## **SEESHA KARUNYA RURAL COMMUNITY HOSPITAL**

KARUNYANAGAR, COIMBATORE - 641 114





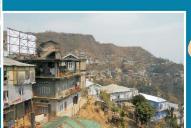


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KARUNYA INSTITUTE OF TECHNOLOGY AND SCIENCES (Declared as Deemed-to-be University under section 3 of the UGC Act, 1956)

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- Written Test and Interview for all other programmes

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#### **SURGERY IN RURAL HIMALAYAS**

#### Dr. George Verghese - Manali

Manali is the most easily accessible place in the Himalayas' and has probably the highest hospital in the World (in terms of height above the sea level}. Places like Kaza and Mudgaon are 8 to 10 hours drive from Manali over high mountain passes.

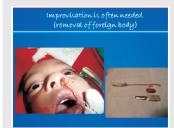
#### THE PRINCIPLES

- 1. The remoteness means one has to be satisfied with whatever is available. It is usually sufficient as shown in Figure 1
- 2. Seeing patients with non-surgical conditions is part of the
- 3. Rural care involves teaching and training
- 4. Having 2 operating tables side by side is a more efficient way of using the nursing staff
- 5. Surgical camps are ideal places for training young doctors and motivating medical students
- 6. Crowding of patients cannot be helped and is generally not a hinderance
- 7. Improvising is often needed as shown in Figure 2
- 8. Simple things can be used as shown in Figure 3
- 9. A wide spectrum of surgical work could be carried out
- 10. Innovations are the key to success in rural surgery

Table 1 gives some data about the work done with the NRHM surgical camps in these areas

#### CONCLUSION

A committed team can bring great joy and satisfaction despite limited resources. If more people can do it, it will make to big difference to our country.

















### ORIGINAL ARTICLE

# THE PNEUMOPERITONEUM – A CONTINUING MISTAKE IN LAPAROSCOPY?

Daniel Kruschinski - EndoGyn Germany

#### **Preface**

Today, laparoscopic surgery is an integral part of the operative repertoire and has broadened gynaecological surgery by continuously providing new indication areas. For a long time, laparoscopy was regarded as the major trend of the century and as a revolution in surgical technology. In recent times, however, the problems associated with this operating technique have been the subject of discussions. After an enthusiastic phase, including also an analysis of the technique, the reality of applying this operation has now arrived.

#### Side effects caused by carbon dioxide

Whilst instruments and devices have become more advanced, the principle of the CO2 pneumoperitoneum has not changed for decades. And it is precisely the carbon dioxide which limits the scope of this operative technique. The occurrence of possible side effects and complications is more significant in case of older and higher risk patients and longer operations. Problems of the CO2 laparoscopy such as hypothermia with increased postoperative pain but also haemodymic and metabolic effects such as a CO2 absorption and a CO2 intravasation coupled with an increase in pCO2 have been described (1,2). The result can be a metabolic acidosis and a hypercapnia as well as a hypoxaemia in the tissue (3, 4, 5,6). The

pneumoperitoneum itself leads to an increase of the intraabdominal pressure with a consecutive elevation of the diaphragm which can result in hyperventilation. The compression of the V. cava causes the heart output volume to be reduced and the central venous pressure to be increased, resulting in increased vascular resistance in the arterial circulation (7, 8, 9, 10). With the increased popularity of the operative laparoscopy, increase in indications with longer operating times and operations on older patients or higher-risk patients, more and more reports about acute organ failure (8) or fatal complications caused by carbon dioxide insufflation (9, 10, 11) are received from anaesthetic and intensive care departments. This in turn results in statements such as that minimal invasive surgery is maximal invasive from a physiological point of view and that consequently patients subjected to endoscopy should be carefully selected.

# "Laparoscopic market" vs. cost-conscious problem solving

The continuously increasing costs are mainly the result of both industry and doctors attempting to solve the problems of the pneumoperitoneum with the aid of technical devices.

When sterilisation was one of the main operational treatments, emphasis was placed on the development of gas-tight trepans, cold light sources and insufflation



devices. With endoscopic surgery becoming more and more complicated, special instruments with turnable and rotating parts, mimicking the freedom of the hand movement, were designed. As adequate suture techniques could not be applied during laparoscopy a special thread material and sophisticated stitching machines were quickly developed specifically for this purpose. These items had, of course, to be developed as disposable items, allowing the development costs in the rapidly developing laparoscopic market to be recovered. Modern developments contain multifunctional instruments and miniaturisations of optical andinstrumental systems. Also the tactile sense which was lost as a result of the use of longinstruments, has been regained with the use of special microprocessor systems. On the basis of Albert Einstein's principle "Everything should be made as simple as possible but not simpler", the areas of tele-medicine and robotic medicine.

# Gasless laparoscopy - a solution to the problem or rather - a prevention of the problem?

Gasless laparoscopy continues to pursue the concept of a minimal invasive operating method, however, offering the principle of simplification, cost-effectiveness and a wide range of application. This technique is based on the principles of minimal invasive operating methods, combined with the conventional technique used by "open" abdominal surgery. This gasless technique reduces all of the aforementioned disadvantages, risks and complications of

gaseous endoscopic surgery to a minimum, retains, however, all advantages of the laparoscopy such as little scars, better appearance, less pain, quicker recovery, shorter hospital stays, etc. The method thus offers progress (the combination of the latest techniques of endoscopic surgery) by taking a step back (proven and established, conventional abdominal surgery techniques). Why has gasless laparoscopy so far had a negative image? A comparison of studies Gasless laparoscopy has so far faired badly in randomised studies. In our opinion, past clinical studies have, however, awarded low marks to the gasless laparoscopy as the target and definition criteria were not correctly selected or the design used in the study could not even withstand an examination.

A randomised study about renalexcretion and the electrolyte metabolism during gasless interventions and gas laparoscopycarried out on pigs (20) showed that a significant reduction of creatinin clearance and urinaryexcretion occurred during and after the CO2 laparoscopy. Also, a significant increase in the serum aldosterone occurs, an indication of a disorder of the renin-angiotensin system due to the underperfusion of the kidneys, causing a reduction of the sodium and potassium level in urine.

