

TRAUMA CHALLENGES IN NEW MILLENNIUM

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TRAUMA CARE

PIP THE PAST

PERSUE THE PRESENT

PREDICT THE FUTURE



2000 - 2010
Declared as

**“THE BONE AND JOINT
DECADE”**

By

The World Health Organisation



“The Burden of Musculoskeletal Conditions at the Start of the New Millennium”

“Musculoskeletal diseases or rheumatic diseases are the major cause of morbidity throughout the world.

These diseases have a substantial influence on health and quality of life and they inflict an enormous cost on health systems”

2000-2010 Declared as
“THE BONE AND JOINT DECADE”



Dr Gro Harlem Brundtland
Director General, WHO



Musculoskeletal disorders

are the most common causes of severe long-term pain and physical disability,

affecting hundreds of million of people around the world esp. Third world



Skeletal Trauma

- Traffic Injuries cause 1 million deaths annually
- Cause more than 30 million severe and disabling injuries annually worldwide





TRAUMA CARE

PAST  PRESENT
Confusion

Operators

Vs

Non Operators

Plaster Foes

Vs

Plaster Friends

Callus Haters

Vs

Callus Lovers

Stability

Vs

Rigidity

MARKET FORCES



INCIDENCE ON THE RISE

- Industrialization
- Urbanization
- Mechanized transport
- Urban violence
- Social conflicts
- Disaster: Man-made & Natural



INDUSTRIALIZATION

- Industrial Revolution
- One of the Ten in World
- 1% of Vehicles
- 1/6th Accidents
- 80,000 Deaths
- 1 million Injured

INDIA !!
One billion people !!
One of the ten Industrialized Nations in the World

320,000 Accidents
in ONE Year

80,000 Peoples are KILLED



MECHANIZED TRANSPORT

% Rise in vehicles

- 2 Wheelers: 11,500%
- Cars : 700 %
- Buses : 750 %
- Trucks : 750 %
- Agricultural: 300 %





Road Traffic Accidents: The Silent Killer...

One 747 crashes

400 killed International media attention

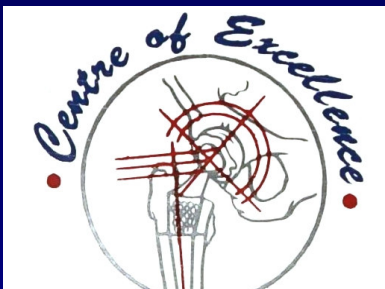
1,000 planes crash / year
unimaginable

400,000 dead

Public outcry -

2500 planes worth / year > 1,000,000 dead

from road accidents
but no one seems to care
because it happens
1 or 2 at a time



Tomorrow...

Disease Burden measured in Disability Adjusted Life Years

ESTIMATE 1990			PROJECTION 2020		
Rank	Cause	% Total	Rank	Cause	% Total
1	Lower Respiratory Infections	8.2	1	Ischaemic Heart Disease	5.9
2	Diarrhoeal Diseases	7.2	2	Unipolar major Depression	5.7
3	Perinatal Conditions	6.7	3	Road Traffic Accidents	5.1
4	Unipolar major Depression	3.7	4	Cerebrovascular disease	4.4
5	Ischaemic Heart Disease	3.4	5	Chronic Obs Pulmonary disease	4.2
6	Cerebrovascular Disease	2.8	6	Lower respiratory infections	3.1
7	Tuberculosis	2.8	7	Tuberculosis	3.0
8	Measles	2.7	8	War	3.0
9	Road Traffic Accidents	2.5	9	Diarrhoeal Diseases	2.7
10	Congenital abnormalities	2.4	10	HIV	2.6



WORLD SCENERIO OF TRAUMA CARE

EURO - AMERICAN

- Pre Hospital Care
- ATLS
- Hospital care
- Advance Diagnostics
- Systems Approach
- Analysis & Documentation
- National Gain

AFRO - ASIAN

- Hospitals ???
- ALTS ???
- Neglect
- Diagnostics ???
- Compromised Care
- Late Presentations
- Documentation ???
- National Loss



WORLD SCENERIO OF TRAUMA CARE

EURO - AMERICAN

- Air Way
- Breathing
- Circulation
- Dolor Control
- Energy Conservation
- Financial Support

