Journal of Neonatal Research and Pediatrics Care

Chembio Publishers
Right Choice for Researchers

My 75 Inventions to Make Healthcare Affordable to Everyone

Introduction

Most of the advanced therapies in Medical Sciences are just a dream to 99.9 % of Indian people as they cannot afford them. To bring this dream into a reality I decided to do research myself and reduced the cost of costly equipment's in Medicine and Surgery so that every Indian can afford it. The therapies in medical sciences are equipment based today and the cost of the medical equipment is very high as many of them are imported and not manufactured in India. I indigenized plenty of this equipment and was successful in reducing the cost about hundred times. I also developed many machines which are invented for the first time in history of medical sciences. The entire research was funded with my own money. Patents have been registered for these inventions in Mumbai office. This project is likely to have a huge positive impact on public health and going to revolutionize healthcare in India and other third world countries. With this project I am also bringing back our glorious past of India as a global leader in science and technology. Now we Indians will invent technologies and the rest of the world will follow us.

Flexible video laparoscopes

First of its kind in the world, designed in 5 mm and 8 mm, (Figure1) totally flexible at all points with a memory and a video camera with 6 leds (Figure 3) fitted in the tip itself making rod lenses outdated. Since there is no image loss the image quality (Figure 3) is much superior to the rod lenses. It can be flexed at 90 degree at port site (Figure 2) to avoid tussle with other instruments during single incision laparoscopic surgery. More than 200 laparoscopies have been performed with it. Cost Rs 5000. Estimated cost is Rs 5 laces. This invention is brought here for a demonstration.

Figure 1

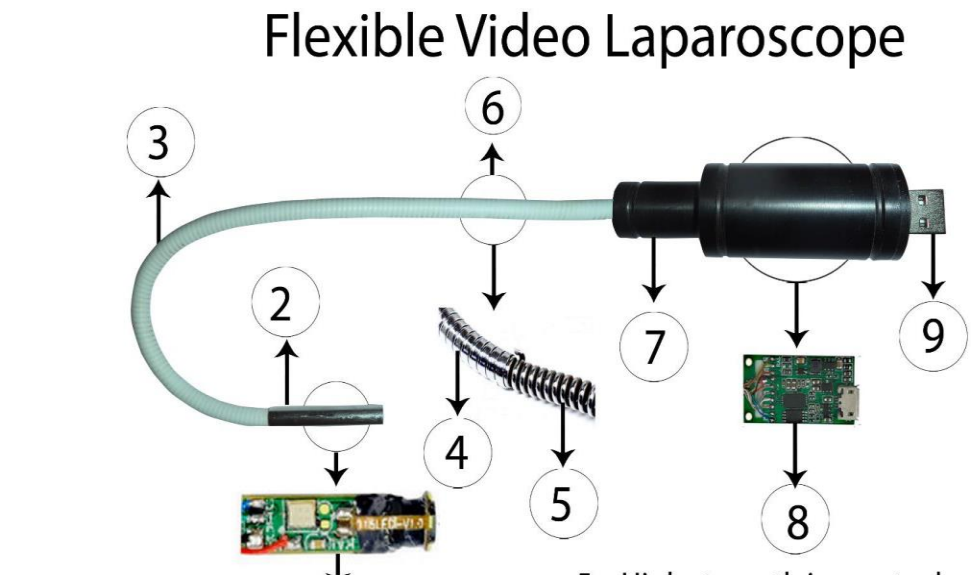
Figure 2

Figure 3

Figure 4

Citation: Jawale S. My 75 Inventions to Make Healthcare Affordable to Everyone. J Neo Res Pedia Care 2019, 2(2): 180015.

Commercialized Flexible Video Laparoscope



1. Video camera
2. Stainless steel tube
3. Teflon sleeve
4. Soft iron wire compressed over spring
5. High strength inner steel spring
6. Goose neck tube
7. Handle of Poly acetal (Delrin)
8. Analogue to digital converter
9. USB male connector

Rigid Video Laparoscopes

Made in 5mm and 8 mm size (Figure1) at cost Rs 5000 instead of Rs 5 lacs Olympus scope (Figure 4) The 5 mm camera (Figure 2) with 6 leds is fitted at the tip of the scope. The image quality (Figure 3) rivals that of a three chip camera although this is a single chip camera as there is no image loss due to rod lenses.


Figure 1

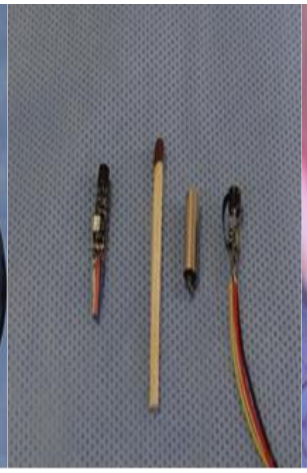
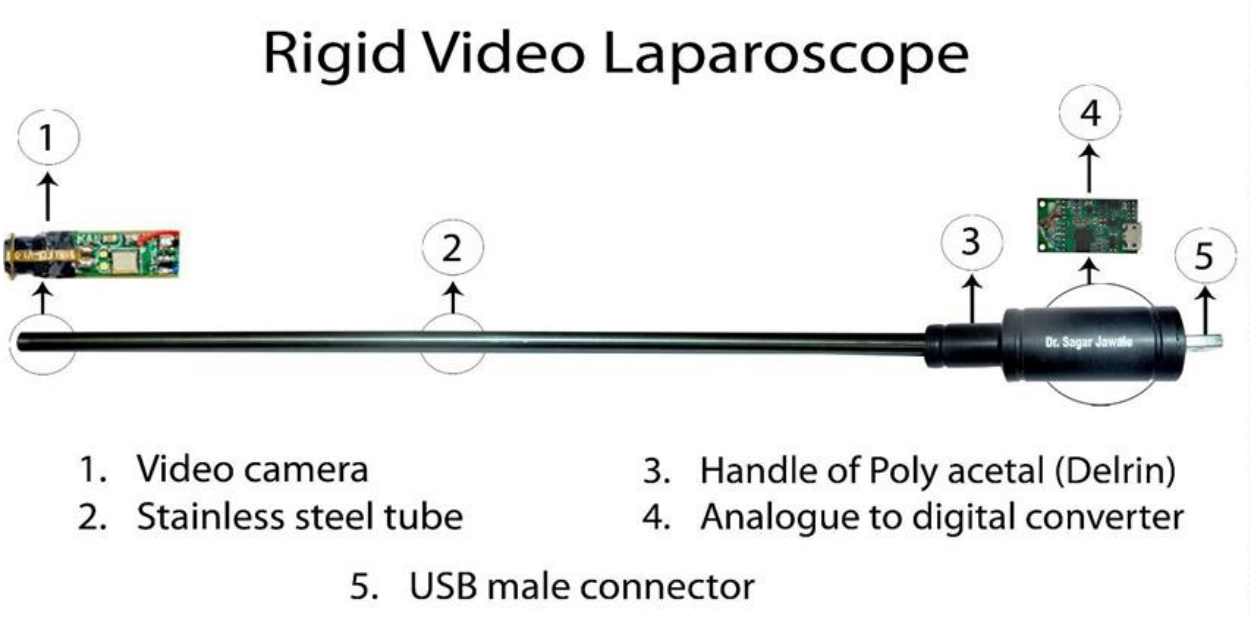


Figure 2

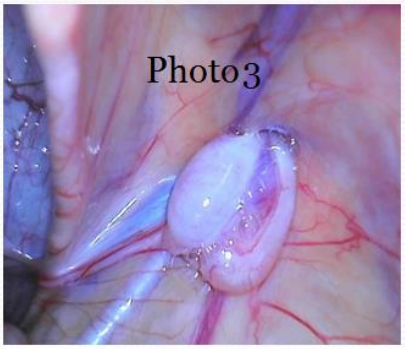

Figure 3


Figure 4



Commercialized Rigid Video Laparoscope

8 mm rigid video laparoscope (Photo1,2) is commercialized at the cost of Rs. 20,000 only. It is easily worth Rs. 6 lacs as Rs. 3 lac camera, Rs.2 lac endoscope and Rs.1 lac worth Led light source are not necessary. The image quality(Photo2) is phenomenal as there is no image loss due to fiber optics.

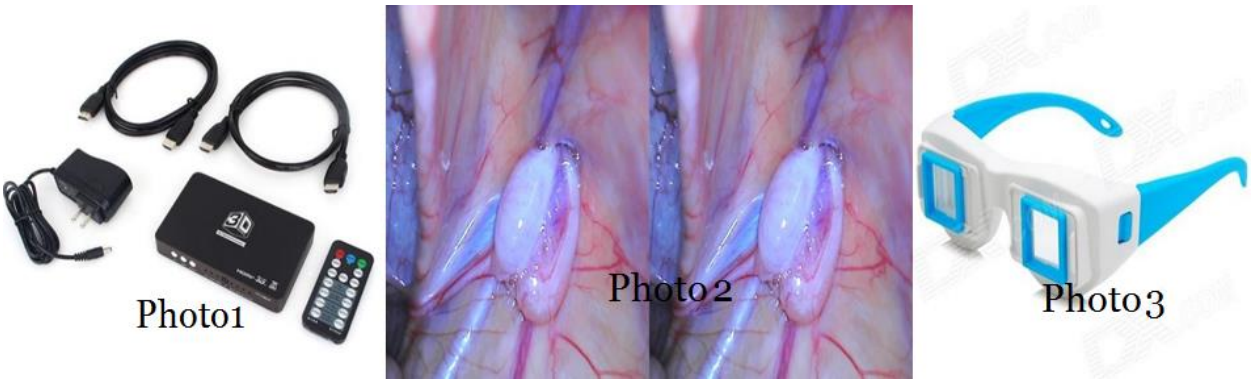


Articulating Video Laparoscope

My articulating video laparoscope is first of its kind in India designed in 8 mm,(Photo 1) a video camera with 6 leds fitted in the tip itself making rod lenses and fiber optics outdated. Since there is no image loss the image quality is much superior to the rod lenses. It can be articulated to 180 degrees (Photo2,3) and rotated in 360 degrees making it to see in places where other scopes do not see. Sterilization is done by putting in Formalin chamber or ethylene oxide gas. The cost of manufacturing was Rs 10,000. The Imported Scope costs Rs 10 lacs.

