital abnormality in Suresh Babu, was corrected in 45 minutes.

Explaining the novel procedure, Dr. Parshotam Lal said as in any other cardiac catheterization, local anaesthesia is administered to the patient. Then the monodisk is inserted gingerly with the help of catheter. The punctured part of the heart is located and the hole is passed with a special material.

The entire procedure can be viewed on closed TV circuits.

The procedure can be employed in patients of all ages from one year onwards. However, can be used only in a selected group of patients suffering from Atrial Septal Defect or Muscular Ventricular Septal Defect of size less than 2 cm. In Suresh Babu's case, the hole was of 18 mm and facilitated the use of this procedure.

Another unique advantage of the procedure

News Paper Coverage

**CLOSED FIRST HEART HOLE(ASD)
FIRST TIME IN INDIA
INDIAN EXPRESS,
MADRAS EDITION,
SEPTEMBER 1992.**

Simple procedure to close heart hole

EXPRESS NEWS SERVICE

MADRAS - For the first time in Asia, non-surgical closure of a hole in the heart has been successfully done on 20-year old Suresh Babu, by Dr Parshotam Lal, cardiologist at the Apollo Hospitals.

Talking to reporters on Thursday, he said the procedure was simple and took about 45 minutes. It was done on selected patients who suffered from Atrial Septal Defect (hole in the heart). It would cost about Rs 45,000.

The treatment is done on patients when the hole is less than 2 cm in diameter. The hole in Suresh Babu's heart was 18 mm in diameter.

The procedure involves the insertion of monodisk, a device made of nylon mesh. Specialised catheters (plastic tubes) are inserted under local anaesthesia while the patient is fully conscious. This is done in the cath lab which is equipped with special X-ray imaging equipment for treatment of cardiac problems like opening of the blocked arteries and valves of the heart.

News Paper Coverage



"INOUE BALLOON MITRAL VALVULOPLASTY" (PTMC) WITHOUT CATHLAB

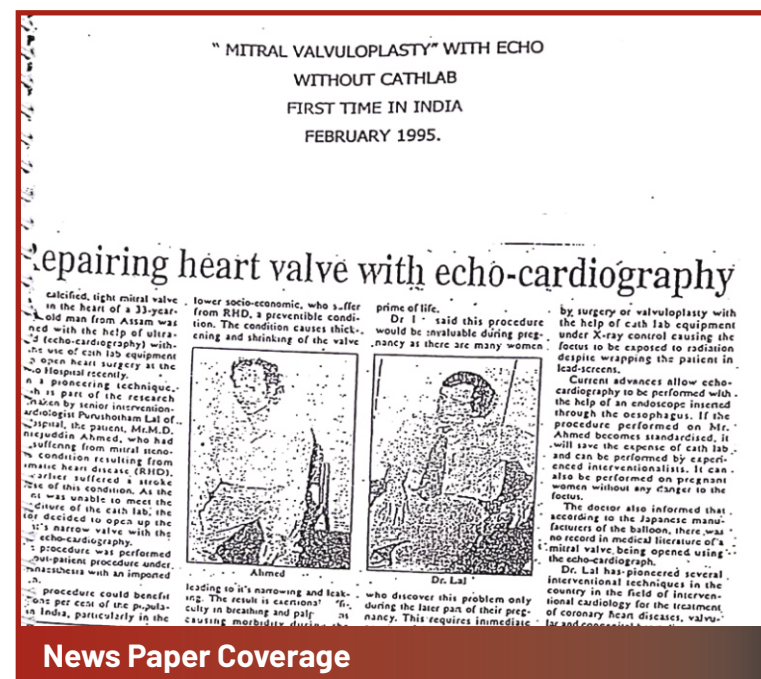
A 33 YO patient from Assam suffering from mitral stenosis condition (condition of thickening & shrinking of valve), resulting from Rheumatic Heart Disease (RHD) and had suffered a brain stroke earlier, could not meet the expenditure of the Cath lab. Dr Lal decided to open the valve through an out-patient procedure under local anaesthesia using ECHO without using Cath Lab. The procedure is useful in patients with mitral stenosis during pregnancy protecting the foetus from the side effects of the radiation.



Balloon Device



Still Image from procedure



News Paper Coverage

PUBLICATION

Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country on Balloon Mitral Valvuloplasty without Fluoroscopy)

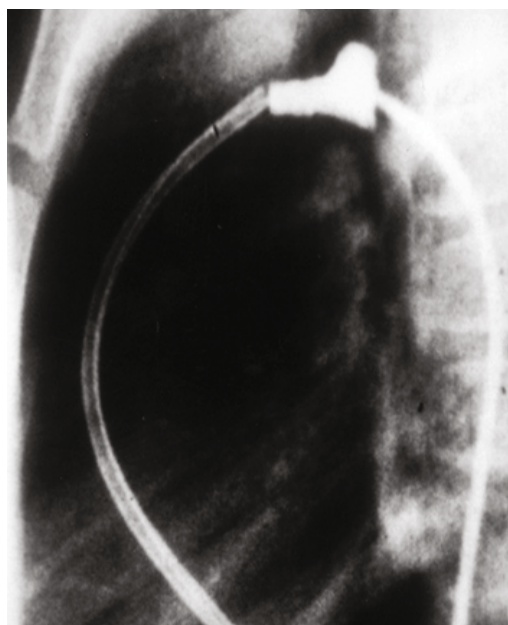
- P Lal, PT Upasani, P Jain, KK Kapur, PD Nigam : Balloon Mitral Valvuloplasty without Fluoroscopy (abstract). Ind Heart J 48:529, 1996
- P Lal, PT Upasani : Balloon Mitral Valvuloplasty without Fluoroscopy (abstract). J Inter Cardiol, Volume 11, Issue Supplement S5-S136, 1998



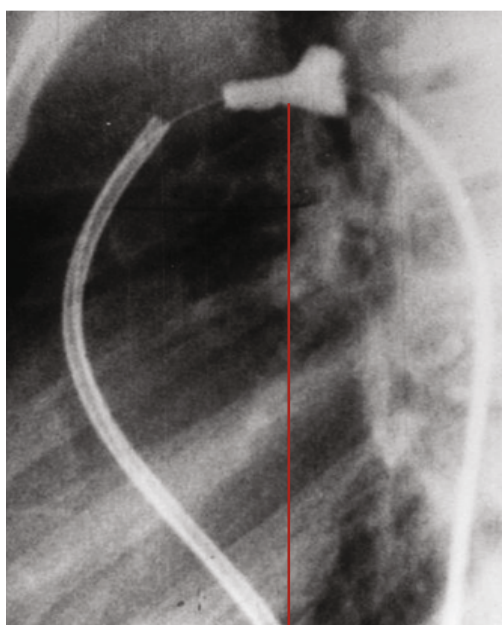
1ST NON-SURGICAL PDA CLOSURE WITH MODIFIED TECHNIQUE IN INDIA

A 12 YO boy from Maldives, suffering from congenital heart disease - PDA, visited Dr. Lal at Apollo Hospital, Chennai. Dr Lal, after going through the complete detail of the situation, **decided to perform India's 1st Non-surgical PDA Closure with modified technique**, closing connection by plugging it with a special type of foam introduced in the opening through catheter and wires.