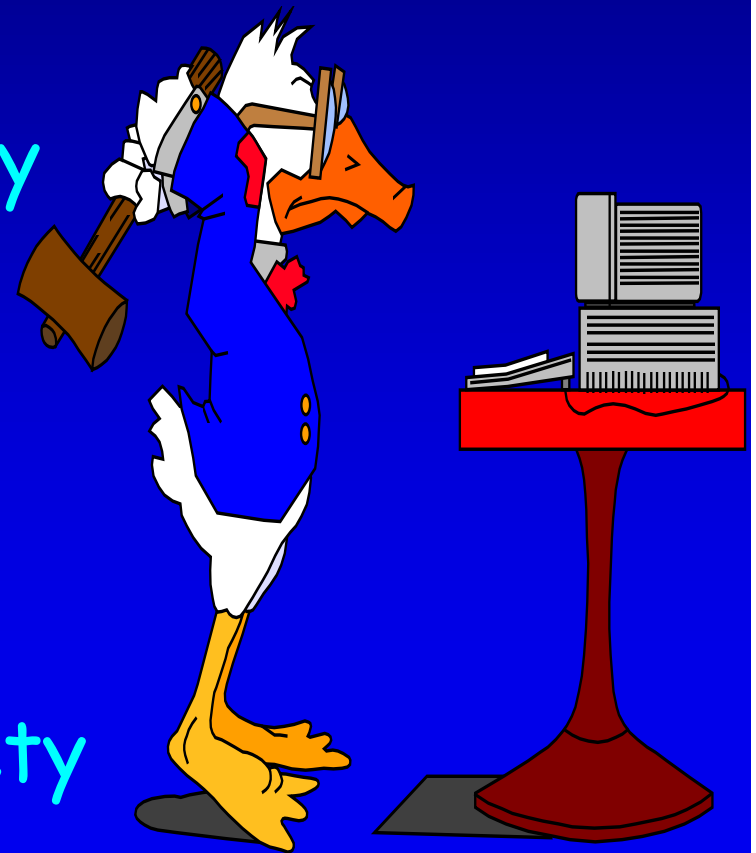
AFRO - ASIAN

- Apathy
- Beurocracy
- Callousness
- Deference
- Escapism
- Financial Caos



TRAUMA IMPACT

- No. 1 killer below 40 yrs
- High mortality & morbidity
- Life long disability
(head / spinal injury)
- Male sole bread earner
affects:
Individual / family / society





TRAUMA STATISTICS

<u>COUNTRY</u>	<u>YEAR</u>	<u>ACCIDENT</u>	<u>MORTALITY</u>
INDIA	1987	160,000	29,000
JAPAN	1987	600,000	8,800
U.S.A.	1987	5 Million	100,000

No. Of Hospital Days : 22 million / year
More than Cardiac & Cancer



OUTCOME

- High Mortality
- Increased Morbidity, 21% Disabled
- Man-hour lost ???