3-D Laparoscopy

In laparoscopy, the 3D picture becomes 2D and the sense of depth and perception is lost making laparoscopy very difficult and prone to mistakes by the surgeon. To eliminate those problems 3 D laparoscopy system was developed by converting 2d images to 3d by an advanced computer processor(photo1) in real time. It is a real 3d system of side by side type(photo2) where the picture resolution remains constant. Each eye sees separate image when watched through stereoscopic goggles(photo3) creating 3 D image inside brain. The system was developed in Rs 15,000 instead of Rs 30 lac system in the market.



VR Headset for 3-D Laparoscopy

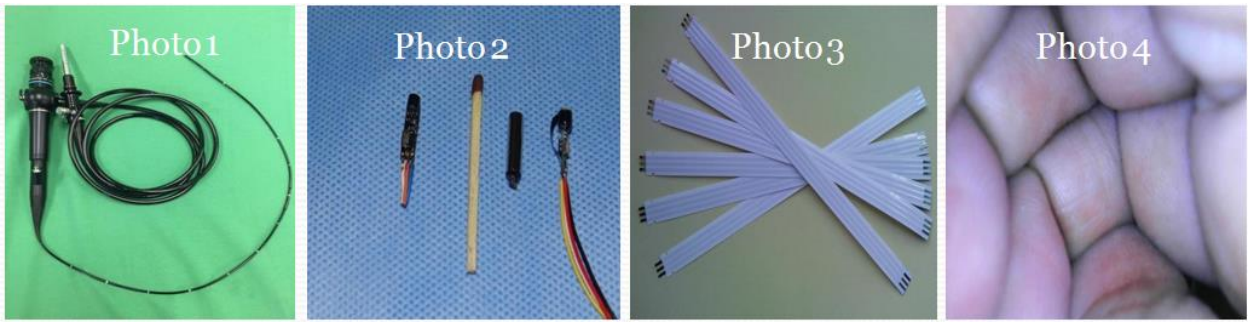
Watching the TV screen constantly during laparoscopy by the surgeon and assistant becomes difficult and inconvenient. To solve this problem the VR Headsets(photo1) were used. Your own smartphone can be put into it and the picture in the TV is accessed by the smartphone in a wireless manner by screen mirroring technology(photo2). Alternatively it can also be done by creating a wireless network by a cloud router in the operation theatre. The VR software in phone converts video into a 3D video in real time. The cost of the system was only Rs 5000.

Video Magnifying Loops

First of its kind in the world. A usb video camera is coupled to a VR set to make 3D video magnifying loops(photo1,3). It shows a 3D video image of operative view in the VR set on your smartphone. Magnification is from 50-500 X. Its video can be enhanced by a number of apps available on playstore. It was made in Rs 3,500 only. Estimated worth cost is Rs 2 lacs.

Flexible Video Endoscopes

Damaged flexible endoscopes such as gastroscope, colonoscope, sigmoidoscope, bronchoscope, ureteroscope (Photo1) were bought on ebay for just Rs 20,000 each and made into functional video endoscopes worth Rs 15 lac each by inserting 3 mm video camera (Photo2) at the tip costing only Rs 2500. The camera also has 6 micro LEDS for illuminating light and image bundle and light bundle both are unnecessary. Flexible flat cable (Photo3) is used from camera to the computer which can withstand one million movements without breaking. Image quality (Photo4) is phenomenal as there is no image loss due to fiberoptic image bundle.



Rigid Video Cystoscope

First device of its kind in the world(photo2). 3.5 mm camera with 2 leds were fitted at the tip of 4 mm stainless steel tube and the output was converted by an analogue to digital converter and given to the computer. Since there is no image loss the image quality is much superior to the rod lenses. Manufactured in just Rs 5000. Estimated worth cost is Rs 5 lacs. Urologists have to bend down(photo1) for endo urological procedures putting them at risk for arthritis of neck joint. This product is going to solve that problem.

Semi Flexible Thin Video Nephroscope

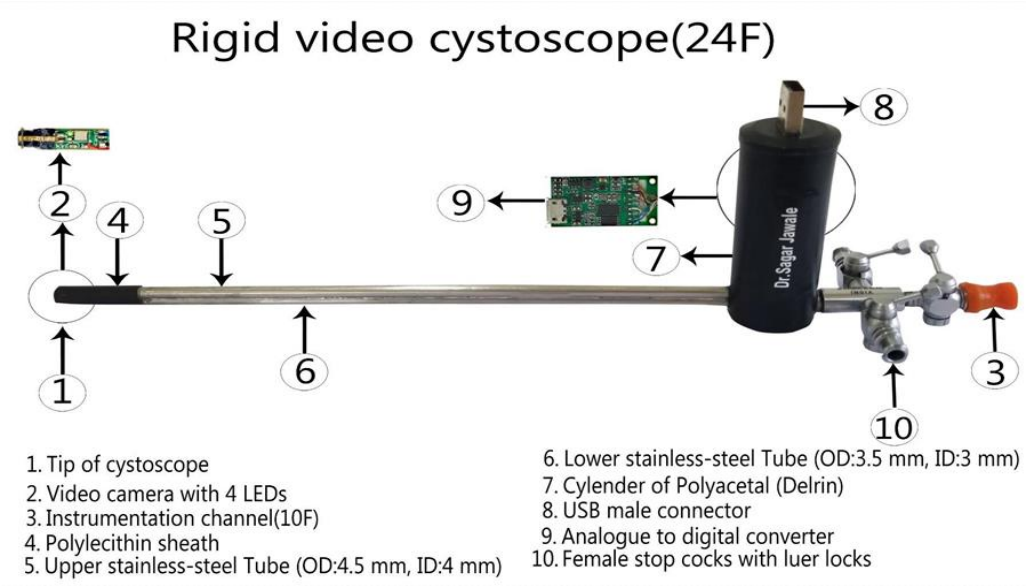
First device of its kind in the world(photo1). 5 mm in diameter and a 1.5 mm working channel with video camera fitted at the tip. The articulating channel accommodates 1 mm optical fiber for laser lithotripsy. It can be used for PCNL as well as for renal pelvic access lithotripsy due to its flexible nature. Made in Rs 10,000, estimated worth cost Rs 10 lacs. Photo 2 is the conventional rigid nephroscope with 10 mm diameter.

Rigid Video Cystoscope (24F)

The instrument is a three in one device in which the telescope, the light source and endo camera are in built. It has vertical diameter of 8 mm and transverse diameter of 5 mm. It has two stainless steel tubes welded to each other one below the other. The outer diameter of upper tube is 4.5 mm and inner diameter is 4 mm. To the back side of this tube, a three female stop cocks with luer locks are attached. The lower stainless-steel tube has outer diameter of 3.5 mm and inner diameter of 3 mm. This is a 10 F single straight channel for instrumentation. The side female stop cocks channels are used for irrigation of fluid and the central channel is for instrumentation. The tip of the instrument is coated with 0.5 mm thick polylecithin plastic tube of one-inch length. It makes the tip of the instrument blunt and non-traumatic.

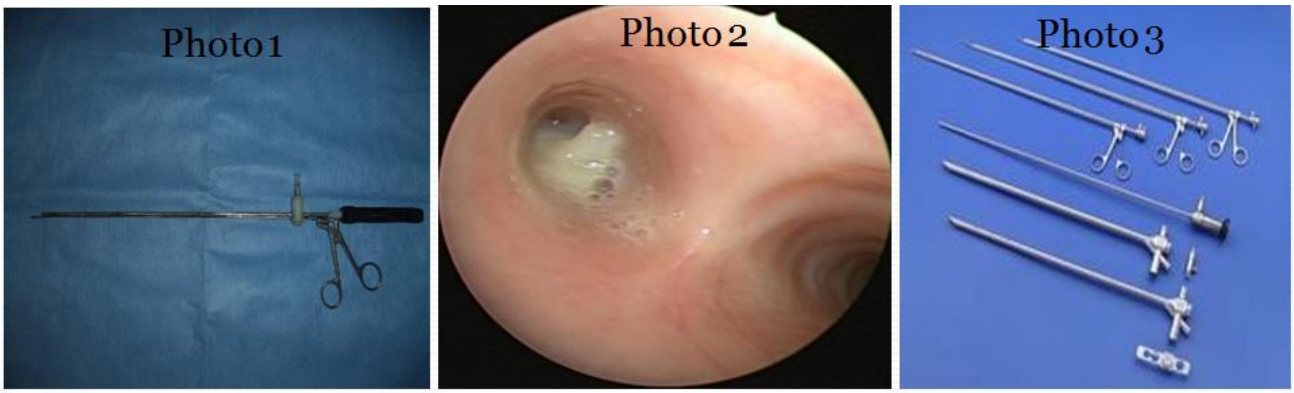
To the tip of the upper tube a video camera of 4 mm diameter with 4 white light LEDs are attached. The 10 wires of this camera pass through this tube and come out in the vertical black bar attached in front of the stop cocks. This vertical cylindrical bar contains a circuit, an analogue to digital converter which converts the analogue video signal from the camera into digital USB signal. The USB output is received at the male USB connector attached at the top of the cylinder. This cylindrical hub is

made up of heat resistant and bio compatible plastic called Delrin-polyacetal.