Apart from other physiological advantages of gasless laparoscopy discussed in this study, the authors concluded that gasless laparoscopy clearly offered better results than gaseous laparoscopy with regard to the renal haemostasis.

#### Experience with gasless laparoscopy interventions

The author has nearly ten years experience in the use of gasless laparoscopy. During the last five years only the aforementioned reusable systems were used. Between October 1990 and February 2000 we carried out 1039 gasless laparoscopy surgical interventions.

The findings showed that with regard to operating time, therewas no difference between interventions with or without gas. Patients which had beenoperated on using a gasless laparoscopy used slightly less painkiller (perfusor pump withactivating function) on the first post-operative day. The greatest difference was apparent withregard to shoulder pain: The study therefore showed that thetime up to the full activity was approx. 30% longer when using pneumoperitoneumlaparoscopy compared to gasless laparoscopy.

#### Advantages of gasless laparoscopy for patients

- As a result of not using a carbon dioxide pneumoperitoneum, patients will experience significantly less post-operative pain.
- The cosmetic result (Fig. 13) is also considerably better than these of pneumoperitoneum laparoscopy as the two incisions can be made directly above the symphysis and very close together as the degree of free movement offered by curved conventional instruments offers a larger radius.
- 3. The operation is safer and more precise as no long and undesirable instruments are required Inadequate suture

techniques often occurring during endoscopic treatment also do not represent a problem for the gasless technique, as conventional suture techniques using needle and thread (Fig. 15) can be used without problem.

- 4. The technique also allowsendoscopic surgery to be carried out under regional anesthesia such as spinal anesthesia orperidural anesthesia
- 5. A decisive advantage of gasless laparoscopy is the ability to use effective suctioning.















Disadvantages of gasless laparoscopy using AbdoLift In case of expanded adhesions, the insertion of retractors is more difficult. Patients with a combination of being overweight (over 95 kg) and having a height of less than 155 cm cannot be operated on with the current models as theabdomen can hardly be reached and the intra-abdominal room does not adequately unfolddue to the weight of the abdominal wall

#### Conclusion

Gasless laparoscopy using the AbdoLift abdominal wall retractor system combines theadvantages of minimal invasive surgery with the advantages of the laparotomy, eliminating at the same time, the disadvantages of both methods.



## ORIGINAL ARTICLE

#### **SYSTEM AUDIT FOR SMALL HOSPITALS:**

Dr. J. Gnanaraj MS, MCh (Urology), FICS, FARSI, FIAGES - Coimbatore
Mr. Einstein Albert K BE, Quality Systems—ISO,CE MBA ENPC Paris

#### INTRODUCTION

Small or medium sized hospitals in rural areas suffer lot of losses due to lack of proper administrative systems. They are more significant in smaller hospitals as the losses would be proportionally greater. On the other hand a good system helps in smooth running of the hospital and increases the profit.

The key administrative areas are the Purchase, finance and work management systems. The main patient areas involve the outpatient and in patient management systems. The audit involves randomly following various tasks and analyzing them and the purpose of the audit is to evolve a good system.

#### THE PURCHASE SYSTEM

The objective of the purchase system is to make sure that the requirements of the hospitals are purchased at the best possible prices, available and accountable always. The various aspects of purchase system include Planning, allocating funds, preparing, purchasing, receiving, storing and distributing the purchased materials.

#### The process is as follows

 The various departments of the hospitals prepare a detailed budget of their needs (Form 2). To start with this could be obtained from the previous

- years audit reports. Departmental meetings and meetings with the administrative staff are useful for this.
- A senior person of the administration then allocates the money that is available for the department (Form 3).
- 3. Indents are placed for the weekly requirements as the need arises. This simply means telling the administration or the stores that these items are needed (Form 4).
- 4. The person in charge of the Stores checks these indents and gives the materials if they are available in stores and if they are budgeted for the particular department (Form 5 &6).
- 5. If the items are not available then approval for purchase is obtained (Form 7) from the Purchase manager, (if budget and allocation is available). The finance manager decides on any new allocation. The person approving should have all the data that are necessary for approval like the previous purchase price (if previously purchased), 3 quotes independently obtained, the convincing need of the item in the departmentet (all as solid proof).
- 6. The Purchase order is then prepared (By the way Purchase orders need to



have a number!!). Prior to preparation of purchase order home work is required for getting information about the prices from various places through independent sources(as mentioned in point no 5). They are recorded and with that information telephone is used for negotiatingthe prices for purchase. Two copies of purchase order are prepared one with the price and the other one without the price with the name of the item, place for purchase, etc. The person going for purchase could get the item at a lower price if he/shecan (Form 8).

7. Any material (including courier) which comes in to the clinic/hospital should be entered at the gate. The entry should have the details like the courier's name, parcel number, entry time, invoice number, etc

Gate Inward No		
Entry Time		
Courier / Parcel Condition	Onen	Intact
Courier / Parcer Condition	Ohem	IIILECL

After the entry, the security will seal the back side of the invoice and write the Gate Inward No. behind it and send the material along with sealed invoice to the stores (Some meaningful work for gate keeper atlast!!). (One usual excuse is, invoice was inside the parcel!! In such case the gate keeper shall open the box in the stores under the supervision of stores in charge and get the necessary details.)

#### A sample gate seal

- 8. The purchased goods are then kept at the quarantine stores(Form 10). After verification with the purchase order and checking the quality (QC), the items are then accepted to the main stores and given Goods received numbers (GR No). Any items to be returnedshould be sent back from the quarantine stores even before giving the GR No. (In other words any item you find inside your campus with a GR No. is an approved item which can be traced back to its Purchase approval and even to its request)
- 9. "Even in the same bill different items will have different GR No. eg: Say Life Buoy soap and Lux soap even if they come in the same bill will have two different GR No.(may sound useless, but when the system starts running and you need fine tuning, you will need it! trying to change at a later stage is really hard, its hard even in corporate.)
  - "All the items will have the GR number labeled/painted/stuck on the item.
- 10. The items purchased are listed and presented during the weekly administrative committee meeting of the officers (or heads of the department) for transparency and ratification(Form 11).
- 11. The various departments would have the stock consumption register that indicates how the items were used and



#### System Audit For Small Hospitals:

- how much is remaining. This register should have the following details (Form 12).
- 12. The above system is for non medical items and the system used for Pharmacy is slightly different.