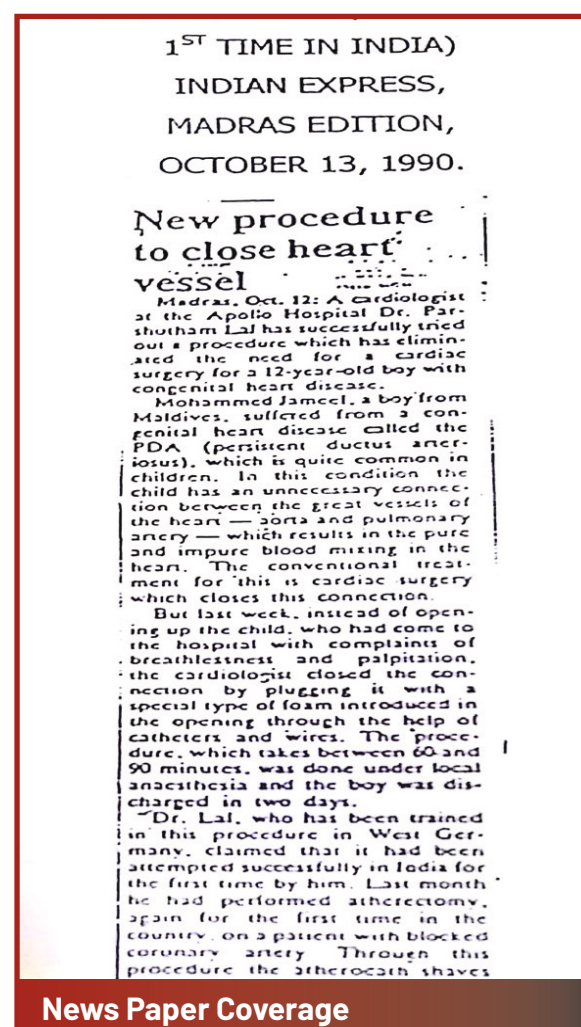
This proved to be an effective & cost-efficient process to close PDA in children without surgery. World's 1st Non-surgical PDA closure was done in 1967 and in 1990, **Dr Lal did 1st of India & Asia.**



Still Image from procedure



Ivalon Plug fitted in the PDA



News Paper Coverage

PUBLICATION

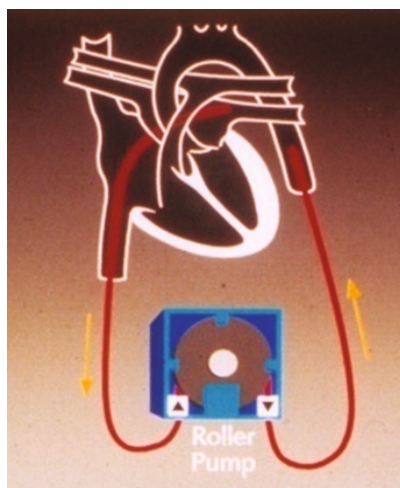
- Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country in 1992).
 - Indian Heart Journal 1992 Nov-Dec; 44(6):411-3
 - P. Lal, PT Upasani : Transcatheter PDA Closure with Various Devices – A Comparative Study (abstract).
- Indian Heart Journal 50:636, 1998



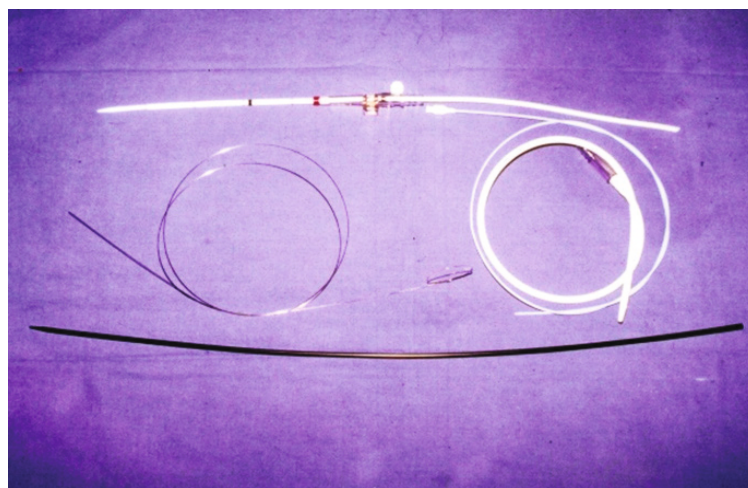
NON- SURGICAL LEFT ATRIO FEMORAL BYPASS SUPPORT

A 58 YO patient was presented at Apollo Hospital, Chennai in Cardiogenic Shock Systolic (BP<50mmHg). His EF was 15% & it was a high-risk case for cardiac surgery. Dr Lal reviewed the case and decided to perform India's 1st Aortic Valvuloplasty with Non-Surgical Left Atriofemoral Bypass Support, for which only 25-30 patients were subjected to this technique per year in the world. He performed this procedure with the help of a custom made roller pump, which was non-expensive and later the device helped in developing advanced Tandem Devices.

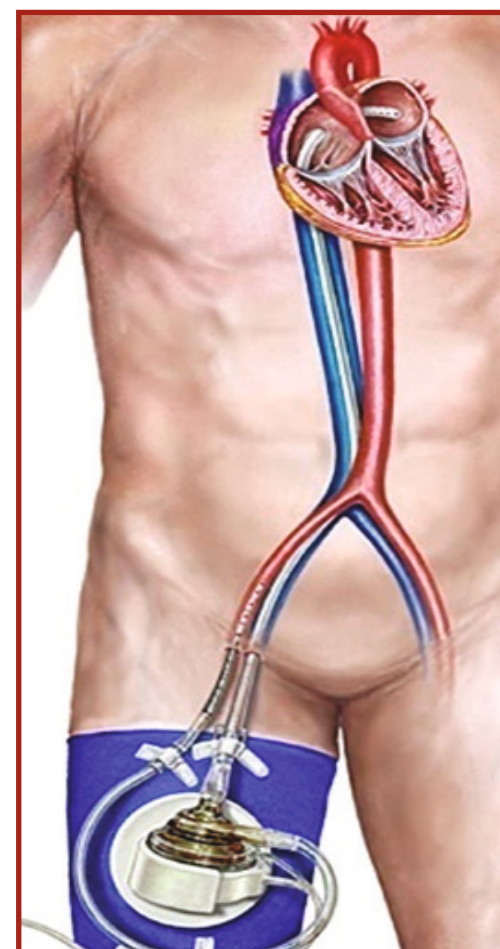
The concept of this device has been used in developing more expensive Tandem Device.