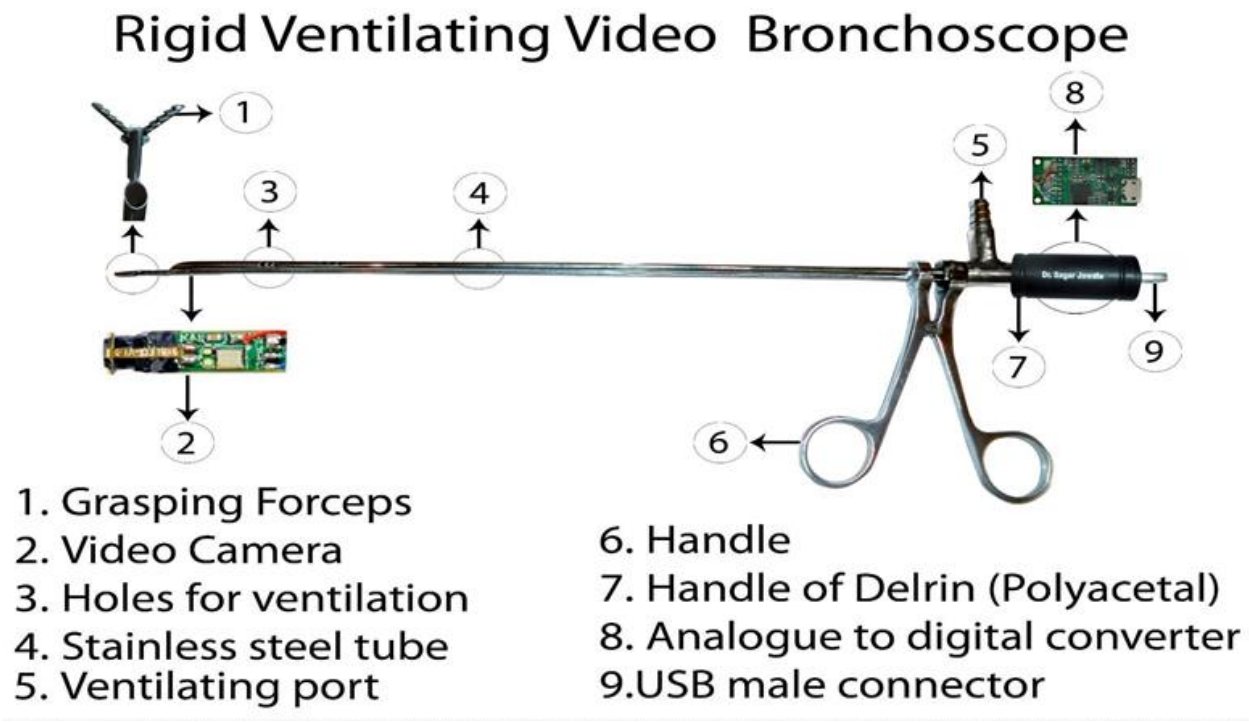


Rigid Video Bronchoscope with forceps

First of its kind in the world(photo1), a video camera is fitted at the tip of a rigid tube made up of surgical steel. The tube has holes on each side for ventilation during the procedure. A foreign body removing forceps is welded to the tube for removal of bronchial foreign bodies. A 3.5 mm video camera is fitted at the tip and there are no fiber optics and rod lenses, hence no image loss and it has excellent image quality(photo2). Outer diameter is 5 mm and working length is 50 cm. Sterilization is done by formalin chamber or ethylene oxide gas. Photo 3 are conventional rigid bronchoscopes. Cost Rs. 5000 only.



Commercialized Rigid Video bronchoscope with forceps

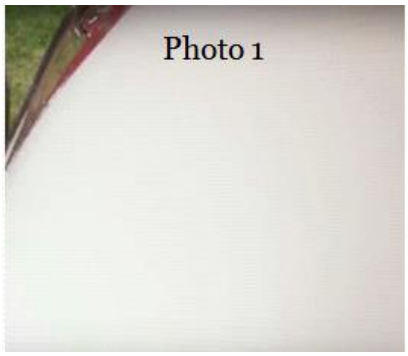


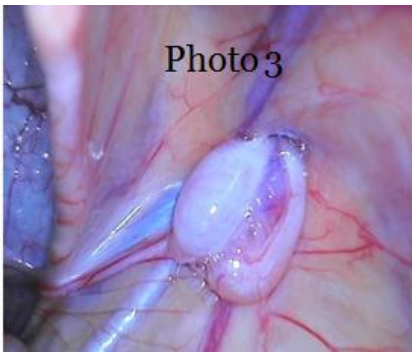
Wireless Endoscopy

Wires of the laparoscope are disturbing to a surgeon. Wireless endoscope gives the surgeon freedom from the nuisance created by wires. By adding a small device at the end of all my previous usb endoscopes become wireless with 2 hour battery backup. The cost of this device is just Rs. 5000.

Hydrophobic Nano Silicon Coating

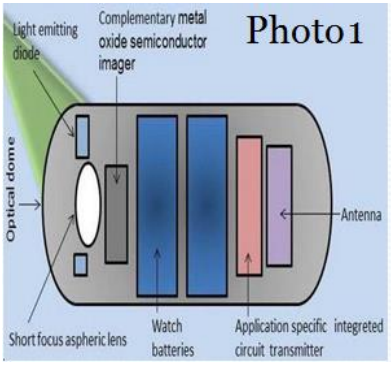
A hydrophobic nano silicon coating (photo2) when applied to any surface repells water and dirt and keeps the surface clean.(photo1) I brought this coating to paediatric surgery by coating the tip of bronchoscopes, laparoscopes, GI endoscopes etc. The blood and tissues do not stick to the surface of endoscopes and vision remains clean throughout the procedure.

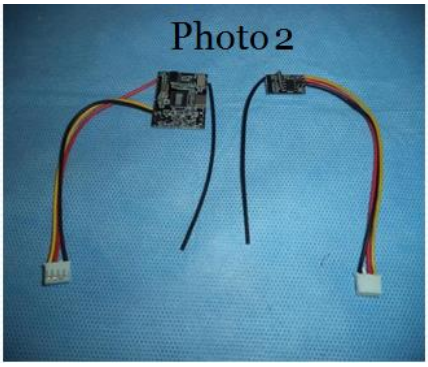




Capsule Endoscopy Device

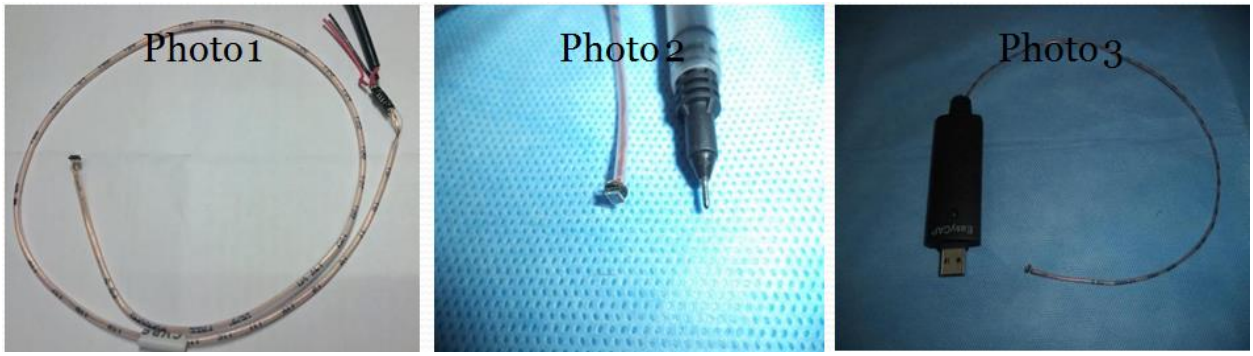
A 5 mm camera module with 2 leds at the tip is used(photo1). It is powered by four batteries used in watches. The camera is put in a tube of stainless steel of surgical grade. The camera is placed to the side of the tube instead of the center as in the devices available commercially. On both ends of the device the stain less steel tube is sealed by plastic caps. The output of the camera is given to a RF video transmitter(photo2) with antenna for wireless transmission of video signal out of the body. A wireless RF receiver(photo2) receives the video images outside the body and connects to a computer where the images are recorded. The dimensions of the capsule are 10 mm diameter and 30 mm length. Cost Rs 10,000 instead of Rs 5 lacs in the market. Photo 1 is the schematic diagram of the device.





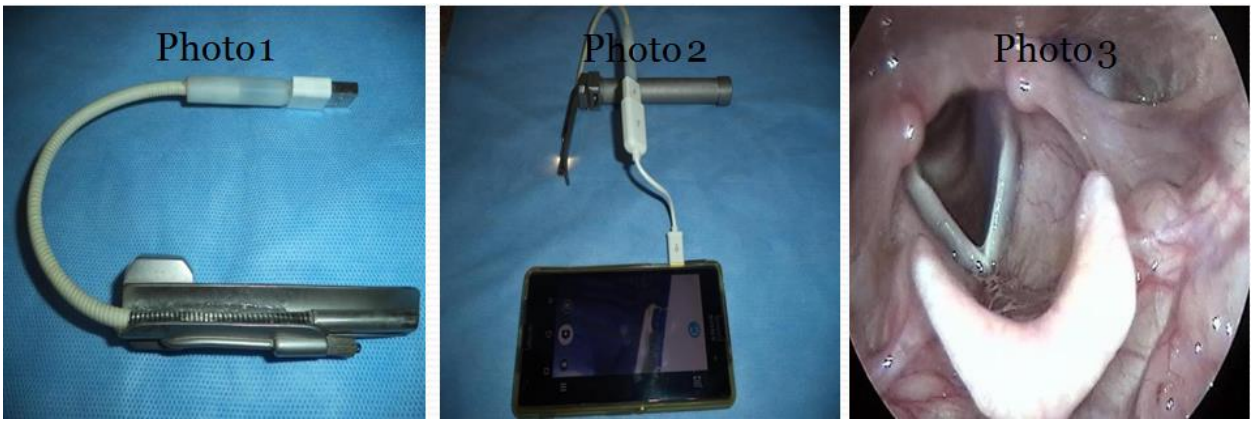
World's smallest Video Camera

It is made up of 1.2 mm CMOS sensor(photo2) which is smallest available in the world market. I took a video camera from the market and disconnected its CMOS senser and connected it back to its small motherboard by 8,0.1 mm copper wires(photo1). The mother board was connected to an analogue to digital converter(photo3) which can be directly connected to a computer or a mobile phone. This camera has a potential to be used in devices such as a ureteroscope, nephroscope, cystoscopes and variety of medical endoscopes. Rod lenses and fiber optics will get outdated with its use in course of time. Cost Rs. 2500.



Video Laryngoscope

A video camera is fitted at the tip of the blade of a laryngoscope(photo1) and has usb output. It is computer compatible and the video can be seen on a mobile phone(photo2) or a computer(photo3). The laryngoscope has its own light which is operated by batteries inside the handle. The cost is Rs 5,000 instead of Rs 3-5 lacs in the market.