MISSED DIAGNOSIS

HIGH MORBIDITY

PERMANENT

DISABILITY

SALVAGE DIFFICULT



NEW MILLENNIUM

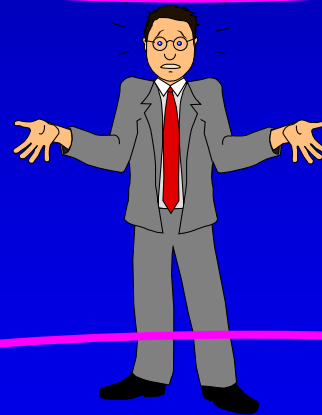


Expensive Travelling



Real Estate
6500/sq ft

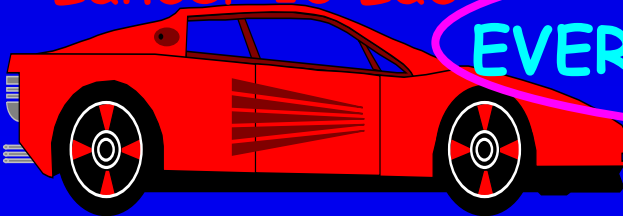
HUMAN LIFE IS CHEAP



Ortho Seat
37 Lac



Lancer 10 Lac



EVERYTHING ELSE IS EXPENSIVE



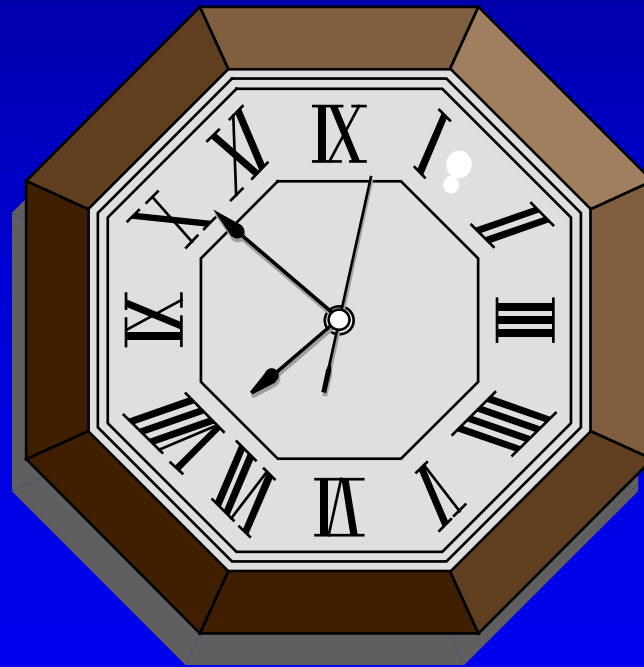
THE ECONOMICS OF TRAUMA CARE

- Hospital stay: Rs. 1000 / Bed / Day
Rs. 700 to Establishment
- Free Care: Compromise
- The Correct Thing:
COST EFFECTIVE CARE



COST EFFECTIVE CARE

ACCIDENT
ROUND
THE
CLOCK



THERAPY
ROUND
THE
CLOCK



TRAUMA CARE

SPECIFICITY

- Domestic Trauma
- Sports Trauma
- Accident
- Urban Violence
- Industrial Trauma
- Disaster