**Inexpensive Left Atrio
Femoral Bypass Support**



**Catheters for the preparation of Left Atrio
Femoral Bypass support**



News Paper Coverage

PUBLICATION

Papers Presented and published in Indian Heart Journal (1st Scientific Paper of the Country)

- Lal, P. et al: Percutaneous Left Atrial Femoral Bypass Support in High Risk Coronary Angioplasty (abstract). Indian Heart Journal Vol. 43, No 4, 1991; 398
- Lal et al. High Risk Aortic Valvuloplasty with Support of Percutaneous Left Atrial Femoral Bypass. Indian Heart Journal; 1992: 44: 267(A).
- P Lal, PT Upasani, AK Pandey, S Kanwar : Left Atrial-Femoral Bypass Support in High-Risk Cardiac Interventions (abstract) Indian Heart Journal 54:521, 2002

SUPPORTED ANGIOPLASTY WITH LEFT ATRIO FEMORAL BYPASS,
1ST TIME IN INDIA,
THE HINDU,
DECEMBER 16, 1991.

New alternative to bypass surgery

From Our Staff Reporter

NEW DELHI, Dec. 15.

Recent developments in invasive and interventional cardiology and discovery of new tools like drills, artherectomy devices, stents and laser catheters have raised new hopes in treating more people with narrowed coronary arteries without going in for the traumatic bypass surgery, according to Dr. Parshottam Lal, working at the Apollo Hospitals, Madras.

Dr. Lal, who was in the town for the World Congress on Cardiology, said in an interview to *The Hindu* on Saturday that a new procedure called Slow Rotational Angioplasty with a drill technique was introduced successfully for the first time in Asia at the Apollo Hospitals, Madras two years ago. A 33 year old patient who was advised for a bypass surgery and on whom balloon angioplasty was not possible underwent the 45 minute operation involving a rotating catheter attached to a small motor which successfully drilled the blocked artery of the heart.

Since then Dr. Lal has performed seven such operations with a success rate of 45 per cent. A more recent achievement of his was another technique called the Left Arterial Femoral Bypass Support, which he successfully attempted in July this year. According to him, only 25 to 30 patients all over the world were subjected to this technique a year and the procedure seemed to be promising one in India.

The procedure is carried out by delivering blood from left upper chamber of the heart to the rest of the body through a roller pump, thereby bypassing the poorly functioning left ventricle. Dr. Lal is also credited with the achievement of introducing Coronary Artherectomy for the first time in the country. The procedure practised first in the US involved using an artherectomy catheter with tiny rotating blades which shaved off the plaque deposited on arterial walls.

Dr. Lal attempted this technique for the first time on a 49-year-old patient from Uttar Pradesh

in September last year. Having pioneered several new techniques as an alternative to bypass surgery, Dr. Lal's efforts have gone unrecognised so far. Shy of publicity, Dr. Lal talks of his achievements in modest terms and possesses only a letter from the Chairman of Apollo Hospitals appreciating his achievements and contribution in the sphere of cardiology.

Trained in UK, U.S. and Germany, Dr. Lal is a fellow of the cardiac Society of Angiography & Interventions of America and a member of the British cardiovascular Intervention Society and German Society of Cardiovascular Research. At the world congress here, he presented a paper on "Advances in Angioplasty" discussing the new techniques implemented by him on heart patients and thereby saving them from the expenses, trauma, risks and recuperation time of a surgery.

News Paper Coverage



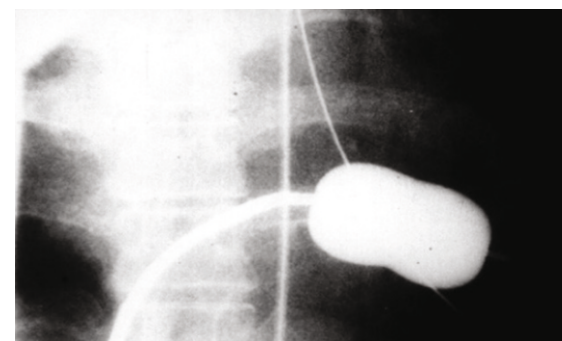
INOUE BALLOON

Back in days, in 1990's, the most famous balloon to perform Mitral Valvuloplasty - Inoue Balloon was a success in the world with patients suffering from Rheumatic Heart Disease, leading to Mitral Stenosis. That time it was so costly that the manufacturing firm - Toray Company of Japan, used to charge 3000 USD for that. Major chunk of patients suffering this disease were from low-middle class and hence the balloon was not used in India ever before. Dr Lal played a key role in persuading the firm & got success in getting the same balloon at a price of USD 1000.

Dr Lal performed India's 1st Inoue Balloon Mitral Valvuloplasty on a 70 YO Lady from Jalandhar in November 1990 and is credited to introduce this successful process in India.



Inoue Balloon across the Mitral Valve



Still Image of the Inoue Balloon from the procedure

Publications of Inoue Balloon Mitral Valvuloplasty

- Lal P. et al: Percutaneous Mitral Valvuloplasty using Inoue Balloon Technique and its Comparison with Other Techniques (abstract). Indian Heart Journal, Vol. 43, No 4 1991; 397
- P Lal, PT Upasani : Ballon Mitral Valvuloplasty by "Modified" Technique (abstract) J. Inter Cardiol, Volume 11, Issue Supplement S5-S136, 1998
- P Lal, PT Upasani, AK Pandey, AS Koppula, S Kanwar : Palliative Balloon Mitral Valvuloplasty for Calcified Mitral Valves (abstract). Catheterization and Cardiovascular Interventions, 2001
- P Lal, PT Upasani, AK Pandey, S Kanwar : Simultaneous Coronary Angioplasty and Balloon Mitral Valvuloplasty for Calcified Mitral Valve (abstract) Indian Heart J 54: 598, 2002

A REVIEW OF PIONEERING EFFORTS OF DR. P. LAL IN THE
FIELD OF INTERVENTIONAL CARDIOLOGY (IC) IN INDIA
INDIAN EXPRESS, OCTOBER 16, 1993

Curing hearts without cuts

FOR the past five years, 46-year-old Janakari, a shopkeeper from Pondicherry, had been suffering from a heart problem. He had a severely narrow valve, and was scheduled for surgery three years ago. But he hesitated to take the

operation, both because of the prospect of a long stay in the hospital and the danger of a huge bill. He was finally persuaded to go to the Apollo Hospital in Madras, where his

valve could be opened up without surgery. He was admitted there in 1990, underwent interventional cardiac proce-

to open his valve the same day and by the next evening was shopping for shells at the beach. The following day he was in the train, on his way home.

NOTE OF CAUTION, DESPITE SUCCESS
INTERVENTIONAL cardiol-

ogy, according to Vikram Jagg, a heart-based cardiologist, is a surgical medical procedure in which the functions of the cardio-

vascular surgeon are taken over by a cardiologist. It has its uses, obviously. Be-

cause the procedure, Janakari was able to walk a few yards without gasping. But thanks to

interventional cardiology, his

valve had an opening with an area of less than 0.5 cm, widened to over 2 cm. And

now he is back to his normal life. The procedure, however, can be

used only with the help of

transcatheter surgery. The

new-generation diagnostic devices for interventional cardiology (IC)

procedures are the angiogram and the intra-vascular ultrasound.