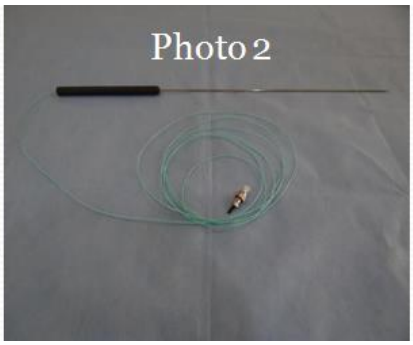


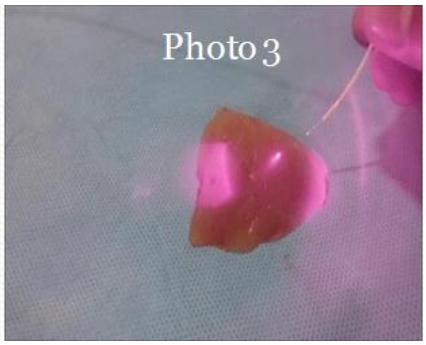
Laser lithotripter

Made by coupling a 0.1 mm optical fiber to a 20 watt 950 nm ND YAG diode laser(Photo1). The one mm optical fiber jacket can pass through working channel of rigid as well as flexible endoscopes breaking bladder, ureteric and kidney stones(Photo2,5). The machine(Photo3,4) is made in just Rs 20,000 instead of Rs 40 lac laser system in the market. Patent is applied at Mumbai office for this invention and it is brought here for a demonstration.

Laser Cautery

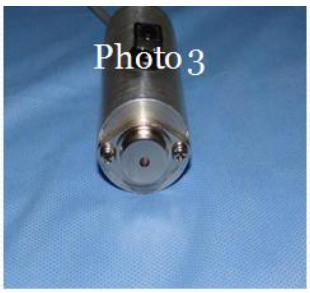
The same 20 watt 950 nm ND YAG diode laser machine can be used as a cautery machine by adding a laser guide(Photo1) to the optical fiber. It can be used as a endo cautery in laparoscopy(Photo2) by adding a long laser guide, both are shown in photos below. This cautery is far more versatile and superior to the electro cautery. Carbon does not form at the tip which needs to be cleaned periodically as in electro cautery. Laser cautery is far more precise and damage to surrounding tissues is negligible as compared to electro cautery. Both the laser guides are brought here for a demonstration.





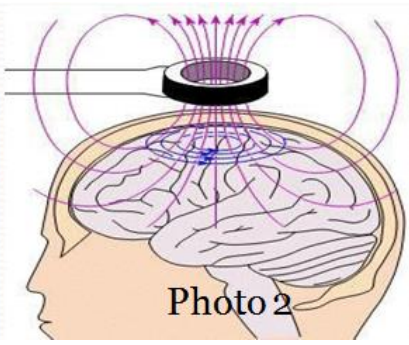
Laser Tissue Welding

Laser tissue welding is a novel technique where 20 % human albumin is put into a wound and 5 Watt Infrared laser of 850 nm is applied over it. At 60 degree centigrade temperature it leads to a formation of a watertight bond of proteins over the tissues by the photo polymerization effect of laser and gives about two weeks of healing in just two minutes. A costly 30 lac rupees machine(photo1,2,3) is used for the purpose which is also not commercially available. I made a hand held laser gun of same specifications in just Rs 10,000 and successfully achieved the same result. Tissues such as spleen, liver, pancreas, brain and kidneys where sutures do not hold well are indications for this technique. A patent is registered for this invention in Mumbai office and it is brought here for a demonstration.



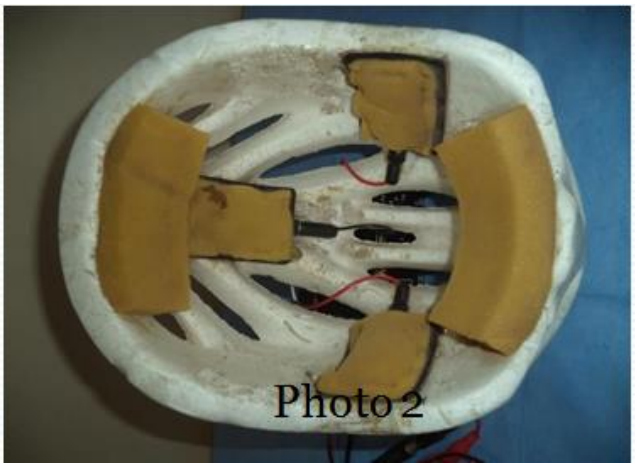
Transcranial Magnetic Stimulation Device(TMS)

Instead of using figure of 8 type butterfly coil, I have used electromagnet(photo1) with solid iron core. The iron core increases the magnetic field thousands of times and leads to diffuse stimulation of brain tissue(photo2). The magnet has a plastic holder for holding to variety of places on the brain. The power supply of the magnet is a 24 Volts AC power Supply with variable frequency from 0-99 Hz achieved by a PWM generator. By placing the magnet on various places of the brain and giving variable frequency of the current, a variety of effects can be produced on the brain. By giving a frequency of 50 hz the brain tissue can be stimulated and by giving 5 hz frequency the brain tissue can be inhibited. The cost is Rs 15,000 instead of Rs 30 lac systems in the market (photo3).



tDCS Device

The Black colored Carbon electrodes of the size of 2 by 1 inch are attached from inside of the thermocol helmet(photo2). The electrodes are covered by sponges which are soaked with Nacl solution before use. The electrodes are detachable and can be placed anywhere inside the helmet. The electrodes are connected to a DC power supply of 3-9 volts and one ampere eliminator(photo1). The maximum current that flows through electrodes is less than 2 Milliamperes. The Themocol helmet is worn by the person who wants to take tDCS. The cost of making was Rs 1500 instead of 1 lac in the market.

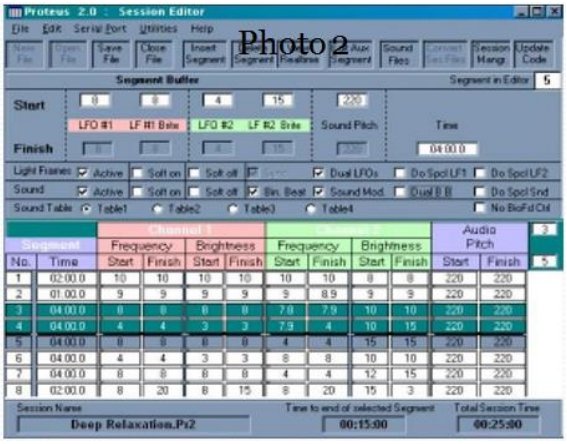


Portable tDCS Device

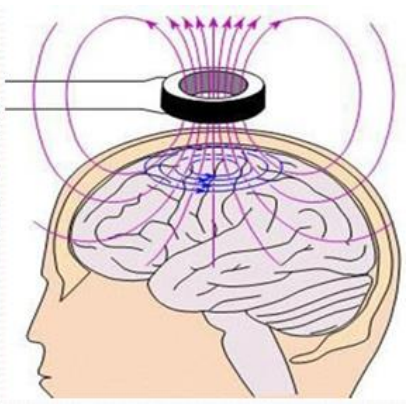
It works on principles of transcranial direct current stimulation of the brain. Various parts of the brain can be stimulated as well as inhibited with it. The device (Photo1) costs only Rs 1000 and is safe enough to be given to patients for daily home use. Upton electrical stimulation(Photo2) brain produces nerve growth factor(NGF) and brain derived neurotrophic factor(BDNF) which have a long list of positive benefits on the brain. 1mg NGF costs Rs 1 lac and does not cross the blood brain barrier.

Light and Sound Sessions for Mind Modulation

The brain cannot develop resistance to light and sound impulses. Taking the advantage of that fact, digital drugs were made up of light and sound impulses for brainwave modulation to be delivered by a light and sound machine (photo1). Programs (photo2) were written for some of the commonest problems as for insomnia, anxiety, depression and also for bliss, alertness, peak performance and kundalini awakening etc.

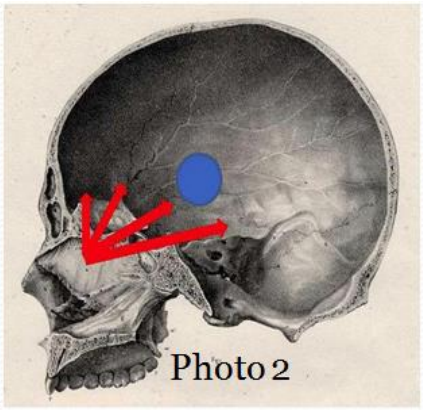


Vigyan Yog



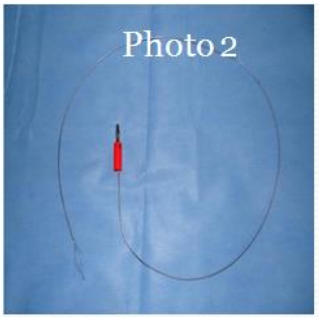
Intranasal Laser Therapy Device

A 5 mWatt red laser diode of 810 nm frequency is used along with its driver for the device(photo1). It is powered by a 3 volt AC power supply from the mains. The diode is coated with a biocompatible Teflon coated sleeve to avoid allergies to the nose. The diode is given a variable pulse of 1-50 Hz to stimulate the brain. A small soft clamp is put to the nose to hold the probe into the nose(photo3). The device can lead to deep brain stimulation(photo2) in a noninvasive manner to treat a lot of neurological conditions. Cost of making was Rs 1000 instead of Rs 1 lac in the market.



