

Flight traffic management through computers



TECHNOLOGY 4

Gases spewed out at workers in industries can be dangerous



HEALTH 5

Plants are emerging as a good source for vaccines

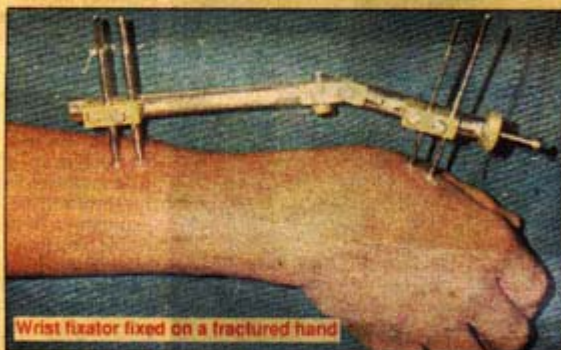


NATURE

# Science Express

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Wrist fixator fixed on a fractured hand

PHOTOS: P. PREETHAMBARAN

## Fixing A BROKEN WRIST

BY RAJESH MENON

**T**HE Regional Engineering College (REC), Kozhikode, has made a path-breaking development in the field of

ment but has also made the equipment cheaper. Present status of wrist fixators

The medical fraternity in the country was more or less depending on the costly imported wrist fixators, which

these, unstable fractures are common and difficult to treat due to the multiple fragments of the distal radius and damage to the articular surfaces.

The treatment that is in vogue, basically involves inserting stainless steel pins into the bone by drilling them on either side of the fractured area; fixing them to a steel rod located outside, external to the wrist; applying traction (ligamentotaxis) suitably to keep the fractured fragments properly aligned; and immobilising the wrist joint, for a period of six to eight weeks, until union is achieved.

But what usually happens is that a malunion of the fragments



Dr. S. S. Kumar

**Mechanical engineers, metallurgists and surgeons have joined hands to develop a new wrist fixator**



take place making it difficult for

the one developed in Germany. This wrist fixator has a hinge joint (double ball and socket) in the external rod, which permits mobility of the wrist joint (usually after a three-week period) to introduce some degree of flexibility of the joint during the bone formation period.

But the double ball and socket type leads to uncontrolled movements of the joint thereby leading to displacement of the fragments. Besides, there is no provision for sustained ligamentotaxis, so that the initial reduction of the fracture and realignment of the articular surfaces is not maintained.

**Development of dynamic wrist fixator**

So, with a view to develop a wrist fixator free from the flaws of the earlier ones, the REC was approached by the Kozhikode Medical College authorities. A team with structural and mechanical engineers, metallurgist and doctors was set up under Dr. Devasdas Menon, structural engineer in the Department of Civil Engineering, REC. A project was submitted to the AICTE, New Delhi, and the

the team. He was behind the mechanism of the device has been developed in the laboratory at the REC. The components of the device have been designed by itself. The complexity of the device has been kept simple in the design for keeping it in the hands of a common man.

Chandrasekharan. Besides, Dr. M. Chandrasekharan, members of the REC faculty, Dr. K. B. M. Nambiar, Dr. T. Gopakumar and Dr. K. K. Kaimal of the REC Department of the Mechanical Engineering, REC, project a new device.

The dynamic wrist fixator made of stainless steel has a hinge unit which controlled motion independent of the wrist, viz. palmar/ulnar deviation.

While the present device allows all the motions of the wrist, previously, once the



(From left to right) Dr. K. B. M. Nambiar, Dr. Devasdas Menon, A. Ajith Kumar and Dr. M. P. Chandrasekharan, explaining the working of the wrist fixator.

research and development of the dynamic wrist fixator began with the funds that they received from the AICTE and the Department of Science and Technology.

Two years of R & D have borne fruit with the development of the dynamic wrist fixator. "We were approached by the Orthopaedic Department of the MCH to develop a new wrist fixator. Bones are structural members of the body and like in other structures viz. dams, buildings etc, they are optimally designed. So, we

lock the other two (radial/ulnar deviation), which is desirable earlier.