Clinical trials to determine the efficacy of these techniques and devices over the established practice of balloon angioplasty are on.

Till then, apprehensions will continue to be voiced about the

viability of these procedures. According to K. Srinivas Reddy, a

specialist in preventive cardiology at Delhi's All-India Institute of

Medical Sciences, "IC procedures have not been able to cut down

the risk factor of 1 per cent involved in surgery. And

complications arising after these procedures are responsible for doubts about their efficacy."

Interventional cardiology opens up a whole new frontier in medical science as it seeks to repair the heart without taking the conventional route. But doctors are divided on its efficacy.

from disabling palpitations and shortness of breath, the necessary connection between the vessels in her heart (a sort of hole in the heart) was closed with the



An enlarged view (top) of the heart's valves on display on video monitors at Apollo Hospital, Madras; Parshotam Lal (left) at the operating theatre. Express photo by C.P. Senthilvelu.

But for the success of any of these interventional procedures, proper selection of patients is the crucial factor. For instance, coronary artery disease becomes

essential when the block in the coronary artery is irregular or complex.

Each procedure costs around Rs 70,000, but the one to close a hole in the heart by inserting a

device called the monodisc seems to be the most challenging. Made of a nylon mesh and wires, the

monodisc is inserted through a catheter. The device is then

pushed inside till it closes the hole and is held in position by the

wires. This, however, can be done only when the hole is less than 2

cm. Involved closely with the development of this procedure while

it was still being experimented with in the US, Lal closed a hole

in the heart of a student - Suresh Babu, 20. The son of a tailor,

Babu was suffering from a septal septal defect (ASD), which

caused breathlessness and did not allow him to play any games. The

IC technique cost his father Rs 40,000, and now he not only goes

to evening classes, but also plays

tennis and volleyball.

HOMEGROWN KEY TO THE FUTURE

IN the case of 28-year-old Mukhtiar Begum from Andhra Pradesh, "who was terrified of

surgery and suffered for years

from disabling palpitations and shortness of breath, the necessary connection between the vessels in her heart (a sort of hole in the heart) was closed with the

help of a bottle-shaped plug made of polyurethane.

This Russian technique sealed the woman's condition known as patent ductus arteriosus (PDA), which involved an unnecessary

connection between the aorta and the pulmonary artery, resulting in

the mixing of pure and impure blood. Failure to treat the condition

can cause life-threatening complications. It can be rectified with an umbrella (Rs 65,000) or

the Indian plug (Rs 30,000). But the polyurethane plug costs

around Rs 10,000.

One of Lal's recent patients, 29-year-old Ojha, a journalist

Rajnarayan Mahapatra, says, "I've suffered for nine years from

this problem (a narrow heart valve) and was advised heart

surgery four years ago. But I was

terribly scared and finally ended up with this procedure."

But as IC becomes the latest catch-word in the country's car-

diology circles, doctors are con-

scious of the fact that the devices

are imported, hence expensive. The challenge before them, there-

fore, is to provide cheaper, home-grown alternatives, besides

reducing the risk factor. Says Lal, "If the cost of interventional car-

diac care keeps increasing at this

frightening rate, and patients are not selected properly, I fear people

will lose faith in this procedure."

So, to turn the situation around, Lal is exploring the possi-

bility of manufacturing the im-

plants indigenously. It will mean

cutting costs and making the pro-

cedure available to larger num-

bers. Till then, IC may remain a

lucrative option for the fortunate few.

■ Rashendra Bhagat, Madras with Radhika Singh, Delhi

'TORAY'

Toray Medical Co., Ltd.

1-8, Nihonbashi-Muromachi, 3-chome
Chuo-ku, Tokyo 103, Japan
Telephone: (03) 245-5651/245-5652
Telex: J22623 TORAYINC
Telefax: (03) 245-5323

Nov. 9, 1990

Dr. Parshotam Lal,
Senior Consultant Cardiologist,
Apollo Hospitals,
Madras

Dear Dr. Lal,

We are pleased to inform that Dr. Kanji Inoue has selected you as the first investigator in India for performing PTMC. We will be forwarding necessary data paper for the same. As per your request, Dr. Inoue has also agreed to reduce the cost of Inoue Balloon from \$3000 to \$1000 for India.

Yours sincerely,

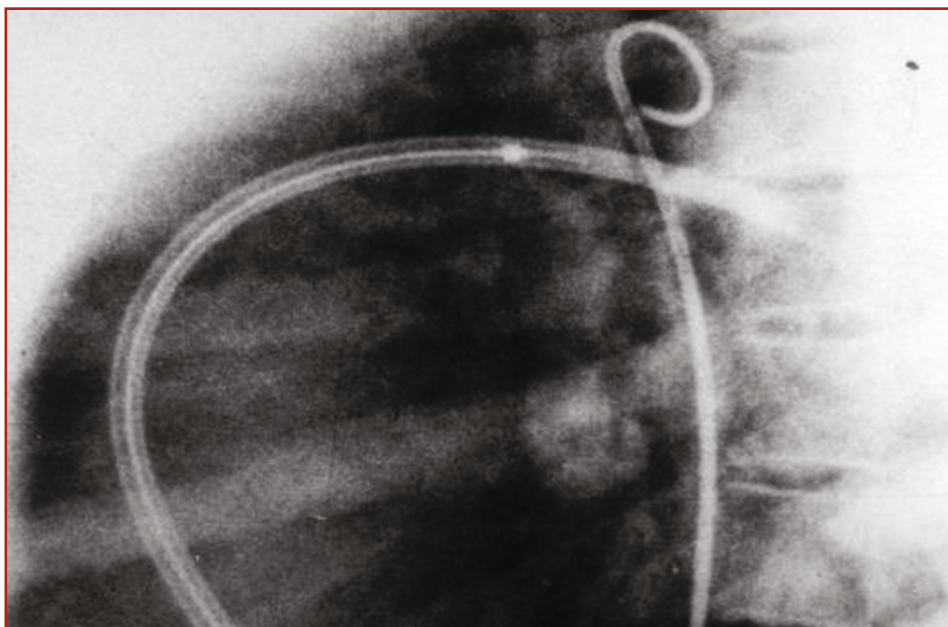
A. Ueda
Manager of International Dept.
Toray Medical Co., Ltd.

Letter from the Manufacturer as
1st Investigator in India



NON-SURGICAL CLOSURE OF PDA BY RUSSIAN TECHNIQUE

An innovative & relatively affordable Russian technique was performed for the 1st time in the country by Dr. Lal in 1992. The procedure used a bottle shaped plug made of polyurethane, to close the hole in the heart of 28 YO patient from Andhra Pradesh. The patient was terrified of cardiac surgery & failure to treat this defect could have led to life threatening conditions. Dr Lal chose to go for the new Russian Technique involving insertion of bottle shaped plug made of polyurethane at the point of defect with the help of special catheter. The procedure lasted for 30 minutes.



The Inoue Balloon from the procedure

LOW-COST NON SURGICAL PDA CLOSURE
(MODIFIED RUSSIAN)
FIRST TIME IN INDIA
INDIAN EXPRESS,
MADRAS EDITION,
JULY, 1992.