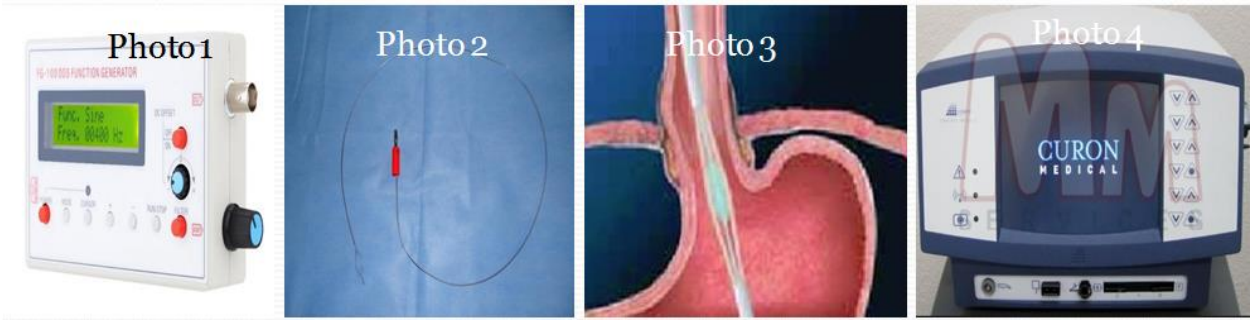
Bronchial Thermoplasty

Bronchial thermoplasty (Photo3) is a procedure indicated for bronchial asthma cases refractory to the conventional therapy. Through a flexible bronchoscope 500 Khz of radiofrequency is given to all bronchi each for 10 seconds. It has a healing effect and reduces the hypersensitivity of bronchi for at least five years. This procedure requires a costly 15 lac rupees machine(Photo4). I used a Rs 5000 radiofrequency generator (Photo1) machine which has 500 Khz as a setting. The probe for thermoplasty was developed from from a 1 mm dormia basket in just Rs 500(Photo2).



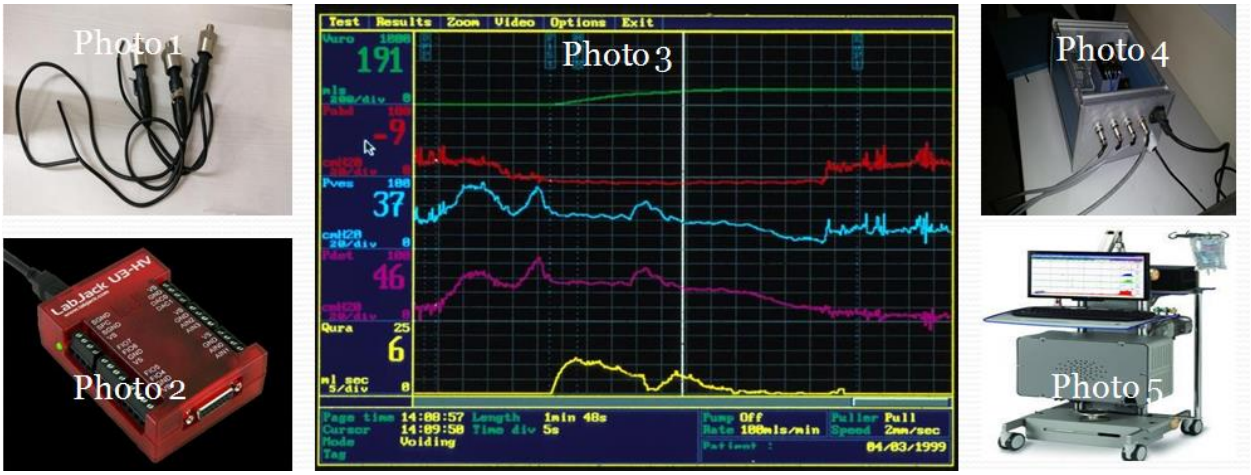
Stretta procedure

Stretta procedure(Photo3) is indicated for grade 1,2 and 3 gastroesophageal reflux cases. 500 Khz radiofrequency is delivered to the lower gastroesophageal sphincter for 60 seconds by an upper GI gastroscope. It tones up the sphincter and drugs are not necessary afterwards. The procedure needs a costly 15 lac rupees machine(Photo4). I used a Rs 5000 radiofrequency generator machine (Photo1) as the source and the probe was made in just Rs 500 from 1 mm dormia basket(Photo2).



Urodynamics machine

The output of urodynamic catheter is given to multichannel digital pressure transducers(Photo1) and through a data acqizition device(Photo2) it is given to a computer. The software(Photo4) was developed under Lab view software. The machine(Photo3) is made in just Rs 30,000 compared to the commercially available machine(Photo4) costing Rs 30 lac. A patent is registered for this invention at Mumbai office.

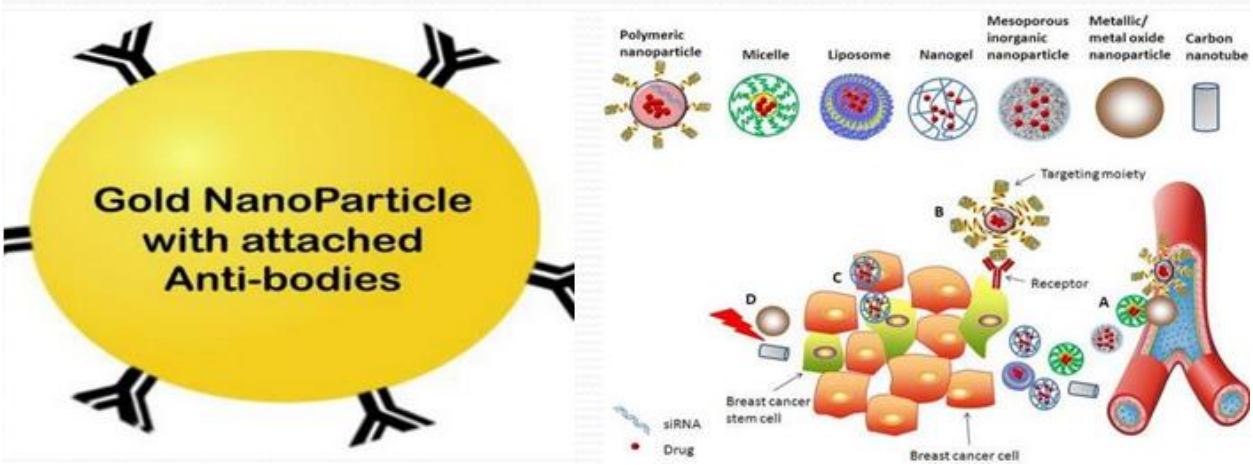


Uroflowmetry Machine

The output of a load cell(Photo1) is given to a computer. Software(Photo3) was developed by Lab view software. The machine(Photo2) is made in just Rs 10,000 instead of Rs 1.5 lac machine(Photo4) in the market. A patent is registered for this invention at Mumbai office.

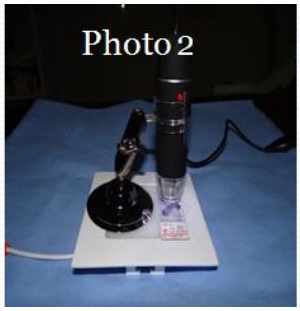
Gold Nanoparticle mediated hyperthermia in cancer therapy

Gold nanoparticles are given intravenously to a cancer patient and they accumulate in the tumor in 24 hours due to the leaky vessels of cancer tumor, the phenomenon known as "Enhanced Permeability and Retention" EPR effect. Now radio waves are fired to the place of cancer which increases the temperature of cancer cells to 45 degree centigrade selectively killing cancer cells without any damage to healthy tissues. My radio waves machine costs only Rs. 10,000 instead of Rs. 5 crore machines used in this research.



Stem Cell Laboratory

Stem cell laboratory needs a centrifuge machine(Photo1), reagents(Photo3) for separation of stem cells by density gradient method, a microscope(Photo2) and photo activation device(Photo4) for photo stimulation of stem cells. Set up in just Rs 30,000 instead of 30 lac rupees in the market. The cost of autologous stem cell transplantation dropped to Rs 50,000 in my hospital compared to Rs 3-5 laces in India.

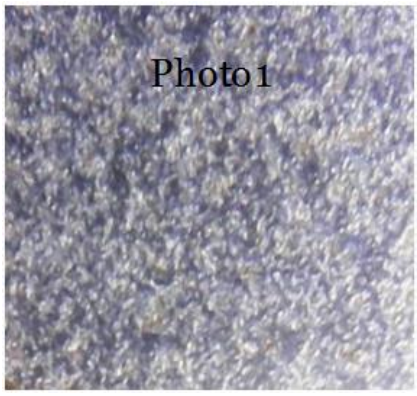


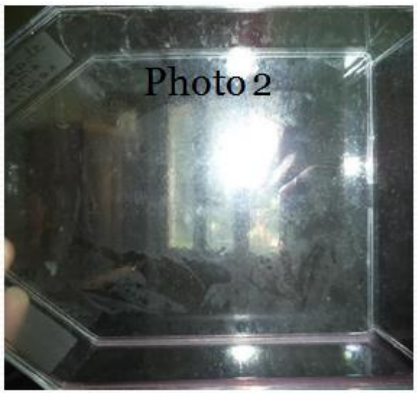
Co_2 Incubator

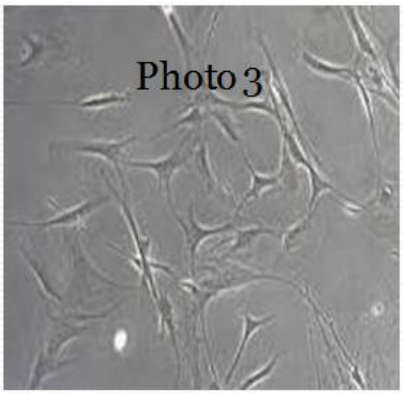
Co_2 incubator was made by modifying regular bacteriological incubator. (Photo1) A co_2 sensor (Photo2) was coupled with a solenoid valve of Co_2 cylinder to maintain 5% Co_2 levels in the incubator for stem cell culture. The machine was made in Rs. 15,000 only instead of Rs. 15 lac Co_2 incubators in the market.

Cultured Stem Cells

Mesenchymal stem cells(Photo3) were cultured in the stem cell laboratory with Co2 independent media for one month.(Photo2) One billion cells were cultured and given to patients at monthly interval. The cost of producing one billion cells was only Rs. 5,000 compared to Rs. 8 crores sold by cell media companies.