Besides, the fixator provided with a mechanism which multiplanar ligamentotaxis. This mechanism corrects the malunion of the fragments to reduce the risk of fracture. Even a slight deviation of the position of the bone leads to traction of the ligaments and would make

# Device to treat wrist fracture

**S**CIENTISTS at the Regional Engineering College (REC), Calicut, Kerala, have developed a device to treat multiple wrist fractures, experts VPI Science Service.

The device, dynamic wrist fixator, helps in better and more controlled movement of the wrist joint and makes it more flexible during bone formation and healing. It has been designed and tested by a team led by Dr. Devadas Menon.

Existing dynamic fixators that are imparted over 8s, 1 inch apiece and they have several drawbacks, say the REC scientists. They tend to uncontrolled movements of the joint that displace the fractured bone pieces, and do not have a spanning mechanism to restrain lateral reduction of the fracture and realignment of the joint surfaces.

These drawbacks are taken care of by the new fixator that has undergone extensive clinical trials at the Department of Orthopedics at the Calicut Medical College.

REC scientists report that about one-sixth of all types of fractures treated in hospitals involve cracks in the lower end of the main bone in the fore arm, called the radius. Unstable fractures, caused by injuries in accidents, are difficult to treat due to the presence of multiple fragments of the bone and damage to the joint surfaces.

Such fractures are usually treated by inserting stainless steel pins in the bones on either side of the fracture area and fixing the pins to a stainless steel rod located outside.

By applying pressure through weights, the broken bone pieces are properly aligned and allowed to join again. The entire wrist joint is immobilised for a period of six weeks till the bone heals itself.

However, in most cases, the wrist does not regain its original mobility due to increased areas of the plates. The wrist generally becomes stiff, prone to arthritis and is deformed. Dynamic fixators have been developed abroad to solve this problem.

They have a hinge joint in the external rod, which permits movement of the wrist joint after a 3-week period of immobilisation and restores some flexibility in the joint during healing. However, they cause uncontrolled movement of the joint and problems in containing the fracture.

These problems have been taken care of in the new device, said Dr. Menon. The fixator has a ratcheting mechanism that maintains positive reduction and corrects wrong alignment of ligaments, and a lig to ensure accurate alignment and spacing of pins fixed to the bone.

# Mania and the Kerala REC develops new wrist fixator

Our Senior Correspondent  
KOTTAYAM, May 21

**T**HE Regional Engineering College (REC) here has developed a "cheaper and improved version" of the dynamic wrist fixator used in the treatment of wrist injuries.

According to Dr. M.P. Chandrasekharan, Principal, REC, and Dr. Devadas Menon who had piloted the research project, efforts were on to market the product with the assistance of the Sri Chithira Thirunal Institute of Medical Sciences, Thiruvananthapuram.

They held a press conference here that whereas the imported dynamic fixators now cost over Rs. 10,000, the new device costs only Rs. 2,000.

The new fixator could be made of stainless steel or any other metal and would provide restricted motion in three independent degrees of freedom. Almost one-sixth of fractures treated in the emergency rooms in a hospital were fractures of the lower end of the radius, the main bone in the forearm. Again, unstable fractures were on the rise mainly owing to the increasing high-velocity injuries caused by accidents.

These fractures were extremely difficult to treat due to multiple fragmentation of the distal radius and damages to the articular surface. And, after treatment...

# Zainibadost for mild-to-moderate asthma

Several new therapies for asthma have become available in the last decade. A new multicenter trial reported in *Ann Intern Medicine* (Feb. 97) evaluates the effectiveness of a new leukotriene receptor antagonist, zainibadost.

Researchers randomized 140 subjects (average age, 42) with mild-to-moderate asthma to either zainibadost (120 mg twice daily) or placebo for 13 weeks. At baseline, about 95 per cent of subjects had early morning symptoms and 70 per cent had nighttime awakenings. Patients were not taking steroids, but were allowed to take beta-agonists as needed.