Low-cost method to close heart hole

EXPRESS NEWS SERVICE

MADRAS - An innovative and relatively cheap Russian technique was tried for the first time in the country at the Apollo Hospital a couple of days ago, to close a hole in the heart.

Done by cardiologist Parshotam Lal, who has pioneered quite a few techniques of interventional cardiology at this hospital, the procedure used a bottle shaped plug made of polyurethane, to close a hole in the heart of 28-year-old patient Mukhtiar Begum from Andhra Pradesh.

"She was terrified of surgery and had been suffering for years from disabling palpitations and shortness of breath caused by this condition", the cardiologist said. In this condition a child is born with unnecessary connection between the great vessels of the heart - the aorta and the pulmonary artery, giving rise to mixing of pure and impure blood

like in any other hole of the heart.

Failure to treat this defect can result in life threatening complications. The only option left was cardiac surgery or other forms of more expensive non-surgical techniques like an umbrella costing Rs. 65,000 which is inserted through the catheters, or Ivalon plug which would have cost her Rs. 30,000.

The cardiologist chose to use a new Russian technique. This procedure involved insertion and firing of a bottle shaped plug made of a polyurethane substance, at the point of defect, with the help of a special catheters. The procedure lasting 30 minutes was done under local anaesthesia leaving no ugly scar. The patient was discharged on the

second day.

This procedure costs around Rs. 10,000.

The advantages of this technique are that it is the cheapest known method for closing this kind a hole in the heart. It avoids the risks associated with surgery, and is relatively safe.

The technique is suitable for all age groups. At present this plug has to be imported but it can be easily fabricated in the country, the cardiologist said, adding that he is already on the job.

Dr. Lal proposes to use this technique on a patient with a similar problem at the Government General Hospital next week.

News Paper Coverage

PUBLICATION

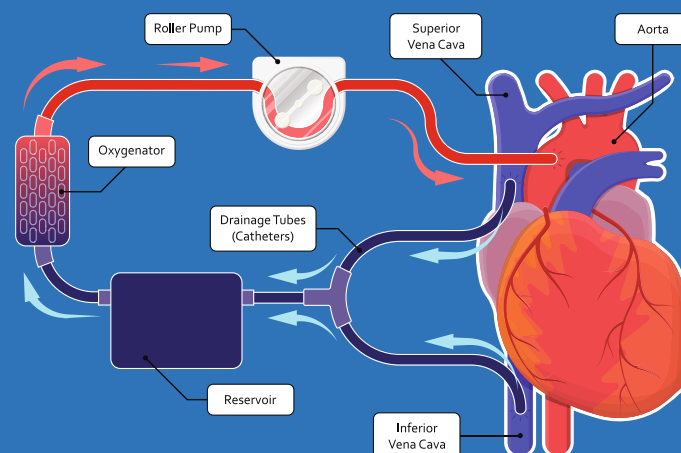
- Lal et al. Non-Rashkind techniques for Transcatheter Closure of Patent Ductus Arteriosus. Indian Heart Journal; 1992: 44: 174(A).
- P Lal, PT Upasani, P Jain : PDA Closure Using Modified Russian Technique (abstract) Indian Heart Journal 48:520, 1996



SUPPORTED HIGH RISK ANGIOPLASTY WITH THE SUPPORT OF CARDIOPULMONARY BYPASS

It was performed in Oct, 1990 by Dr. P Lal at Apollo Hospital, Chennai on a Colonel from Jalandhar. The patient was high risk due to severe LV dysfunction. He was put on biomedical pump with oxygenated (Heart Lung Machine) and the procedure was performed successfully.

Cardiopulmonary Bypass (CPB)



PUBLICATION

- Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country)
- Lal, P. et al : Elective Supported Angioplasty with Cardiopulmonary Support (CPS) – Our Initial Experience (abstract) Indian Heart Journal Vol 43, No 4, 1991: 398



REPAIRING OF NON-SURGICALLY ANEURYSMS OF ABDOMINAL AORTA AND ILIAC ARTERIES

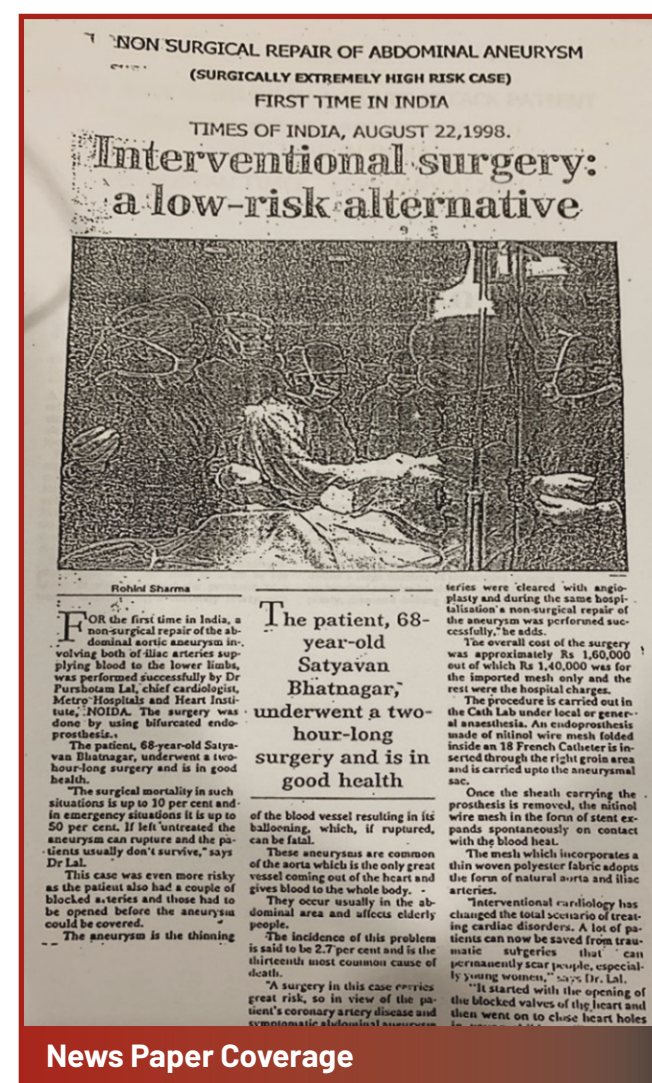
It was performed by Dr. P Lal in July, 1998 at Metro Heart Institute, Noida (Delhi NCR). It is an alternate to high risk surgery having high mortality. The first case was performed on 68 years old Doctor from Chandigarh.



Abdominal Aneurysm before repair



Abdominal Aneurysm after repair



News Paper Coverage

PUBLICATION

- Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country in 1992).
- P. Lal, PT Upasani et al: Non-Surgical Repair of Abdominal Aortic Aneurysms – Initial



TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT (TIPS)

It was done on a female patient from Kolkata in November, 1990 at Apollo Hospital by Dr. P Lal. This **useful for patient suffering from liver cirrhosis and liver transplation.**

Letter from Mr. R. Suresh who helped in providing the necessary consumables to perform this challenging case.