For Pharmacy the indenting starts with generation of Purchase order in the following way. Use of computers is of great benefit.

- A. For all items in the Pharmacy "ABC analysis" is carried out (Form 13). This is done by multiplying the sale price by quantity sold and arranging them in descending order. Great efforts are made to make profit from 'A' Category medicines (20% of medicines that give 80% of the income)
- B. Maximum and minimum stock is fixed for all the medicines (Form 14
- C. Profit ratio is calculated for all the items as follows. "Profit ratio = {(Maximum retail price Purchase price) / Maximum retail price }x
- D. The first step is getting the **current** stock.
- E. Order quantity is prepared as follows "Order quantity = Maximum stock current stock". The computer generates the orders only for medicines that have gone below the minimum stock
- F. The purchase order is automatically generated choosing

- by default the place where the best profit ratio is available.
- G. The subsequent steps are similar to the ones for the non medical items. The difference is that batch numbers and expiry dates are entered and short expiry ones are not accepted.

Although the system looks simple following it makes a significant difference. At BMCH the profits from the Pharmacy went up from 25% to almost 55%. Getting quotes for prices through independent sources have resulted in purchase prices that are about 20 to 30% less where one person was obtaining the quotes (although he was a honest and sincere man). Planning budgeting helps in 10 to 15% saving as items could be bought in wholesale rates at appropriate places and when sudden trips to bigger cities etc are made the thing that need purchase and the money required could be obtained quickly. Checking the Goods received against the purchase orders eliminates the various ways in which the dealers cheat the customers (1). With telephonic enquiries the shop keepers offer their best deal as they are not sure whether the customer would come to their shop. They feel that once the customer comes to the shop they can convince them to buy at their prices. The medical representatives would also do the ABC analysis and try and make profits from the 'A' category items. A similar analysis could be carried out for non medical items too.

While negotiating for non medical items for a



#### better deal keep the following in mind

- Keep a data base of a year's requirement to tell the dealer the bulk of business it means.
- Keep in mind that some big dealers give a bit more of reduction if the payment is ready cash.
- Dealer margins on branded FMCG (fast moving consumer goods like soaps, bleaching powder etc) are around 10%, where as local ones with quality can be around 30% or so.
- Some times negotiations happen percentage wise, so have an idea of what your negotiation means in percentage terms. Especially in case of capital goods. This often ends up in some odd figure and helps to further push the deal in to a round figure.
- Always try to contact the area marketing executive / Manager of a brand than a dealer, he has incentives on targets, where as dealer makes money from some other products as well. He can force a dealer for better price, some times even direct supply!
- Think like a business man, even a rupee matters!! – Be good stewards.
- Price fluctuations do occur in market; hence have a market quote collected at least once in 6 months. (After all worth the run).

# THE WORK ALLOCATION AND MONITORING SYSTEM

The objective of this system is to plan, execute and appropriately pay for the various works that are necessary at the hospital. The works manager is the most important person in this system. The process is as follows

- As always the first step is to plan the necessary works for the quarter.
   This is carried out by the appropriate head of the Departments (Forms 15,16)
- The indent for the work is then made by respective departments in need and reviewed by the Works manager who plans the details of the work and the budget (Form 17).
- The work and the approximate budget is then presented to the appropriate committee and approved(Form 16). The finance manager should be a part of approving body.
- 4. The Works Manager then prepares the authorization for work and the work contracts (Form 19). This has all the necessary details like the person to whom the contract is given, the number of persons working, the target date, budget, etc
- On completion of the work the Works manager and the Finance Manager, inspect and approve the payment for the works.



#### System Audit For Small Hospitals:

- The payment authorization procedure is then followed for both the works carried out and the goods purchased.
- The list of work carried out is presented every weekend to the administrative committee for ratification (Form 20)

#### **PAYMENT AUTHORIZATION SYSTEM**

The objective of this process is to ensure that payments are made only after sufficient verification of the goods received or the works carried out. Like the previous sections routine payments are made only when budgeted and allocated money is available. The Finance Manager prepares the authorization which is approved by the Administrator

- In the main stores once the Goods Received (GR) number is given and the number pasted on the goods or items the original bill with the GR stamp and number, the original purchase order is sent to the Finance Manager (Form 21).
- 2. Using one of these numbers the Finance Manager verifies the details from the computer with the necessary details like the various quotes, the telephonic negotiations, etc and forwards it to the Administrator and makes the authorization for payment for the concerned bill (with voucher numbers) {Form 22}.

- The Administrator once again checks and approves payment and prints out and gives the authorization for payment and to whom the payment should be made.
- 4. The cashier then makes the necessary payment to the person submitting the authorization.
- 5. Similar authorization is generated for the works carried out by the Finance Manager after inspection of the work carried out (with voucher numbers for payment). The Administrator similarly checks the details and gives the authorization for payment print out to the concerned person who goes to the cash counter and collects the payment.
- When payments are made through cheques the Finance Manager sends the authorization to the accountant to make the cheques.

#### THE IMPREST ACCOUNT SYSTEM

The cash counter receives authorized income and makes only authorized payments. In other words they make payments only against proper verified bills. However credit purchase might not be possible at all places especially if they are at a distant location where the hospital has only occasional dealings. Moreover the cash counter might not have sufficient money for larger purchases all the time. Hence a certain



amount of money is kept as "Imprest amount" with the Imprest account cashier as decided by the management committee.