Compared with placebo, patients receiving an inhaled corticosteroid reported more symptom-free days (7 vs. 1.7 per month), more days with beta-agonists (11.3 vs. 6), and more days without asthma episode (10.1 vs. 5.1). They also missed 53 per cent fewer days from school and work, and had 54 per cent fewer health care contacts. These outcomes may be relevant to insurers looking at the indirect costs of asthma.

An expert has commented: "This relatively short trial suggests daily preventive inhaled corticosteroids are needed to experience the benefits alone for patients with mild-to-moderate asthma. However, comparisons between inhaled and inhaled steroids are needed before routinely recommending this new drug."

# Brainier bone

Collaborative research between York University in northern England and America's Harvard Medical School, reveals that bones in the body share a common language with cells of the nervous system. The findings offer hope for better prevention and treatment of osteoporosis and other bone diseases, management of bone loss, and other orthopedic practices.

# IPAD loan for N-E community development

United News of India  
NEW DELHI, May 21

**I**NDIA will receive a \$ 22.9-million (Rs. 83 crore) loan from the International Fund for Agricultural Development (IFAD) for community development in the north-eastern region.

The agreement for the north-eastern region community resource management project for upland areas was signed in Rome by the Indian Ambassador to Italy, M. K.P. Taitan and the IFAD President, Mr. Paolo Di Salvo, an Indian ambassador release from Rome said. The project focuses on...

## IN BRIEF

**□ Piglets make their debut, handling imaging agents**

SynCor has launched Piglet and Piglet2, two tungsten containers for the delivery of radiiodine. The US firm also has a PETPig system for handling of cyclotron-produced radiopharmaceuticals used in positron emission tomography.

**□ US link-up to develop tissue regeneration products**

Osiris Therapeutics and California-based Activated Cell Therapy have agreed to develop structural and connective tissue regeneration products. Osiris will have exclusive rights to use Activated Cell Therapy's cell isolation and enrichment technology for the recovery of mesenchymal stem cells. Osiris, based in Baltimore, Maryland, intends to use the stem cells to develop cell therapy products to treat diseased or damaged structural and connective tissues.

**□ Rapid exchange catheter launched**

B. Bard has launched Calypso Rely, a rapid exchange stent for use in percutaneous transluminal coronary angioplasty surgery, and a successor to its Calypso Samba stent. The company says that the catheter's newly designed shaft and low profile will improve lesion navigability, a key requirement for successful surgery. Worldwide, around 360,000 interventional cardiology procedures were carried out in 1996.

**□ \$100,000 grant for vascular tissue cutter**

Enable Medical has received a \$100,000 grant from the US National Institutes of Health to begin a Phase I study of its device for cutting vascular tissue. The Small Business Innovation Research grant will allow the Ohio-based company to develop its endoscopic bipolar radio frequency device.

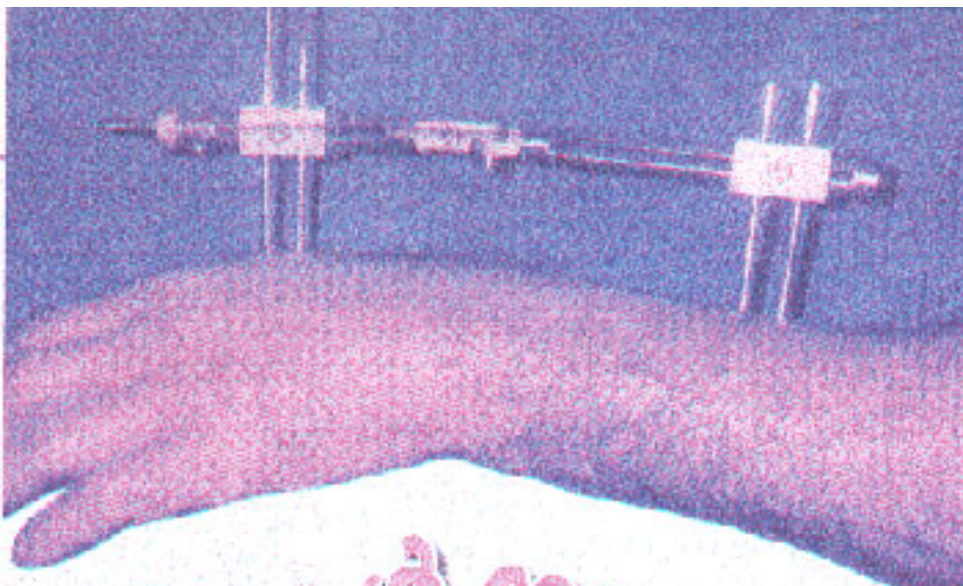
**□ Dynamic wrist fixator developed in India**