He also helped in arranging the visit of Prof. Ken Thomson from Melbourne, Australia.

FIRST TIPS CASE IN INDIA

TAR RADIANCE <starradiance12@gmail.com>
From: STAR RADIANCE <starradiance12@gmail.com>
Date: Wednesday, November 14, 2018
Subject: FIRST TIPS CASE IN INDIA
To: email-p-lal@hotmail.com

Dear Sir,

SUB: FIRST TIPS CASE IN INDIA

With reference to the above subject to best of my knowledge the first TIPS case was done in the Year Nov-1990 at Apollo Hospital, Chennai by DR. Purshotam Lal along with DR. Ken Thomson from Melbourne. The Female patient who was from Kolkata.

Fishal Surgicals supplied three types of TIPS Sets" manufactured by COOK Incorporated, USA.

DR. Rosch-UCHIDA set from USA

DR. Ernie Ring Set from USA

DR. Ken Thomson set from Australia.

Fishal Surgicals supplied Wall STENT manufactured by SCHNEIDER, Swiss.

Kind Regards

R. Suresh

TAR RADIANCE MEDICAL DEVICES TRAINING AIDS
&6, KOTHENDAN STREET, DEVENDRAN NAGAR,
MANAMCHERI, KUNDRATHUR, CHENNAI-600069,
T.N., INDIA

091-9566279391

091-44-29030072

AX: 00-91-44-24780487

mail: starradiance12@gmail.com

www.starradiancemedical.com

<https://lh3.googleusercontent.com/-hXRPkDdMv7o/AAAAAAAAAAI/AAAAAAAAAA/DA dg5z8FbvU/s96-c/photo.jpg>

R. Suresh

TAR RADIANCE MEDICAL DEVICES TRAINING AIDS
&6, KOTHENDAN STREET, DEVENDRAN NAGAR,
MANAMCHERI, KUNDRATHUR, CHENNAI-600069,
T.N., INDIA

091-9566279391

091-44-29030072

AX: 00-91-44-24780487

mail: starradiance12@gmail.com





FIRST CASE OF THE COUNTRY OF IMPLANTING GOLD STENT

It was BY Dr. Lal happened in August, 1997 at Metro Heart Institute, Noida. In the initial years of Coronary Stenting, there was high incidents of blood clot in the stent and the Gold Stent was introduced with a view that it should have less foreign body reaction and less blood clot formation.



PUBLICATION

- P Lal, PT Upasani et al : First Clinical Experience with the Gold Stent (abstract) J Inter Cardiol, Volume 11, Issue Supplement S5-S136, 1998



FIRST CASE OF INDIA OF ACOLYSIS

It was performed by Dr. P Lal in February, 1998 at Metro Hospital, Noida (Delhi NCR) on a 48 years old patient who suffered heart attack and his main artery LAD was loaded with blood clot. A probe was attached to the ultrasound device through the guiding catheter. After the probe was brought up to the sight of the clot, ultrasound energy was delivered for 5 minutes and the blood clot was broken into fine particles which dissolved in the blood stream. It was thought to be helpful in patient having peptic ulcers and stroke where the blood thinner if given to resolve the blood clot can cause bleeding.

ACOLYSIS - DISSOLVING THE BLOOD CLOT
WITH ULTRASONIC WAVES
FIRST TIME IN INDIA
TIMES OF INDIA, FEBRUARY 21, 1998.

Acolysis for heart patients

FOR the first time in India a new procedure to dissolve blood clot in the blocked artery of the heart has been successfully carried out by Dr Purshotam Lal, director and chief cardiologist and Dr P.T. Upasani, consultant at Metro Hospitals & Heart Institute, NOIDA.

Acolysis, as the procedure is called, was performed recently on a 48-year-old patient who had suffered a heart attack and continued to have chest pain. His coronary

angiography revealed 95 per cent block in the main artery LAD along with the clot.

The probe attached to the ultrasound device was inserted from the groin area under local anaesthesia through the guiding catheter like conventional balloon angioplasty.

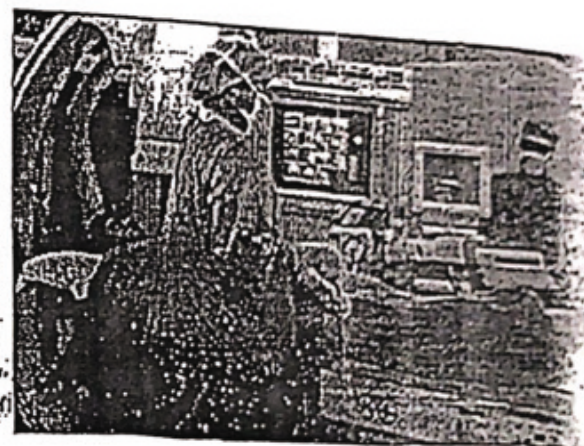
The probe was then brought up to the clot and ultrasound energy was delivered for five minutes. The blood clot broke into fine particles which dissolved in the blood

stream.

After the clot was dissolved angioplasty with implantation of the stent was performed with excellent results.

The procedure can prove to be very effective for patients having stomach ulcers, strokes, etc, as other blood clot dissolving drugs cannot be given to them in order to avoid complications like brain haemorrhage.

■ Rohini Sharma



PUBLICATION

- P Lal, PT Upasani : Experience with Intracoronary Ultrasound Thrombolysis (abstract) Jj Inter Cardiol, Volume 11, Issue Supplement S5-S136, 1998.



FIRST TIME IN INDIA PULLBACK ATHRECTOMY

It was performed by Dr. Lal in 9 June 1996 at Apollo Hospital, Delhi. The procedure was performed on a 45 years old male patient from Chandigarh who had 90% critical block in his right coronary artery. The cutting device called Pullback Athrectomy was introduced and was rotated at 2000rpm with the help of a motor. The cut out material is collected in the collecting chamber and the device is taken out. It helps in difficult cases of coronary angioplasty.

"PULLBACK ATHERECTOMY"
FIRST TIME IN INDIA
INDIAN EXPRESS,
MADRAS EDITION,
JUNE 9, 1996

5A

Device to clear artery **EXPRESS NEWS SERVICE**

NEW DELHI, June 8: A new cutting device to remove the fatty tissue blocking the arteries was used successfully by Dr Parshotam Lal, senior interventional cardiologist at Indraprastha Apollo Hospital today.

The procedure was performed on a 45-year-old male patient from Chandigarh. Coronary Angiography today showed 95 per cent critical block in his right coronary artery.

The cutting device called Pull back Atherectomy involves a cutting device which chips off the fatty tissue by rotating a blade at the rate of 2000 rpm with the help of a motor. The cut out material is collected at the collecting chamber.

News Paper Coverage



TIME IN THE COUNTRY OF ANGIOGENESIS

It was performed by Dr. P Lal in April 1998. This helps in production of new blood vessels at the site of block. The procedure was done by injecting VEGF a growth hormone in the **"No-option" patients unfit both for bypass and angioplasty and was used as last resort.** In some patient stem cells were prepared from the bone marrow and similarly were injected. Follow up was limited.