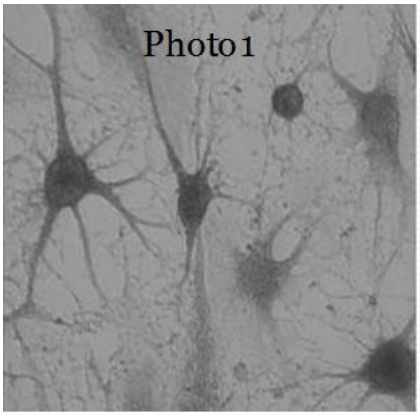


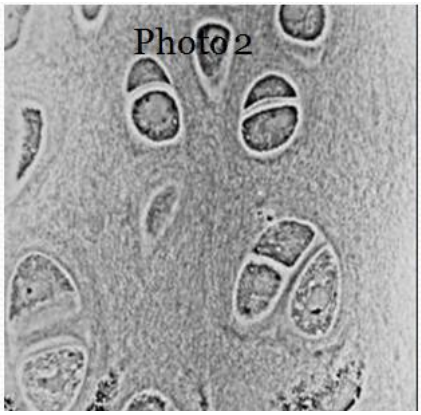


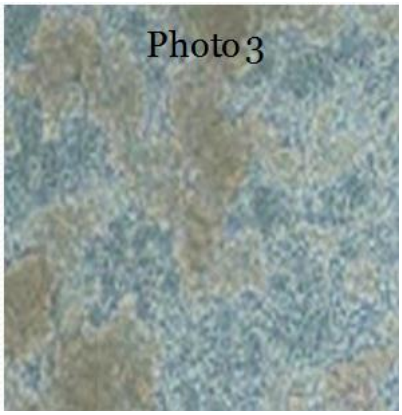


Stem cell Trans differentiation

Mesenchymal stem cells were differenciated to neurons,(Photo1) chondrocytes,(Photo2) Islets of Langerhans(Photo3) on experimental basis at the cost of Rs. 15,000 per billion cells. For legal purpose the cells were not given to patient and discarded. Waiting for DCGI permission. In usa it costs Rs 65 lacs for this treatment.

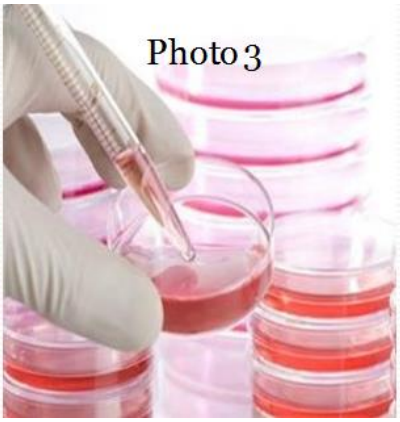






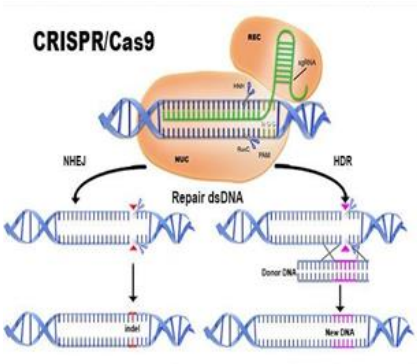
Tissue Culture Laboratory

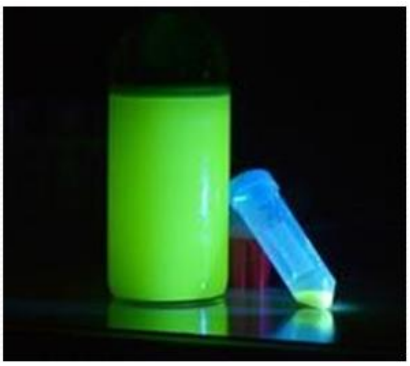
The bacteriological incubator (photo1) was modified as tissue culture laboratory by using co2 non dependant culture media. The reagents (photo2) were imported and organs such as human urethra, vagina and skin and stem cells can be grown in it (photo3). It was set up in just Rs. 10,000 instead of Rs. 10 lac laboratory in the market.



Crispr CAS 9 Genome Editing

Crispr Cas 9 is a genome editing tool which is precise for human genome editing for variety of genetic disorders. A viral vector along with endonuclease enzyme and mRNA enters the cell and into its nucleus. mRNA precisely take the endonuclease enzyme the “molecular scissors” to the area of DNA where it makes a double strand DNA cut excising the faulty gene and the cell immediately rejoins the DNA. With collaboration with Thermo Fischer Scientific company I have the ability to manipulate 6 lac genes in humans. It will only cost Rs 50,000 in my lab instead of Rs 6.5 crore in USA.



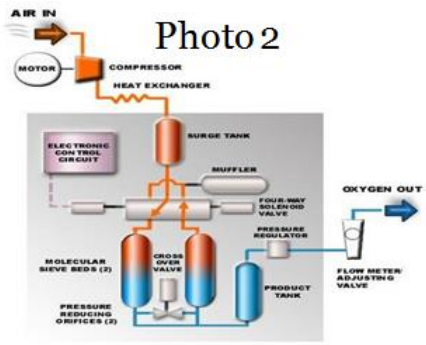


Oxygen from air

Oxygen concentrator (Photo1) was connected to a small compressor(Photo2) harvesting oxygen from air which is 20 times cheaper than cylinder oxygen. This oxygen can be stored in a tank or can be used in real time in ICU and in operation theatre through Boyle's machine. Total cost Rs 80,000 , Rs 75,000 for oxygen concentrator and Rs 5000 for the compressor, compared to a Rs 30 lac for the commercial machine(Photo3).

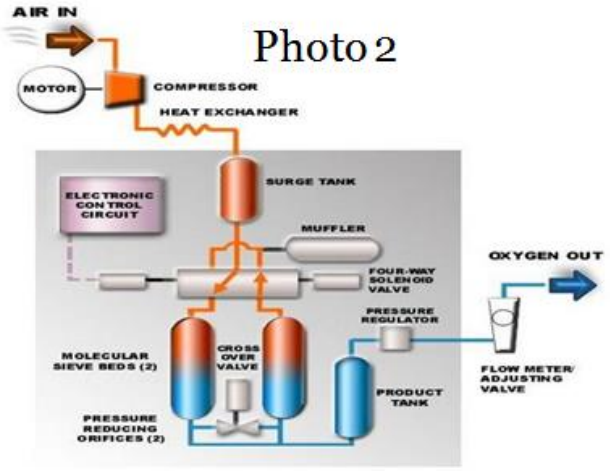
Portable Oxygen Concentrator

Portable oxygen concentrator was made by using two containers containing Zeolite crystals(photo1) through which air is pushed by an air compressor(photo3). Nitrogen in air is absorbed by the zeolite crystals and 95% pure oxygen 2 L/Min is obtained. This device(photo2) is going to revolutionize healthcare in rural India where oxygen is not available anywhere. It can be used with car battery, on mains or on solar power and can be used to transport critical patients to the hospital in any vehicle or in ambulance. Cost Rs 5000 instead of Rs 50,000 in the market.



Large Oxygen Concentrator

Large capacity oxygen concentrators(photo2) with 100 liters per minute output can be made on above principles. Manufacturing cost will be only Rs 50,000 instead of Rs 30 lac in the market(photo1) and every primary health center in India can be installed with it solving problem of oxygen forever in our country. It will have a large storage tank, hence although power goes off for 8 hours, oxygen in the tank can continue to the patients.

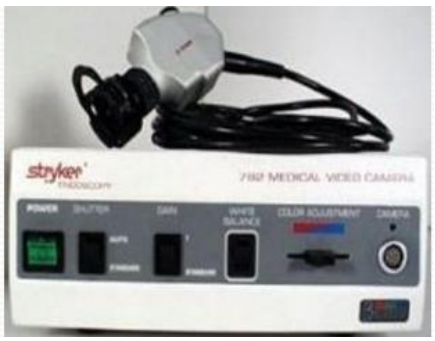


Central vacuum Machine

A metal tank(Photo1) from scrap market was connected to a kirloskar 1 HP vacuum pump(Photo2) and a pressure switch attached in the pipeline for automatic operation. Total cost Rs 20,000 compared to a Rs 20 lac machine(Photo3) in the market.

Laparoscopic camera

Industrial CMOS usb camera(Photo1,2) of 5 MP video resolution, is used as a laparoscopic camera. It has 20 times the video resolution compared to a Rs 3 lac cameras (Photo3) in the market. It costs only Rs 30,000. This product is commercialized and available for buying.



Digital Stethoscope

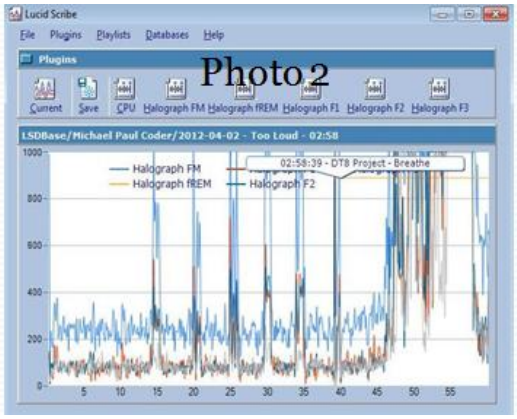
My Digital stethoscope (photo1,2) is designed by fixing a condenser microphone in the tubing near the diaphragm of the conventional stethoscope. The output of the microphone is given to the analogue to usb converter device that digitalizes the sound. Anti-alias audio filter is used to filter the high pitch sounds so that the lower pitch sounds such as heart sounds and bowel sounds should be loudly heard. The output of the usb is connected to an android device (photo1) or a computer where it is heard, processed and recorded by a variety of free applications available in the android market.

Pocket USB ECG Machine

A portable pocket size ecg machine(photo1) with mobile phone connectivity(photo2) weighing only 50 gms is made by converting the analogue signal of sensors to digital by a circuit in just Rs 1500 instead of Rs 50,000 ecg monitor in the market that weighs 5 kgs. It is going to revolutionize healthcare in rural area of India. Even lay people can take ecg and send it to qualified doctors anywhere with click of a button through mobile phone and get the diagnosis. My device is compatible with variety of ecg apps(Photo3) on playstore.

Pocket USB EEG Machine

Pocket size 50 gms weight single channel EEG machine(photo1) was made by the think gear chip. It connects to mobile phone and think gear software(photo2) giving you eeg . It costs only Rs 3500 instead of 15 lac rupees systems in the market(photo3). It can be used by doctors on rounds for follow up EEG of patients. It can be carried in emergency situations where basic diagnosis can be made immediately.