A dynamic fixator for treating wrist injuries has been developed by the Regional Engineering College in Kozhikode, India. The stainless steel device provides a tensioning mechanism that permits periodic correction to ensure that fracture reduction is maintained. Sri Chidambaram Institute of Medical Sciences in Thiruvananthapuram will market the device for a price, the college estimates, of less than Rs10,000 (\$280) each.

**□ Foetal heartbeat detector from Hewlett-Packard**

Hewlett-Packard has introduced a hand-held foetal heartbeat detector for use in early pregnancy and during delivery. The HP Series 50 Sonata marks the re-entry of the company into the low-cost, portable end of the market. HP claims that the detector's early detection mode, which reduces background noise, allows doctors and midwives to detect the foetal heartbeat earlier in pregnancy.

**വിറ്റിന് ഒരിവുകൾ പറ്റി ചിക്രി**  
 അലഞ്ഞുനോക്കുന്നവരിൽ ആദ്യം ഹോസ്റ്റ്  
 എന്ന കണ്ണുകൾ, മുൻകൈ (Fore  
 arm) യുടെ പ്രധാന എറ്റി (Radius)  
 ന് അണിബന്ധത്തിന് സമീപം തക  
 രാറുപറ്റുന്നവരാണ്. കൂട്ടിച്ചുറിയിൽ  
 വിണ്ണും ഒരു അങ്ങിയും എണ്ണകൾ  
 ഒടിയുന്നതിൽ നിന്ന് വ്യത്യസ്തരേ  
 യി, ഇവിടെ എണ്ണ തകർന്ന് കഷ  
 ണങ്ങളാകുന്നതുകൊണ്ട് ഇത്തരം  
 ഒടിയുകയെ അസ്ഥിര (unstable  
 Fractures) ഒടിയുകൾ എന്നു വിളി  
 ക്കുന്നു. ഉഷ്ണത്തിൽനിന്ന് വീഴുക  
 വരുന്നവർക്ക് പ്രത്യേകിച്ച് ഇത്തരം  
 വരുന്നവർക്ക് അപകടത്തിൽ പെ  
 ടുക എന്നീ സാഹചര്യങ്ങളിൽ ആ  
 ണ് ഇത്തരം ഒടിയുകൾ സംഭവിക്കു  
 ന്വേ. എണ്ണ കഷണങ്ങളായി നൂറു  
 അടിച്ചോകുന്നതുകൊണ്ട് ചികിത്സ  
 വിഷമതകളെല്ലാം തരുന്നതായ ഒരു  
 ബന്ധകം (Fixator) ഉപയോഗിച്ച്  
 അണിബന്ധം അനങ്ങാതെ നോക്കുകയും  
 ആവശ്യമായി എണ്ണവർഷ ആഴ്ചകളിലേക്കാൾ  
 ബന്ധകം നീക്കുകയും ചെയ്യുന്നു. ഇതിന്റെ  
 കൂടെ ഡോക്ടർമാർ നൽകി എണ്ണകളെ യഥാ



# ഒടിയുകൾ ശൈലിമേഖല

"Mathrubhumi - Arogya Manika"  
 August 1997  
 പത്രസംഭരണം ഇന്ത്യയിലെ പലകോടതികളിൽ ഉൾപ്പെടെ പ്രസിദ്ധീകരിക്കുന്നു. കേരളത്തിലെ പലകോടതികളിൽ ഇപ്പോൾ പതിപ്പുകൾ പ്രസിദ്ധീകരിക്കുന്നു. ഏപ്രിൽ 1997 മുതൽ ഇത് പ്രസിദ്ധീകരിക്കുന്നു. ഇതിൽ പലകോടതികൾ ഉൾപ്പെടെ പ്രസിദ്ധീകരിക്കുന്നു. **10 രൂപ**