PUBLICATION

Paper Presented and published (1st Scientific Papers of the Country)

- **P Lal, PT Upasani et al** : Angiogenesis with Vascular Endothelial Growth Factor – Indian Experience (abstract). Journal Inter Cardiol, Volume 11, Issue Supplement S5-S136, 1998A
- **P Lal, PT Upasani** : Gene Therapy for Prevention of Restenosis after Coronary Angioplasty : Indian Experience (abstract) Indian Heart Journal 50:679, 1998
- **P Lal, PT Upasani, AK Pandey, S Kanwar** : Intermediate-Term Follow Up of Patients Undergoing Angiogenesis with Vascular Endothelial Growth Factor (abstract). Catheterization and Cardiovascular Interventions, 2001.
- **P Lal, PT Upasani, AK Pandey, SC Manchanda, P Arora, S Kanwar** : Initial Nonrandomized Experience with Repair of Infarcted Myocardium by Autologous Bone Marrow Cell Transplantation (abstract) Indian Heart Journal 55:464, 2003.



FIRST TIME IN INDIA ENDOMYOCARDIAL BIOPSY WITH ECHO-GUIDANCE

It was performed by Dr. P Lal in July 1990. It is an out patient procedure useful for patients undergoing heart transplantation and other conditions of the heart causing cardiomyopathy.

The procedure can be done as outpatient with echoguidance and without the use of cathlab.

PUBLICATION

Paper Presented and published (1st Scientific Papers of the Country)

- P Lal, PT Upasani : Echocardiography – Guided Endomyocardial Biopsy (abstract). Indian Heart Journal 47:609, 1995.



PIONEERED MULTIPLE HEART HOLE CLOSURE

Two holes in heart closed without surgery

By A Staff Reporter

NEW DELHI: A 37-year-old man with two holes in the heart has had them closed through a non-surgical procedure carried out at a hospital in Noida.

S M Aggarwal, the patient, underwent echocardiography at a leading institute after he complained of chronic breathlessness and palpitation.

Two holes, measuring 20 millimetre and 5 millimetre each, were spotted in the heart and the consultant advised him surgery, which he refused out of fear.

Then, he went to the Noida-based Metro Hospital and Heart Institute, specialising complex heart surgeries.

"The procedure, inserting a tube through the groin, took less than an hour and was performed under local anaesthesia," said Purshottam Lal, the cardiac surgeon who performed the procedure.

A thin tube was inserted through the hole and a folded patch brought to the other side of the hole, which expanded on release. It was fixed across the holes with anchoring wires and closed the holes.

MULTIPLE HEART HOLE CLOSURE

FIRST TIME IN INDIA

TIMES OF INDIA

MAY.30, 1997.

PUBLICATION

Paper Presented and published (1st Scientific Paper of the Country)

- P Lal, PT Upasani : Simultaneous Transcatheter Closure of Secundum ASD Perimembranous VSD - A Case Report (abstract)
Ind Heart Journal 50:612, 1998



PIONEERED INTRA OF HYDRODYNAMIC THROMBECTOMY

(A DEVICE TO REMOVE BLOOD CLOT FROM THE HEART ARTERY)

PUBLICATION

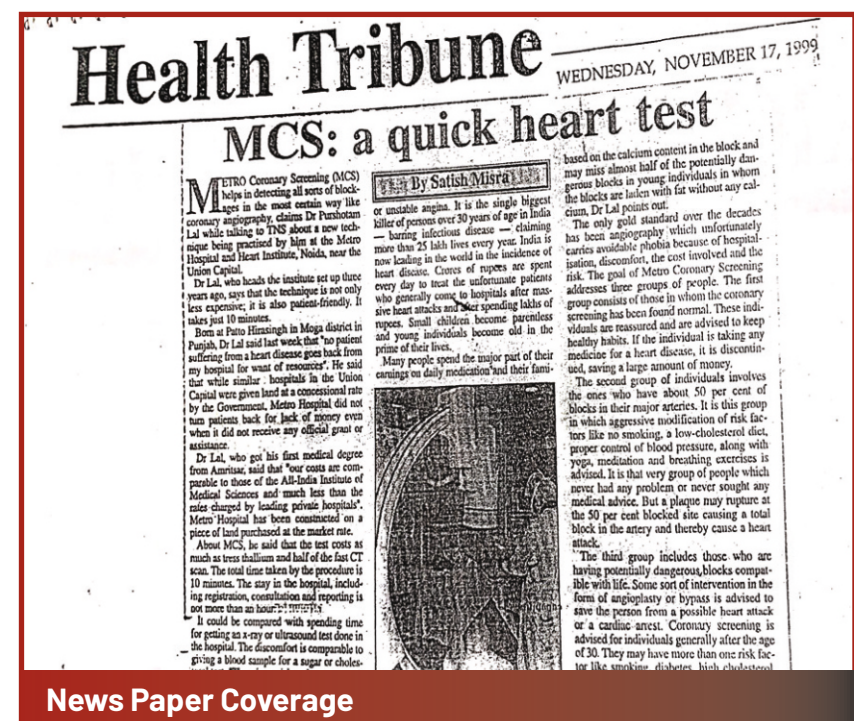
Paper Presented and published in Indian Heart Journal (1st Scientific Paper of the Country)

• **P Lal, PT Upasani, R Rathi, SM Sachdeva, S Kanwar** : Percutaneous Treatment of Arterial Thrombosis by the Use of Hydrodynamic Thrombectomy (abstract). Ind Heart Journal 53:630,2001

• **P Lal, PT Upasani, R Rathi** : How to Optimise the Results of Primary Angioplasty by Mechanical Thromboaspiration (abstract) Ind Heart Journal 58:431, 2006

PIONEERED THE CONCEPT OF METRO CORONARY SCREENING

This involves the coronary angiography with a thin catheter from Wrist or Elbow, Echocardiography & Blood Studies. It takes 3-4 minutes and the person can go back to work in less than one hour. During the years of 1998 when this concept was developed, the patients use to be very much afraid of the word of coronary angiography and the procedure as whole which involves hospitalization. With this concept the person doesn't have to take **off the cloths, no preparation required, since we use less than 10cc die under high pressure following the principle of fluid dynamics. Since, 1998 more than 35000 procedures THE LARGEST NUMBER IN MEDICAL LITTERATURE** have been performed at Metro Heart Institute Noida, with 100% success rate. In very selected group of cases the angioplasty with stenting can be done through the same rout and the patient can be discharged in less than 2 hours.