- The Purchase Manager authorizes the person going for purchase to collect the money from the Imprest cashier.
- The persons signs and takes the advance and enters the purchase orders for which advance is taken.
- Once the goods arrive they go through the regular channel like the Quarantine stores, main stores, finance manager, etc and the person collects the money from the cash counter.
- 4. The person who took the advance then settles the advance by paying back the cash that he took as advance to the Imprest account cashier.

#### TRANSPORT AND TRAVEL SYSTEMS

This is an important system as the hospital vehicles make many unnecessary trips in our surveys and after having a proper system the number of trips have reduced by almost 50%. The Purchase Manager or some other person could be in charge of this department.

 All requests for vehicle are made to the Purchase manager (or the allotted person / Travel Manager) either directly or through the senior drivers.

- If the Travel Manager approves the travel he then authorizes the preparation of the authorization for travel slipwhich contains all the relevant information like person taking the vehicle, the purpose of travel, the type of travel (personal/official), authorizing person if official travel, starting kilometer reading, approximate distance, the mode of payment, etc)
- After completion of travel the drivers are responsible for completing the entries, making sure of payments and giving the authorization slip to the accountant.
- The drivers maintain a log book entering in addition to the travel details, the place and kilometer reading while filling the fuel tank, the log of services and repairs, etc
- 5. The gate keepers maintain the kilometer reading while the vehicle is going out and coming in.
- 6. The Finance Managerprepares the official travel bills (with voucher numbers). In addition to the handwritten one given by the employee details like places of travel, purpose of travel, person authorizing the travel, mode of travel authorized and claimed amounts, etc are entered in the computer.
- 7. The Administrator verifies the



#### System Audit For Small Hospitals:

documents and bill and approves it and prints out the authorization for payment (with voucher numbers) which is presented to the cash counter for receiving the money.

#### THE ACCOUNTS AND CASH SYSTEM

This is one of the key administrative areas of the hospital. Strict monitoring and control is required. They either receive or pay only with special permissions or authorization and should submit the money and accounts at the end of the day. Random checks should be carried out at frequent intervals.

- For some payments authorization is not required. For instance patients can come and straightaway pay the registration fee, payment for various health care plans of the hospital or for "Interim Deposit" which is used for deduction at various counters like laboratory, Pharmacy, ultrasound, etc. The Interim deposit is the money that is used like an advance which is settled when the patient leaves the hospital and this avoids patients standing in ques for billing and payments frequently.
- Hospital bills and authorization from the Finance Manager is required for other payments to the hospital. For sale from the hospital (e.g. Scraps, etc) the Finance Manager prepares the vouchers which are authorized for receiving payment by the Administrator.

- 3. The authorized personnel who collect money for various plans (like insurance plans, etc) submit them to the cash counter and get a receipt which they attach to the preliminary receipt book that they use for collecting the money from the people.
- 4. It is important to receive the money in the appropriate heads.
- 5. The cashier makes the various payments that are authorized by the Administrator/Finance Manager according to the payment voucher numbers and the details distribution of the payments under the various account heads are carried out by the computer according to the allocation by the Finance Manager.
- 6. The voucher for salary deductions are made by the Finance Manager ((with voucher numbers) and presented to cashier and the computer automatically sends the information to the salary details.
- 7. The money at the end of the day and the accounts are submitted to the Finance Manager who arranges for depositing the money every day to the bank.
- The income details and the actual bills and vouchers are sent to the accountant who maintains a parallel written account and safely keeps the documents.



#### LEAVE AND ATTENDANCE

- The annual leave is planned in January along with the Head of the Department and the person in charge of approving the leave is informed.
- 2. The application of all leaves are forwarded to the person in charge of granting them through the Head of the Department
- Once approved the person going on leave should find out from the Head of the Department who would be doing his/her work and delegate the necessary works.
- **4.** Once the leave is sanctioned it automatically goes to the attendance register
- **5.** A person at the gate clicking in out as staff come and leave is the ideal system for attendance.

#### THE IN PATIENT SYSTEM

A smooth system of admission, treatment and discharge of patients is boon to the hospital administration.

- A public relations office welcomes the patient and informs them of the various facilities that are available at the hospital. They also inform the patients about the various health care plans that are available. If the patients fall under any low cost heath care plans they also authorize the plan (preferably using barcode printer)
- 2. The patients then go to the

registration counter to register to see the particular doctor. The Interim Deposit plan could be used here but many patients still prefer the traditional way of seeing the doctor first.

- At the preliminary examination counter the vital signs are checked and entered and preliminary history is recorded (using the software if available)
- 4. The **doctor** examines and orders the investigations in the system.
- 5. Print station or a special counter with senior nurses explains to the patients why the investigations are ordered and what they should do and also tell them about the Interim deposit that helps them to beat the ques.
- The patients directly go to the places of investigation and tests and get the money deducted through the Interim Deposit plan.
- If they need admission they pay more money into the Interim Deposit which is then used for getting the medicines and investigations.
- 8. The billing persons do the final billing on discharge and the Finance Manager or the person delegated for this issues the authorization for final bill payment at the cash counter
- The patient then collects the discharge papers etc from the public relations department after the special counter



#### System Audit For Small Hospitals:

(Print station) persons explains to them the medical follow up.

10. The left over money in the Interim Deposit could either be collect while the patient leaves the hospital or could be carried over for the next visit.

A satisfied patient is the best advertisement for the patient and the first impression generally is the lasting impression. Hence a public relations office plays an important role.

#### REFERENCES

1. Pharmacy and beyond (Getting more from the Pharmacy).

#### CONGRATULATIONS

Dear friends,

Dr. J.K.Banerjee

ON the 19thDec. my book was released by Dr, APJ Abdul Kalam in Delhi in his house through a small ceremony which was arranged by my publisher. Apparently, it seemed from his talks that he had already browsed through the book. A lot of photographs were taken by the publisher. A few members of the rural medicare society were present on the occassion For those of you who do not know about it yet, the name of the book is "Memoirs of Rural Surgeon - the turning point of medical practice".