അതെല്ലാം കൈയടിപ്പിച്ച് എണ്ണപറ്റുന്നവർക്കു കൂടുതൽ ചികിത്സാ വിധികൾ വ്യക്തമായ രീതിയിൽ വ്യക്തമായിട്ടുള്ള മെഡിക്കൽ പബ്ലിഷേഴ്സ് എന്ന ഉപകരണം കോഴിക്കോട് ലഭിക്കുന്നു. എണ്ണപറ്റുന്നവർക്കും മെഡിക്കൽ മെമ്പർമാർക്കും മെമ്പർമാർക്ക് സർവ്വീസുകൾക്കും മെമ്പർമാർക്ക് സർവ്വീസുകൾക്കും സർവ്വീസുകൾക്കും സർവ്വീസുകൾക്കും.

പ്രസിദ്ധീകരിക്കുന്നു. ആവശ്യപ്പെടുമ്പോൾ അടിയന്തിരമായി പ്രസിദ്ധീകരിക്കുന്നു. ഉൾപ്പെടെ പ്രസിദ്ധീകരിക്കുന്നു. കേരളത്തിലെ പലകോടതികളിൽ ഇപ്പോൾ പതിപ്പുകൾ പ്രസിദ്ധീകരിക്കുന്നു. ഏപ്രിൽ 1997 മുതൽ ഇത് പ്രസിദ്ധീകരിക്കുന്നു. ഇതിൽ പലകോടതികൾ ഉൾപ്പെടെ പ്രസിദ്ധീകരിക്കുന്നു. **10 രൂപ**

**ഡോ. കെ. വിൻസെന്റ്**  
**ആർ.എ.സി.കോളേജ്**  
 കേരളത്തിലെ പലകോടതികളിൽ ഇപ്പോൾ പതിപ്പുകൾ പ്രസിദ്ധീകരിക്കുന്നു. ഏപ്രിൽ 1997 മുതൽ ഇത് പ്രസിദ്ധീകരിക്കുന്നു. **10 രൂപ**

ప్రపంచము అందరికీను దొర్లుతుంది. ఎవరైనా దీనిని తెలుసుకోవాలంటే ఎవరికీ దొరకొచ్చినట్లు అనే కోరికలతోనే దీనిని తెలుసుకోవాలి. దీనిని తెలుసుకోవాలంటే ఎవరికీ దొరకొచ్చినట్లు అనే కోరికలతోనే దీనిని తెలుసుకోవాలి. దీనిని తెలుసుకోవాలంటే ఎవరికీ దొరకొచ్చినట్లు అనే కోరికలతోనే దీనిని తెలుసుకోవాలి.

# అద్వైతపాఠశాలలో సంవలనం సృష్టిస్తున్న అస్తి ఖచ్చితం

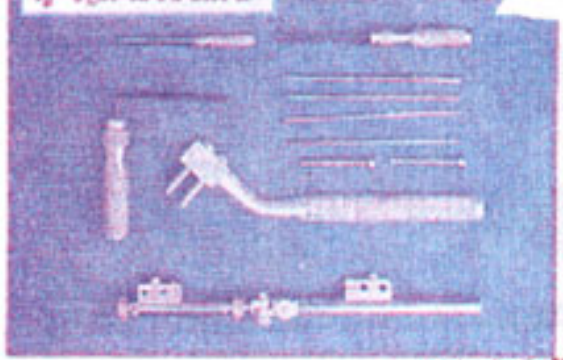


అద్వైతపాఠశాలలో ఉన్న అధ్యక్షుడు, డాక్టర్ బి.వి.ఎస్.

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Telegu Weekly "Eenadu" July 20, 1997