PUBLICATION

Paper Presented and published ((1st Scientific Paper of the Country)

- P Lal, PT Upasani, SM Sachdeva, S Kanwar : Coronary Screening – Coronary Angiography as an Outpatient Procedure (abstract) Int. Journal of Cardiovase Interventions 4 (suppl 1): 34, 2001
- Presented at the 4th International Meeting on Interventional Cardiology: Frontiers in Interventional Cardiology held in London, UK from 24th June to 27th June, 2001
- P Lal, PT Upasani, R Rathi : Coronary Angioplasty on a 'Day Care Basis' – Is it justified (abstract) Indian Heart Journal 58: 434: 2006

INTRAVASCULAR RED LASER LIGHT THERAPY AFTER ANGIOPLASTY

It was useful to prevent the restenosis. A catheter was attached to the Red Laser Light source and was taken to the angioplasty site to deliver the light. It was supposed to limit the proliferation of the smooth cell responsible for the restenosis.

PUBLICATION

- **P Lal, PT Upasani** : Experience with Intracoronary Ultrasound Thrombolysis (abstract). J Inter Cardiol, Volume 11, Issue Supplement S5-S136, 1998.

PERCUTANEOUS TRANSMYOCARDIAL REVASCULARIZATION

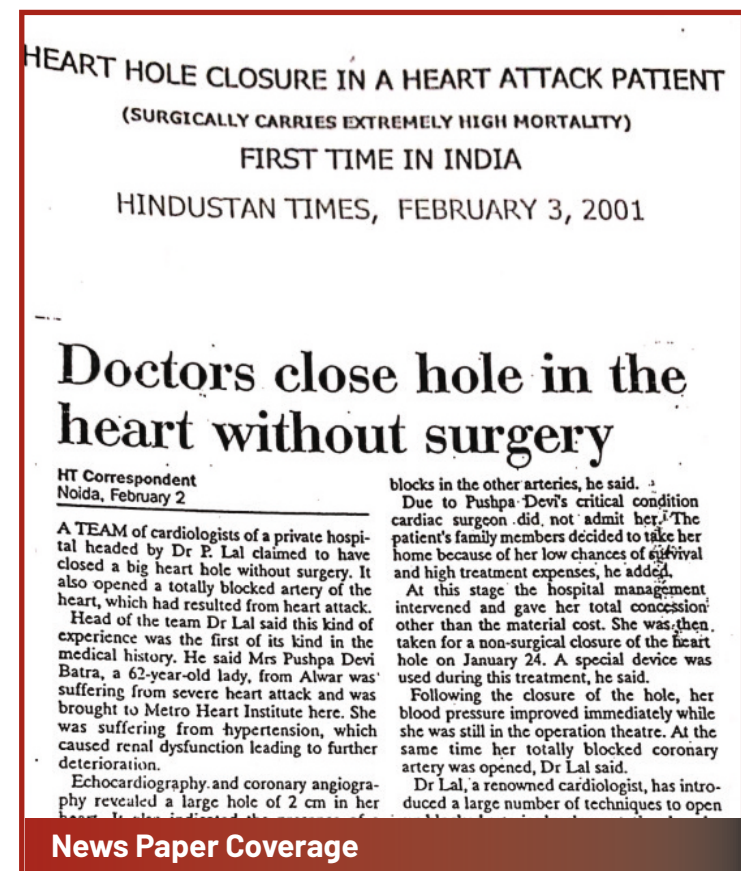
The procedure involved the use of special catheter to create micro holes in the myocardium with a view to create new blood vessels (Angiogenesis)

PUBLICATION

- P Lal, PT Upasani : Initial Experience with Percutaneous Initial Experience with Percutaneous

PIONEERED INTRA CORONARY HYDROLYSIS

It was performed by Dr. P Lal. It involves the use of hydro dynamic thrombectomy to take the clot out.



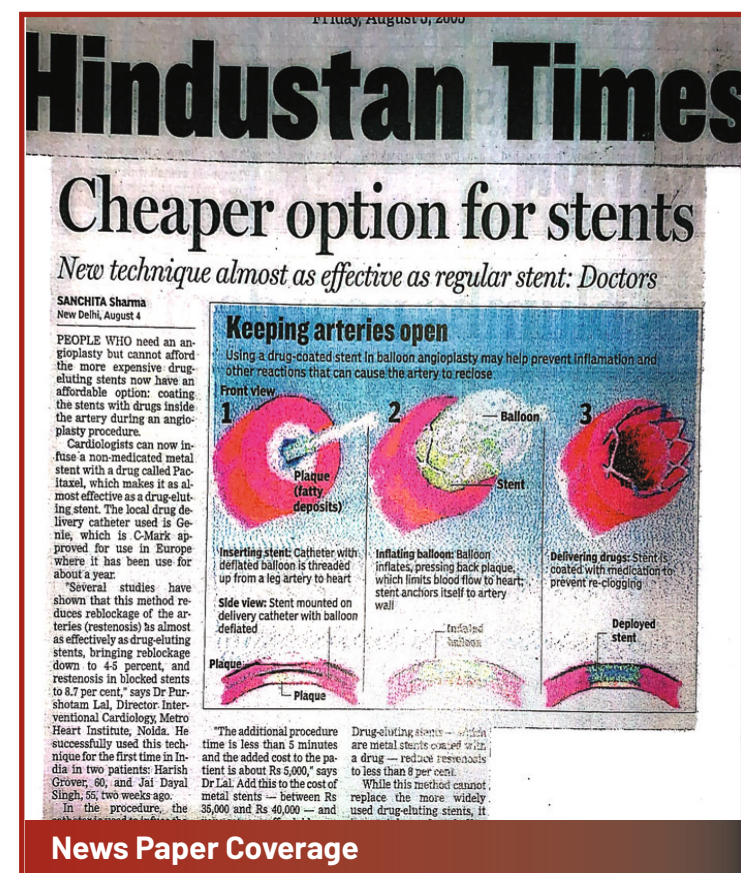
PUBLICATION

Paper Presented and published (1st Scientific Papers of the Country)

• P Lal, PT Upasani, R Rath, SM Sachdeva, S Kanwar : Percutaneous Treatment of Arterial Thrombosis by the Use of Hydrodynamic Thrombectomy (abstract) Indian Heart Journal 53:630, 2001: Echocardiography – Guided Endomyocardial Biopsy (abstract). Indian Heart Journal 47:609, 1995

LOCAL DRUG DELIVERY CATHETER (GENIE)

In lieu of expensive drug eluting stents. The procedure was performed by Dr. P Lal on July 2005. That time it was thought that local drug delivery catheter is a cheaper method to prevent the restenosis.



PUBLICATION

Paper Presented and published (1st Scientific Papers of the Country)

- P Lal, PT Upasani, R Rath, SM Sachdeva, S Kanwar : Percutaneous Treatment of Arterial Thrombosis by the Use of Hydrodynamic Thrombectomy (abstract) Indian Heart Journal 53:630, 2001: Echocardiography – Guided Endomyocardial Biopsy (abstract). Indian Heart Journal 47:609, 1995

“Smile of my patients
is the only award that
I cherish”

Dr. (Prof.) Purshotam Lal

MD, AB (USA), FACM, FRCP (C), FICC, FSCAI (USA)
Padma Vibhushan & Dr B. C. Roy National Awardee
Chairman – Metro Group of Hospitals



11
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OVER
2 DECADES
OF EXPERIENCE