The name of the publishers are "OCEAN BOOKS(PVT) Ltd. address, 4/19 Asaf Ali Road, New Delhi 110002,India. you may perhaps get it by VP Post also.

Contact person : Dr. Pivush Kumar.

Email: <kalampiyush@hotmail.com> J.K.Banerjee

Gnanaraj J, AdaikalaJesuraj, Charles Daniel.

Clipboard Issue 38, April to June 2006 p 2-4. Christian Medical Association of India.

**POST SCRIPT**: The various forms and formats are not given but could be obtained from "jgnanaraj@gmail.com mecei@yahoo.com The details of the software could be obtained from charlesdaniel1@gmail.com

#### **ERRATA**

The author for the original article titled "The relevance of early cancer detection in rural areas" in Rural surgery Vol. 7 page 4. October 2011, should read as Dr. PG Balagopal and not Dr. PG Rajagopal. We apologize for the mistake. Editor.

The authors for the article "Cost and efficiency of inguinal hernia surgery in a rural hospital in Burkina Faso are

Konè, Insa; Marschall, Paul; Flessa, Steffen.

In Rural surgery Vo. 7 No. 4 page 1 it is given as Dr. Insa Kone only. We apologize for the omission.



## ARSI ARTICLE

#### **ARSI CONFERENCE AT SAHADA 2011:**

Dr B D Patel - Sahada

The total number of delegates were 270. It was a very enjoyable conference.

The first session was video demonstration of

- 1. Modified radical mastectomy.
- 2. Laparoscopic Cholecystectomy
- 3. Laparoscopic appendectomy.
- 4. Orchidopexy.
- 5. Applyingexternal Fixators under local anasthesia.

Second session was a Symposium on Safe Surgery.

Third session was C M E and the topic was " acute scrotum in children".

4th session was Guest Lecture by Dr . Hardikar from Pune on 'Low cost Surgery'

5th session was 'post graduate training in Rural surgery.lt ws a very interesting session .The participants were

- a) Vice Chancellor of Maharashtra University of Health Sciences DrJamkarArun.
- b) Dr Bannerji.
- c) Dr Prabhu.
- d) Dr C.J.Gaekwad.
- e) Dr Dilip Gupta.

DrArunJamkar declared to start fellowship in Rural Surgery and formed a committee to formulate the mode of admission and syllabus etc.

Then there was inauguration. The inaugurationwas by Dr. Vijaykumar Gavit the Minister of Medical Education (Maharashtra Govt.). Dr.ArunJamkar was the chief Guest and AnnasahebP.K.Patil was chairperson of the function.

On Second Day The First session was free paper session.

The second session was symposium inobstetrics.

Third session was paneldiscussion on Urolithiasis.

The fourth session was again a free paper session.

Then there was AGBM.

Third day started with free paper session.

Second session was symposium on blunt abdominal trauma and then there was anesthesia session.

#### http://www.youtube.com/watch?v=rComl1F4-TU&feature=related

Please watch the video link given above to learn about the innovative way of using locally available materials for the SILS (single incision laparoscopy surgeries). This was devised by Dr. Elbert Khiangte from Northeast India.

## ARSI ARTICLE

#### **LESSONS FROM NIGERIA**

#### Dr. J. Gnanaraj MS, MCh (Urology), FICS, FARSI, FIAGES - Coimbatore

The International Federation of Rural surgeons {IFRS}had its biennial conference at Eruwa in Nigeria from November 16 -19, 2011. Dr. Oluyombo A Awojobi was the Organizing Secretary of the conference. About 80 delegates participated in the conference.



THE SOLAR AUTOCLAVE

The first impression of the participants especially the ones from overseas was the amazement at the genius of Dr. Awojobi who had created so much almost out of nothing. The massive building was constructed from locally made hollow bricks that lock into each other {thus minimizing the use of cementing}. The machines for making the bricks were made from scrap metal. The fish for the meals came from the nearby artificial ponds. The entire place was filled with innovations of various kinds. Although it leaves one in awe and admiration the corollary is that what happens after Dr.

Awojobi? It might not be a model that could be reproduced.

#### DR. KINGSNORTH AND HERNIA SURGERY

It is difficult to believe that 3% of the African population has hernia. In some communities it was as high as 10%. Hence Professor Kingsnorth's approach is Operation Hernia which has the mission to provide high quality surgery hernia at minimal cost to the patients that otherwise would not receive it. It is a 100% voluntary organization that has completed over 50 missions operating on more than 5000 hernias. They were more than delighted to use the ARSI innovation of using mosquito net for repair.

The air-conditioned operating rooms and the quality of instruments were very different from the Operating rooms elsewhere. The camps were used for training surgeons both the local surgeons and the trainees from abroad. The expressed the difficulties in training the local surgeons {due to a variety of reasons}



THE KING AND THE PRESIDENT



#### TRAINING RURAL SURGEONS

The need of the hour was the training of rural and other surgeons from Nigeria. Most of the papers were on this subject and the expressed the difficulties that the African surgeons face in getting the relevant training. Dr. Sanjay Shivade's paper on Vaginal hysterectomy under local anesthesia and Dr. Tongaonkar talking about setting up rural hospitals made one feel that it might be better for the African surgeons have training in India rather than in western world as they might not be able to come back and start doing similar work after training in Western countries. The details of the papers from Nigeria indicate that the heath care there is at least few decades behind India and several decades behind the western world.

There were several vary informative teaching session especially from the German colleagues who were present at the conference. Their presentations were simple, easy to understand and follow.

#### THE IFRS NEWS

Mrs. Gabriella Holoch was elected as the Pesident of IFRS while Dr. Tongaonkar was elected as the President elect for the IFRS while Dr. Awojobi was requested to continue as the Secretary for the IFRS and Dr. Peter Reemst as the Treasurer. Dr. S Arora had resigned and hence Dr. J. Gnanaraj elected as the Director from India. Dr. Jerome Afuka [Nigeria] was elected as the Joint Secretary Several ways in which IFRS can help was discussed and the following were some of the discussions.