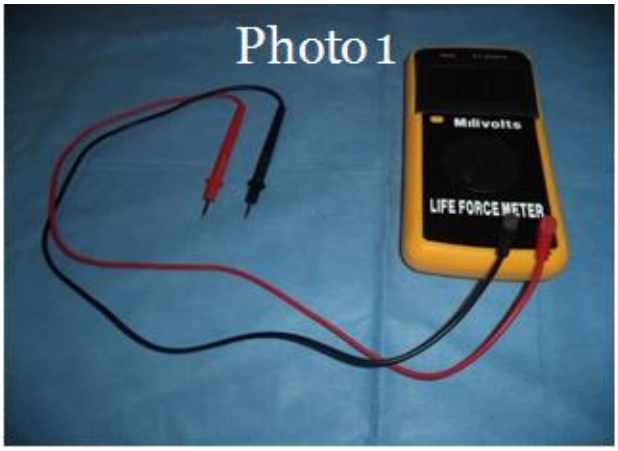


Pocket USB EMG Machine

It was made by converting the EMG signal of the sensors (photo1) by electronic amplifier and the output was converted to usb which connects to any mobile phone. There are many mobile apps that can show the result. Cost of manufacturing was Rs 1500 instead of Rs 5 lac system in the market (photo2). This device can bring a revolution in physiotherapy.

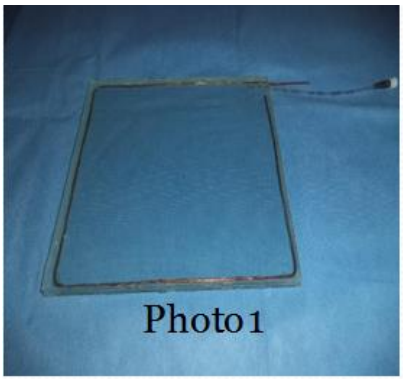
Life Force Meter

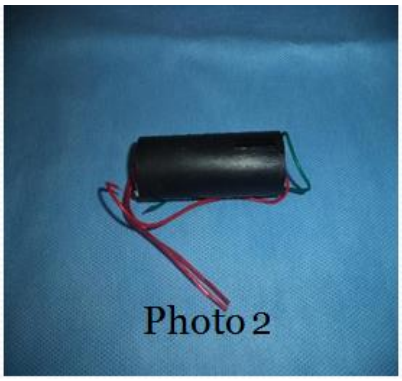
I decided to make a life force meter that measures the potential difference across the hands and legs. A digital voltmeter(photo1) with a range of 0-200 millivolts was made for the purpose. I measured the potential difference between both hands by putting electrolyte gelly on fingers and pressing the fingers over the pins of the meter hard(photo2). The average highest figure is about 50 millivolts. The voltage was found to be highest in the morning after getting up from the bed. It was lowest when you are tired. It is low when you go to sleep in the night. The voltage was significantly low when you fall ill. The voltage improved as your health improves. The voltage significantly dropped after sexual activity supporting the ancient knowledge of losing energy after sex and supports the lifestyle of celibacy. The voltage of a dead body was recorded as zero.



Kirlian Photography Camera

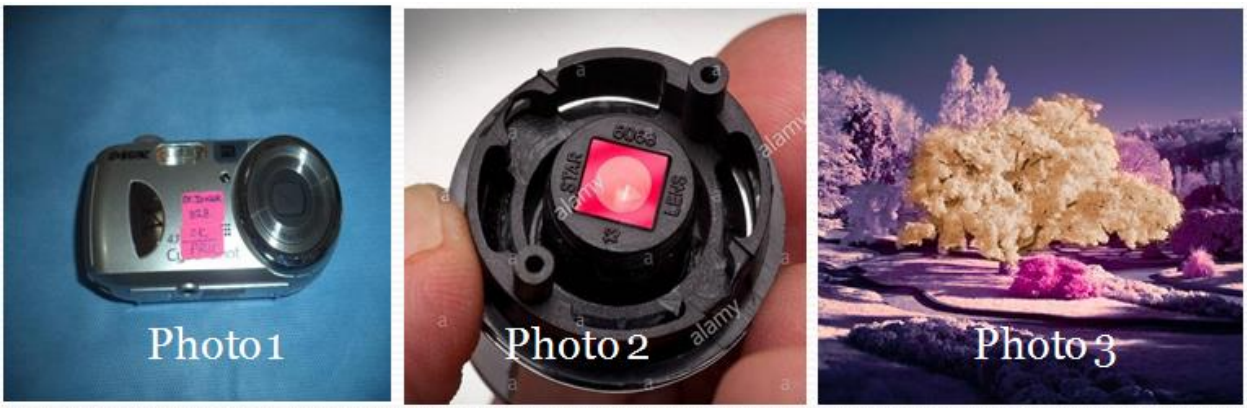
The transparent photo electrode(photo1) was made by sticking two glass plates together with a copper wire passed between them. NACL solution is filled in between the glass plates. The object to be photographed is put between the metal plate and the glass electrode. A high voltage DC current of 10,000 volts(photo2) is applied to the plate and the glass electrode to see the corona discharge(photo3). This is photographed by a digital camera and various interpretations are made. Cost of making was Rs 5,000 instead of Rs 10 lac system in the market.





Ghost Camera

The human eye can see only 20 % of the total electromagnetic spectrum. The infrared filter(photo2) of a digital camera(photo2) is taken away and now the camera can see the complete electromagnetic spectrum. It can record many paranormal phenomenon and various shades of light which we do not see(photo3). Such a camera is also known as full spectrum camera. It can be used for paranormal research and ghost photography.



Magnification rings for Medical Photography

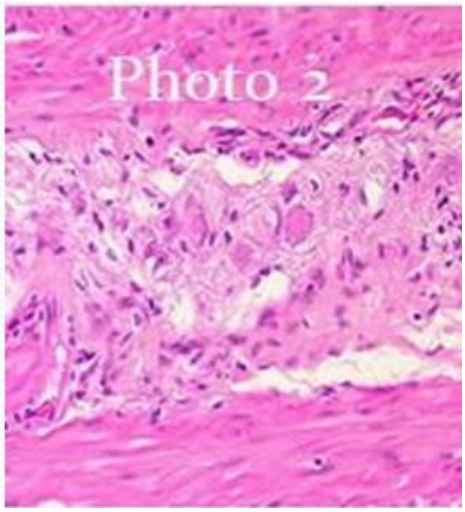
Medical photography requires photographs to be taken without disturbing the surgeon (photo2) and without disturbing the sterility of the operating field that is from 5 feet distance. When photos are taken from 5 feet (photo3), the close ups of the part to be highlighted is not possible. When the cameras are attached with these photography rings (photo1), the close up of operative part can be easily taken from 5 feet distance(photo4). The cost of the rings is Rs 500.

Ophthalmic Video Microscope

A video camera was coupled with optics to make an ophthalmic video microscope(photo1). It can be attached to the operation table with a flexible arm to focus on the eye to be operated. It has 50-500 X magnification. It has usb output that goes directly to the computer. It was made in Rs 2500. For the above purpose Carl Zeiss microscope(Photo2) is used which costs 20-30 lac rupees. This device can revolutionize ophthalmic surgery in rural India.

Pathology Video Microscope

A video camera was coupled with optics and attached to the body of conventional pathology microscope (photo1). It has 50-1000 X magnification (Photo2). It has usb output that goes directly to the computer and was made in Rs 7500 instead of Rs 2 lac microscopes in the market.

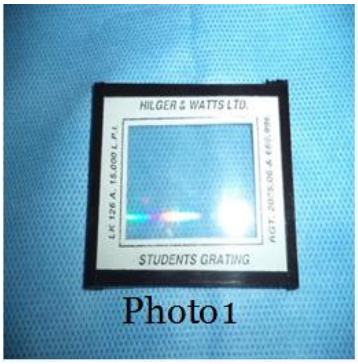


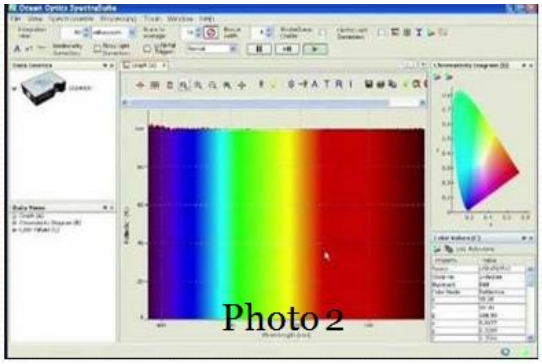
Video Microscope for Microvascular Surgery

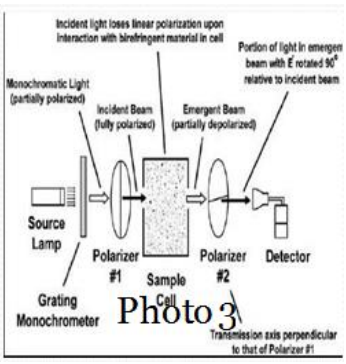
A video camera was coupled with optics to make a micro vascular surgery microscope(photo1). It can be attached to the operation table with a flexible arm to focus on the part to be operated. It has 50-100 X magnification. It has usb output that goes directly to the computer. It was made in Rs 2500. For the above purpose Carl Zeiss microscope(Photo2) is used which costs 20-30 lac rupees. This device can revolutionize micro vascular surgery in India.

USB Spectrometer

USB spectrometer does a lot of basic works in pathology. It can be used to make real time Ph, Electrolyte, blood gas measurements in the human body. A light source passes light through the substance to be scanned and that image is passed through a screen(photo1) that splits light into a spectrum and it is recorded by a usb camera that sends the spectrum to the computer. Computer Software(photo2)reads the spectrum and immediately identifies the substance. It was made in Rs 5,000 instead of Rs 3-5 lac systems in the market. Photo3 is the schematic diagramme of a usb spectrometer.