- The IFRS could organize training programs for the rural doctors.
   Training programs in the Western world like Germany was not useful to the African doctors
- IFRS could provide International quality control affiliations for rural hospitals all over the world. This involves lot of work and commitment and hence no firm decisions were made
- 3. IFRS would continue to support the conferences as usual.
- IFRS could have a central library of teaching materials and surgical techniques videos that could be accessed through internet

#### THE SOLAR AUTOCLAVE

One of the interesting things that was on display at the conference was the solar autoclave made from pressure cooker and other locally available materials and it really did work. It is a handy knowledge to have in a rural area.



THE OPERATING ROOM AT AWOJOBI CLINIC ERUWA



#### ■ Lessons From Nigeria

#### THE KING

Nigeria still has Kings and queens. The King of Eruwa was present to grace the conference and inaugurate the facilities.

There was the opportunity to meet him at the palace too. It was interesting to note that unlike our politicians the King was giving out money {rather than receiving}to all those who met him and greeted him and whenever he opened or inaugurated something.

#### THE SCIENTIFIC SESSIONS

There was only one significant scientific session during the conference. This meant that there was plenty of time for discussions in small groups which was very helpful. The sessions on Anatomy, pathology, etc. were very stimulating {unlike the classes during the MBBS training period}. Useful innovations like the low cost vacuum therapy unit and modifications of standard treatments like using local anesthesia for vaginal hysterectomy and urology

instruments for CTS, etc. were useful. Many of the African colleagues found Dr. Tongaonkars session very useful.

#### **CONCLUSIONS**

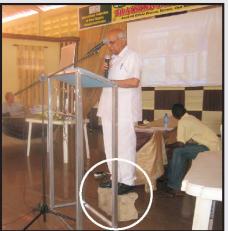
Despite the high costs, difficulties in travel and stay the conference at Nigeria was worth it. Each one of us should be thankful to God for the facilities that we do have at our own places. Hats off to the genius of Dr. Awojobi but we need to plan for sustainable and reproducible models for rural surgery.



PART OF THE DELEGATES
AT THE CONFERENCE



Dr. AWOJOBI@60



INNOVATION FOR Dr. TONGAONKAR



## ARSI ARTICLE

#### **SURVEY OF RURAL SURGICAL FACILITIES**

**Dr. Elias Engleking** - Germany **Dr. J. Gnanaraj** - Coimbatore

**Dear Friends** 

The Association of Rural Surgeons of India is like a large family. The conferences and meetings are like family get together which is fun and useful. All over the World there are plenty of surgeons who are interested in helping the rural surgery community and we could be of great help to our colleagues in African countries and other places where the facilities are meager.

It would be nice to have a database of all our hospitals so that we can use this data for lot of mutually beneficial things like

- 1. Sharing equipment and personnel
- 2. Sharing donated equipment and disposables
- Providing working holidays where surgeons can help for two weeks and enjoy a two week ecofriendly local

holiday near the rural hospitals

- Bulk purchase and negotiation and arranging training programs for new equipment
- 5. Arranging for repairing old and? condemned equipment

The basic need is to provide the data. Could you please take some time to fill in the data and send to us indicating those that you do not want us to publish {either in the website or bulletin}

# FORMAT FOR SENDING INFORMATION ABOUT HOSPITALS

Note: The information would be kept confidential. Only the data would be used for analysis without mentioning the hospital or place. However you may kindly indicate the data that could be published in the name of the hospital especially in the website.

Brief History of the place/Hospital:

Name of the Hospital:

Address:

CEO of the Hospital: (Name, qualifications, experience)

Number of Beds:

Services offered:

Service Offered	Number of bed for it

Number of doctors: Name and qualification

Who gives anesthesia?

Qualification of the anesthetist:

Number and qualifications of Nursing staff:

Number and qualification of the Laboratory staff:

Variety of tests by the laboratory staff:

Number of ultrasounds done per year:



#### Survey of Rural Surgical Facilities

Person doing the ultrasound and training:

Number of X rays done per year:

Person doing it and training:

List of major equipment available at the hospital:

Where do they get the blood from:

Number of transfusions per year:

Number of out- patients during the previous vear:

Number of in-patients seen during the previous year:

Number of surgeries carried out during the previous year:

Laproscopic surgeries:	
General surgeries:	
LSCS:	
Gynaecological surgeries	
Orthopedic surgeries	
Plastic surgeries:	
Pediatric surgeries:	
Urological surgeries:	
Oncological surgeries	
ENT surgeries:	
Eye surgeries:	
♦Others:	

- Financial turnover during the previous year:
- Number of committees in the hospital (like Hospital infection control

- committee, Policy making committee, etc)
- Quality control or improvement measures taken during the last year:
- Number of death audits conducted during the last year:
- Number of sentinel events analyzed during the last year:
- Names and some details of places of tourist interest near the hospital:
- Means of getting to the hospital {nearest airport/railway station/ bus station}, etc.:
- Whether it would be possible for you to arrange for working holidays?
- ♦ The costs involved in staying at your place and in the nearby tourist places?
- ♦ Equipment that you are interested in:
- ♦ Do you have any equipment that needs repairs or that have been condemned?



Figure 1 For Article in Page No. 24

GETTING PAST OBSTRUCTIONS IN URINARY

PASSAGE: FEW NEW NON-INVASIVE METHODS



### BIOMEDICAL INSTRUMENTATION ///

# ASSESSMENT OF CARDIOVASCULAR RISK USING AUGMENTATION INDEX FROM PPG



Delpha Jacob, Manimegalai, Prof. K Rajasekaran and Dr. J. Gnanaraj - Karunya University

#### INTRODUCTION

The risk factors for cardiovascular diseases are associated with the increasing stiffness of the arterial wall. Photoplethys mography is a measure of the volume of the blood in the vessel. Thus by analyzing this peripheral pulse wave it might be possible to predict cardiovascular risk.

High pulse pressure is now recognized as an important cardiovascular disease risk factor for myocardial infarction, stroke, and development and progression of heart failure, even after adjusting for the effects of other known cardiovascular disease risk factors. Elevated pulse pressure in elderly and hypertensive individuals is attributable to increased aortic stiffness.