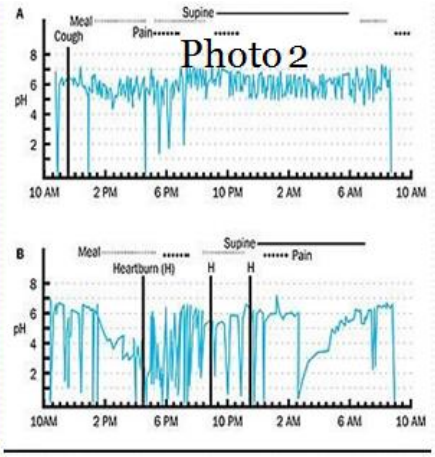






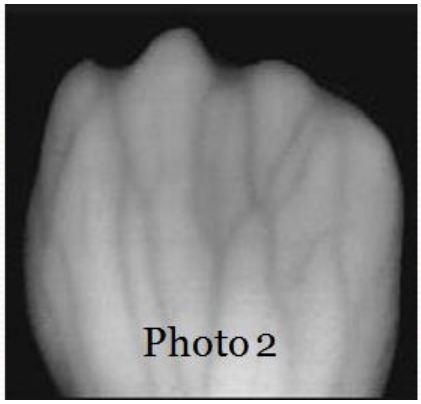
24 Hour Ph Monitoring System

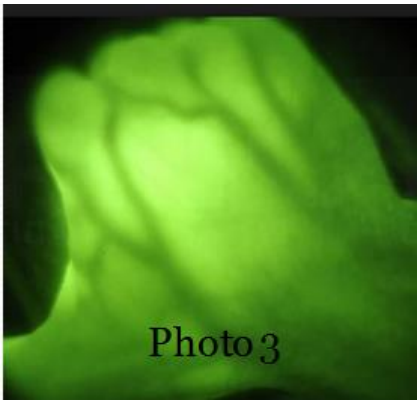
24 Hour Ph Monitoring System is a gold standard for diagnosis of GER. It was made by an esophageal fiber optic probe (photo1) that transmits and receives light in real time and The above mentioned USB spectrometer gives real time values of esophageal ph for 24 hours(photo2). It was made in Rs 10,000 instead of a Rs 15 lac system in the market (photo3).



IV Imaging System

Far infrared leds emit light on the body and its reflections are recorded by an infrared camera(photo1). Infrared light is absorbed by the veins more than surrounding tissues and they stand out as dark lines on the image(photo2). The computer software enhances the image (photo3) in various formats if required. This system was made in Rs 2500 instead of Rs 1.5 lac system in the market.





Muscle Stimulator

A 12 volts AC current with frequency of 50 Hz is used to make a muscle stimulator(photo1). It is used for identifying muscle complex in Penn's operation(photo2) for imperforate anus. It was made in Rs 500 instead of Rs 50,000 systems in the market.


Photo 1

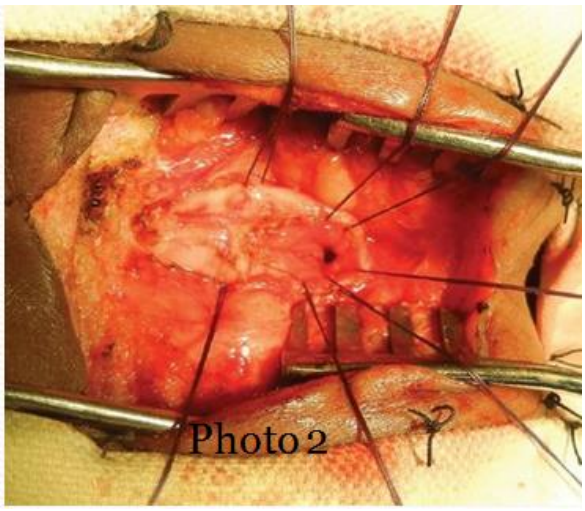


Photo 2

Nerve Stimulator

A 12 volts AC current with frequency of 100 Hz is used to make a peripheral nerve stimulator(photo3). It can be used in pain management(photo1,2) as well as in parotid surgery to identify facial nerve. It was made in Rs 2500 instead of Rs 1 lac systems in the market.

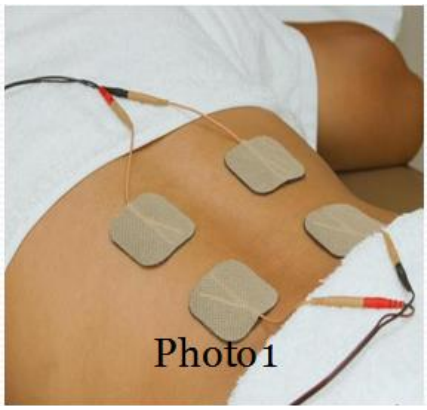


Photo 1

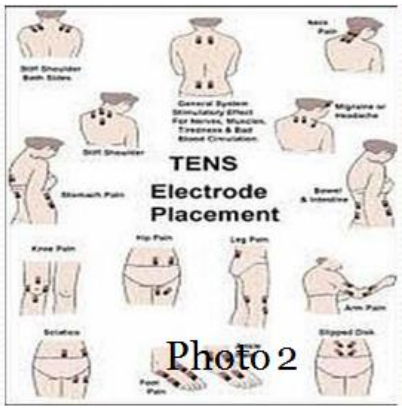


Photo 2

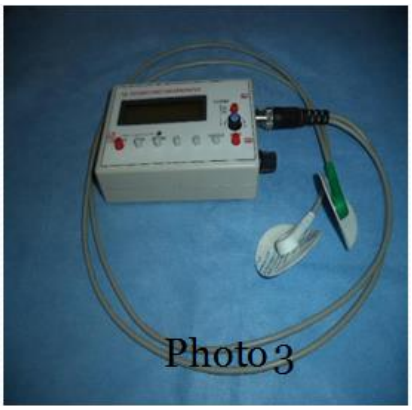


Photo 3

Hemodialysis machine

90 % of 2 lac people in India who require hemodialysis die due to lack of the facility. Hemodialysis machine(photo1) was made by passing the disposable tubes through a pulsatile flow pump(photo2) and pressure was measured by dial type pressure gaze of a sphygmomanometer. Another pulsatile pump circulates the dialysis fluid through the disposable dialyzer. It was made in Rs 15,000 instead of Rs 30 lac systems in the market(photo3). This device is going to revolutionize kidney related healthcare in India.


Photo 1

Photo 2


Photo 3

Partial ECMO Machine

Extracorporeal Membrane oxygenation bypasses the patient's lungs and oxygenates the blood till the lungs get well. Millions of children and adults worldwide die every year due to lack of this facility. The machine(photo1) was made by circulating the blood by a pulsatile pump(photo3) and passing the blood through the disposable lungs(photo2). The system was made in just Rs 15,000 instead of Rs 40 lac system in the market.

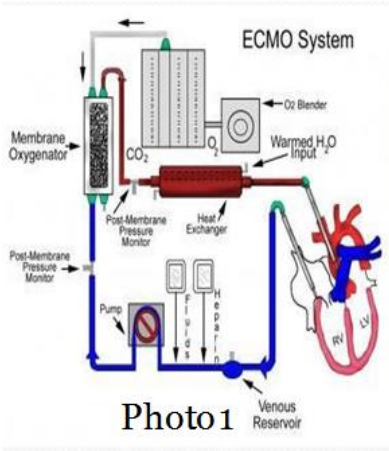


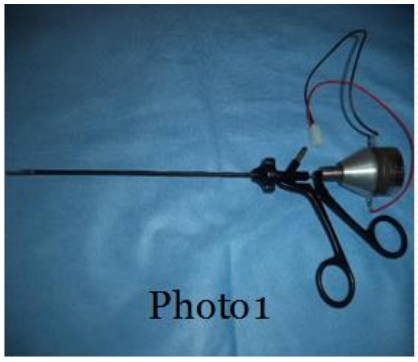
Photo 1

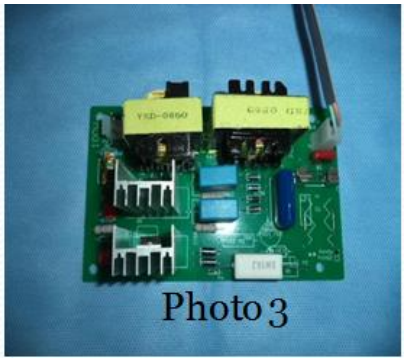
Photo 2


Photo 3

Harmonic Scalpel

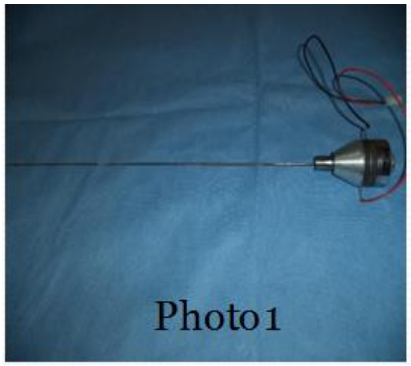
Harmonic scalpel was made by attaching a 60 watt piezo transducer to the end of a laparoscopic forceps(photo1). The transducer(photo2) is powered by a 60 Khz radiofrequency driver circuit(photo3). Harmonic scalpel uses ultrasound to cut the tissues in laparoscopy and open surgery. It was made in Rs 10,000 instead of Rs 15 lac system in the market.

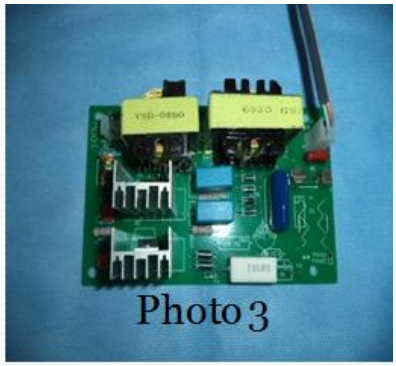




Ultrasonic Lithotriptor

It was made by connecting the metal probe(photo1) to a 60 watt piezo transducer(photo2). The transducer is powered by a 60 Khz radiofrequency driver circuit(photo3). It is used to break bladder and kidney stones. It was made in Rs 5,000 instead of Rs 5 lac system in the market.





Led OT lights

Halogen bulbs of OT lights(Photo1,2,3) were replaced by 400 watts leds lights in just Rs 5000 . Commercially available Led OT lights of 400 watts cost Rs 3 lacs in the market.

Led light cord

Led light cord(Photo1) was made by fitting a 3 watt Led bulb at one end of a cord. The led end of the cord fits directly to the light hub of an endoscope(Photo2). Total cost was Rs 250 and the Led bulb can be replaced in just 10 rupees. Led light sources and fiber optic cord(Photo3) in the market are bulky and cost Rs 3 lac. A patent is registered for this invention at Mumbai office. This invention is brought here for a demonstration.