We describe the method of evaluating the arterial stiffness based on the Photoplethysmography studies.

#### **METHOD**

The shape of peripheral artery pressure waves is influenced by arterial stiffness, PWV, and wave reflections (AI). The radial artery pressure wave is composed of three waves: an incident wave generated by blood flow and two reflected waves, one from the hand region and a later-arriving wave from the lower body. The radial artery augmentation index (AIr) is defined as P2/P1. As the elastic arteries become stiffer, PWV

increases and the reflected wave from the lower body returns earlier to the radial artery, migrates up the pressure wave toward peak systolic pressure, and thus causes an increase in Alr. There is a positive relationship between Ala (augmentation index of aorta) and Alr and both can be used as estimates of arterial stiffness.

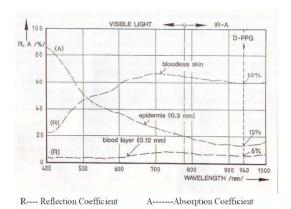


Figure 1: Absorption of light by various components

The augmentation index is determined by implementing an algorithm in MATLAB for stationary signals and further extended to measure AI in real time signals in LabVIEW.Generally, the illuminating PPG wavelength is chosen to provide weak absorption in tissue, yet stronger absorption by blood, to provide a high degree of optical contrast. Infrared radiation is often employed and provides a convenient illumination source. It provides a signal proportional to changes in skin blood volume. The

wavelength of the light used is crucial when determining the parameters of interest — wave lengths between 650-950 nm are commonly used because they combine good penetration with good contrast between the dark vessels (veins and arteries) and the light tissue. In this wavelength range haemoglobin in the blood absorbs much more strongly than the remaining tissue. Light is reflected after it reaches the skin and part of the light penetrates into deeper layers where it may be either scattered or absorbed.

#### Sensor

The PPG sensor used in the experimental set up is reflective type. Below given is the picture showing the sensor that is used.

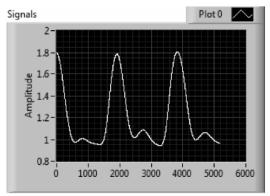


Fig 2 PPG sensor

The photoplethysmographic sensor will be placed below the tip of the finger and pressure will be applied on the proximal phalanx. Since the cuff is wrapped on the proximal phalanx of the finger rather than arm, it makes less discomfort for prolonged used. The blood volume changes on the finger will be notified by the sensor. Non-invasive pressure measurement is an oscillometric method which applies theory of sphygmomanometer.

It is clear from the above result, the augmentation index of abnormal patients is above 1 in all means and for normal patients it is 0.9 and below.

Figure 3 shows the signals acquired with Labview software



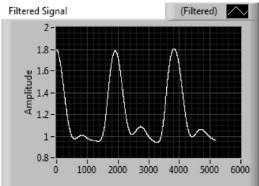


Figure 3: Signals from Labview

The formula used to calculate Augmentation Index is given as follows

$$Ai = \frac{(Ps-Pi)}{(Ps-Pd)}$$

Where,

Ps  $\rightarrow$  systolic pressure point.

Pd→ diastolic pressure point.

 $Pi \rightarrow point of inflection.$ 



The augmentation index for each cycle is calculated and the average for the same is taken.

The same is repeated for the entire obtained signal and the result is tabulated.

Table of comparison of all the data acquired

Subject	Ps	Pi	Pd	Al
NORMAL				
SIGNALS				
1	1.8061	1.1511	0.9886	0.9299
2	1.3973	0.8555	0.7952	0.8999
ABNORMAL				
SIGNALS				
3	2.9320	1.1220	1.1720	1.0046
4	0.7260	0	0.2980	1.6342

#### DISCUSSION

Elastic properties of the arterial wall are highly pressure dependent. At low levels of arterial pressure, wall stress is supported by compliant elastin fibers, whereas at higher levels of pressure, wall stress is supported by much stiffer collagen fibers. An increase in elastic artery stiffness is related to arterial

wall composition and occurs over a long period, for example, with advancing age, hypertension, and arteriosclerosis. Acute changes can occur in elastic arteries with changes in distending pressure, but these changes are passive. For example, during vasodilatation, both pressure and diameter decrease in elastic arteries, causing a passive decrease in wall stiffness and a decrease in PWV. There is variation in the wave due to aging of the artery which leads to stiffening.

At present there are various instruments that measure augmentation index Peripheral Arterial Tonometry (PAT-Alx), SphygmoCor, version 7.1, AtCor Medical, CVProfilor device, Diagnostic Applanation Tonometry (Specaway), TensiomedArterioraph. However the above methods are expensive and what we have used is a cost effective and accurate method. It is a very simple, low cost, easy to apply PPG technique that could be used for long term monitoring, therapy control or for screening to help prevention of cardiovascular diseases.

## LETTER TO THE EDITOR ////

### **EFFECTIVE HEALTH CARE PROVIDER FOR INDIA**

#### **GouripadaDutta**

Thank you for publishing my two articles. I did not receive vol 7 No. 2 in which the paper entitled "Effective Health Care Provider for India" was published. I came to know about it from the letter to editor by Dr. S.K. Basu in vol 7 No 3. My friend Dr. Sitanath De was kind enough to send me the article.

I am also thankful to Dr. Basu because he read the paper and expressed his displeasure for its publication in the journal Rural Surgery. Everyone has his right to express his/her opinion. He has questioned the wisdom of editor and editorial board. I have no comment.



#### Effective Health Care Provider For India

His statement is that many such articles has been published in Rural Surgery. So this paper does not merit publication. I feel that many such discussions will come again and again because the problem of Health care VSmedicare will continue so long it is used by the ruling section for its motive of commercialization and dominance on the vast weaker section of the population. Research means repeated analysis of any perpetuating problem.

The objective of this paper was to point out the difference between 'health care and medicare'. Basis of health care is to universalize, at least, to optimize social justice. Medicare minus this understanding of social justice can not provide proper service to the ailing population. The merchants of medicine very shrewdly has shifted the emphasis from health care to medicare. This has created a serious situation. I tried to place before my readers that in-spite of a huge infrastructure of medicare (units and personal) by the codified system (western and ISM&H), only about 30% of the seek people can avail this medicare.

Internationally it has been accepted that there are different methods of medical service even in codified medicine. The non-codified medicine is now being considered by health activists because of its multifactorial approach. The western medicine is based on uni-factorial approach. Its preventive and promotive measures thus fail to fulfill the desired goal. This non-codified medicine has

been denigrated by the stronger section in the name of science. The paper points out the deficiency of this unifactorial approach and the prevailing inadequacy of education and training of the health personal which is one of the crucial concern of the health activists.

The paper has tried to draw attention of the members of ARSI on this important problem. The author is associated with ARSI in his modest way because he believes that ARSI is aware of this medical nemesis and wants to demystify western medicare from its aggressive nature.

Dr. Basu has stated that the rural surgeons are providing service to 2/3 rd of the ailing people with their selfless service. He has not mentioned his source of information. The facts (data) provided by the govt. and non-govt. sources do not corroborate his statement. Rural surgeons are providing medicare may be with a human face.

As an old health worker, i have requested the members of ARSI in those two articles to keep an open mind to understand the complex and critical health care problem which is taking now a serious situation inspite of phenomenal progress of medical science.

I expect members of ARSI including Dr. Basu will ponder again over the proposals given in those articles.

Thanking you with kind regards

yours sincerely

Shri. Gouripada Dutta



## ORIGINAL ARTICLE

# RISK FACTORS FOR FOOT ULCERS IN DIABETES MELLITUS: A RULE OF THE THUMB FOR MANAGEMENT IN RURAL AREA



Alex G Reginald, J. Gnanaraj - CMC Vellore

#### **BACKGROUND**

Diabetes Mellitus is a metabolic disease with a prevalence of 10 to 15%. Foot ulcers complicate about 7% of patients with diabetes and this causes severe disability, to the patient and a great economic burden to the family. The patient might eventually loose the foot in rural areas.

#### **AIMS OF THE STUDY**

To identify a simple clinical tool to identify patients who are prone to development of foot ulcers and to classify them as low, moderate and high risk patients.

#### **SETTINGS AND DESIGN**

This retrospective case-control study was carried out at the Community Health and Development (CHAD) department of the Christian Medical College and Hospital Vellore.

#### **MATERIALS AND METHOD**

The records of all the patients Diabetics from ... to .. were reviewed. Patients with at least one episode of foot ulcer with no other known causes like Hansen's disease were included as cases. Controls were chosen

randomly from the rest of the group with no footulcers.

#### STATISTICAL ANALYSIS

The relative risks were calculated for the various identified variables. The Odds ratio was then calculated and Chi square tests were used to identify the significance. Five factors were identified as significant and they were categorized.

#### RESULTS

The five factors that were identified as significant risks for developing ulcers were neuropathy, absent pulses, foot deformity, pre ulceration and disability. When none of these factors are present the risk of having an ulcer is about 30%, while if one of these is present then the risk rises to 77% and when more than one risk factor is present then the chance of having an ulcer is over 91%. Variables like age, sex, Body Mass Index, callus, fissures are not significant risk factors.

#### CONCLUSION

Diabetic patients could be stratified effectively according to risk of developing ulcers.

#### SIGNIFICANT RISK FACTORS FOR FOOT ULCERS IN DIABETES

1) NEUROPATHY 2) ABSENT PULSES 3) FOOT DEFORMITY 4) PRE ULCERATION 5) DISABILITY.



## METHODS AND DEVACIES////

# GETTING PAST OBSTRUCTIONS IN URINARY PASSAGE: FEW NEW NON-INVASIVE METHODS

# \_\_\_\_\_

## Antony Devasia, J. Gnanaraj - CMC Vellore INTRODUCTION

Impacted stones or injuries often cause difficulty in passing catheters in both the urethra and the ureter. The catheter or guide wire often tends to be stuck at the same point even with repeated manipulations. We describe few minimally invasive methods that could be used during such circumstances.

#### **METHODS**

1.Faggots method for ureter (and urethra): Faggot (1) described a method of passing several filiform catheters for negotiating strictures. The logic was that several of those would be stuck at various points, which allows one of them to pass beyond the stricture. The same principle could be used in the ureter to pass a guide wire beyond the calculus (Figure.1 go to page 18). Two to three 0.025-inch guide wires are passed together. They are manipulated in tandem until invariably one of them slips past the stone.

2.Other methods for Ureter: When the above method fails an open ended catheter could be left below the site of the stone for few days and this helps the ureter below to dilate and then Ureterorenoscope could be passed to the site of the stone to break it with lithoclast.

3.Bridging urethral injuries: When there is urethral injury especially at the bulbar

urethra and sometimes after TURP it is difficult to pass larger catheters as they get stuck at the area of injury or surgery. The urethrotome with a half round sheath could be used to get past the area of injury but would allow only smaller catheters like 14 or 16 F and smaller. To over come this problem three or four 5 F ureteric catheters placed under vision. They form a bridge over the defect and well lubricated larger catheters are then passed easily into the bladder. (Figure 2)

#### **DISCUSSION**

With the arrival of endoscopic internal uretrotomies, the Faggot technique is seldom used for urethral strictures. However, the principle is very useful in negotiating guide wires past impacted ureteric stones. After TURP or negotiating past urethral injuries, the metal stylets could be placed inside the catheters to make them stiff and then they could be passed. However this is a blind procedure and could cause further severe injuries (especially with inexperienced persons). Hence the above methods are safer and less traumatic.

#### **REFERENCES**

1.R. C. Tiptaft: The urethra and penis. Bailey and Love's short practice of surgery. Charles Mann and RCG Russel. 21<sup>st</sup> edition. Chapter 59 p 1458. Chapman and Hall. ELBS London.