TRAUMA CARE

TO MATTER

E

- Education
- Encouragement
- Enforcement
- Enlightenment
- Efficacy

Its not the KNOWLEDGE, But
APPLICATION is that
MATTERS the MOST

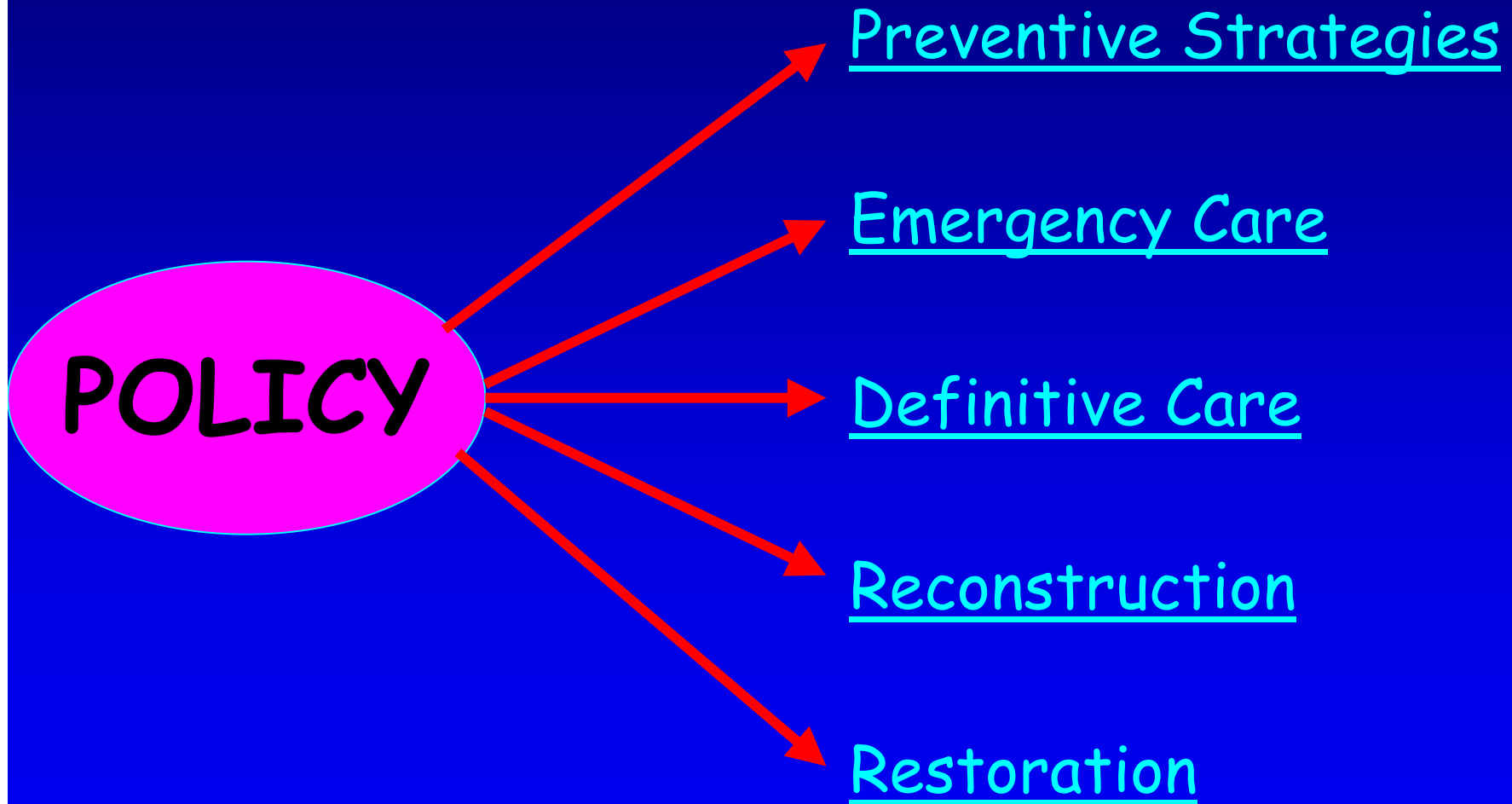


TRAUMA CARE

- Education → Knowledge
- Application → Practice
- Analysis → Insight
- Documentation → Advancement



MILLENNIUM TRAUMA CARE





PROTOCOLS

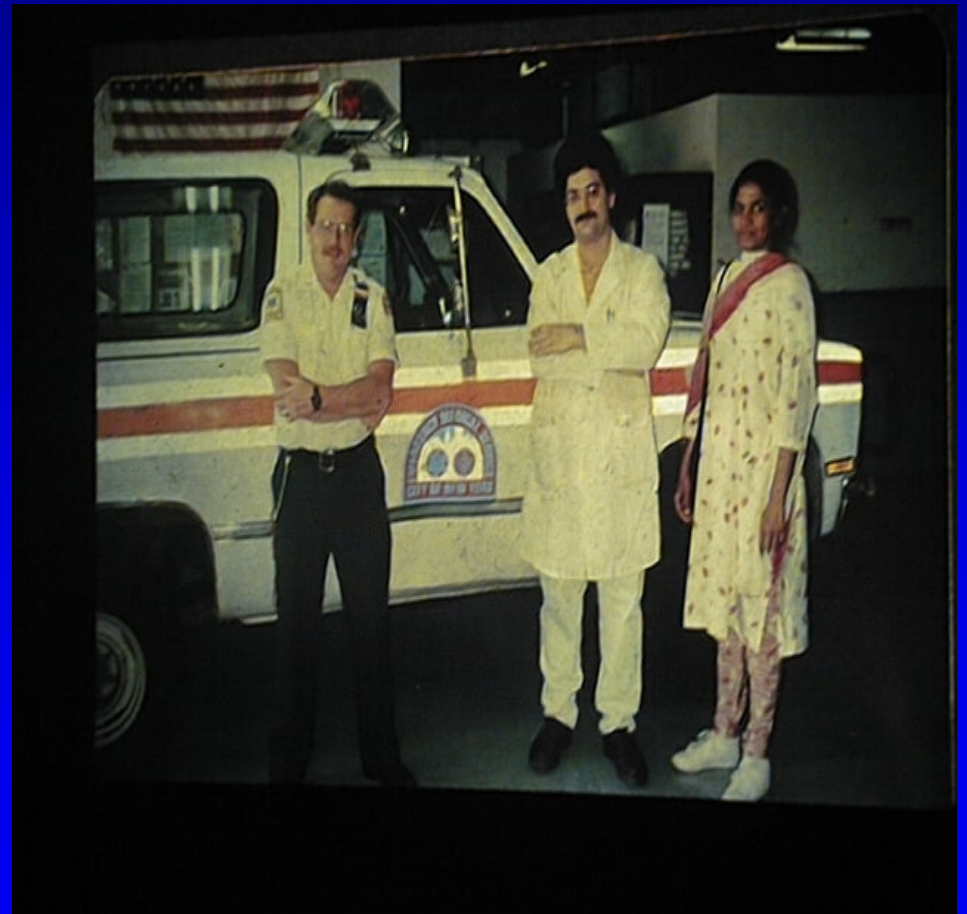
- POLY TRAUMA
- OPEN INJURIES
- OPERATIVE TREATMENT
- FUNCTIONAL TREATMENT



WORLD SCENARIO

West:

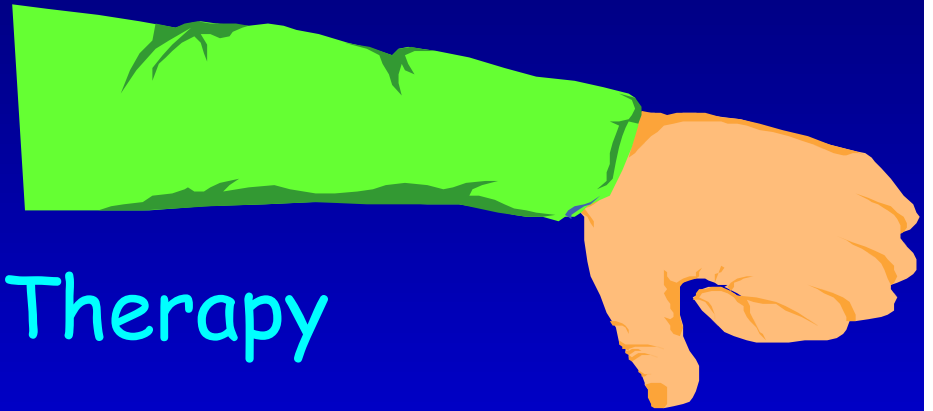
- Pre-hospital care
- Trauma Centers
- ATLS
- Advance Diagnostics
- Monitoring
- Early / Definitive Stabilization
- Total Rehabilitation





INDIAN SCENARIO

- No Pre-Hospital Care
- Delay in Diagnosis / Therapy
- Treatment Centers ???
- Diagnostics & Monitoring - Exceptional
- Management Compromise
- Increased Mortality & Morbidity





PREHOSPITAL CARE

EARLY SALVAGE

PARA-MEDICS :

- Transportation
- Communication
- Maintenance Airway / Breathing / Circulation
- Gross reduction in Mortality / Morbidity Disability.

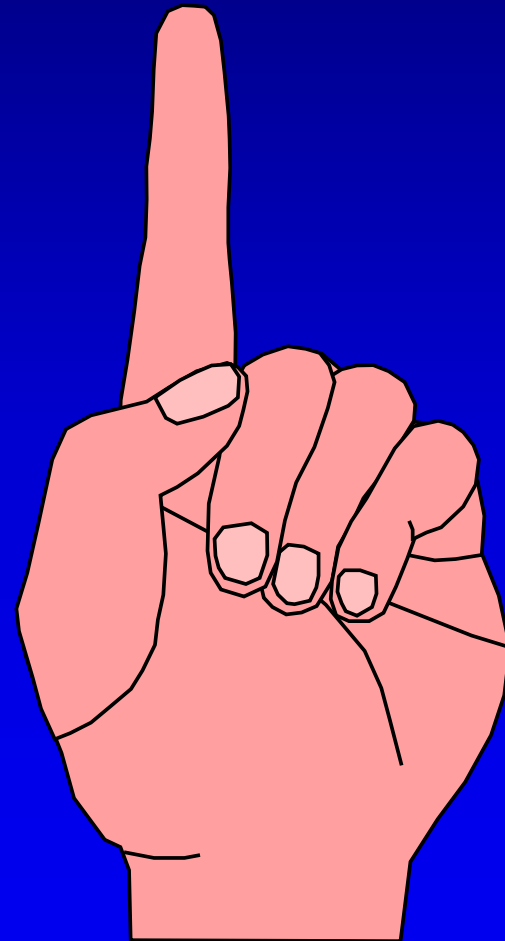




HOSPITAL CARE

Prime Consideration

- Life salvage
- Limb salvage
- Functional salvage





HOSPITAL CARE

CONCEPT OF

Composite
Collaborative

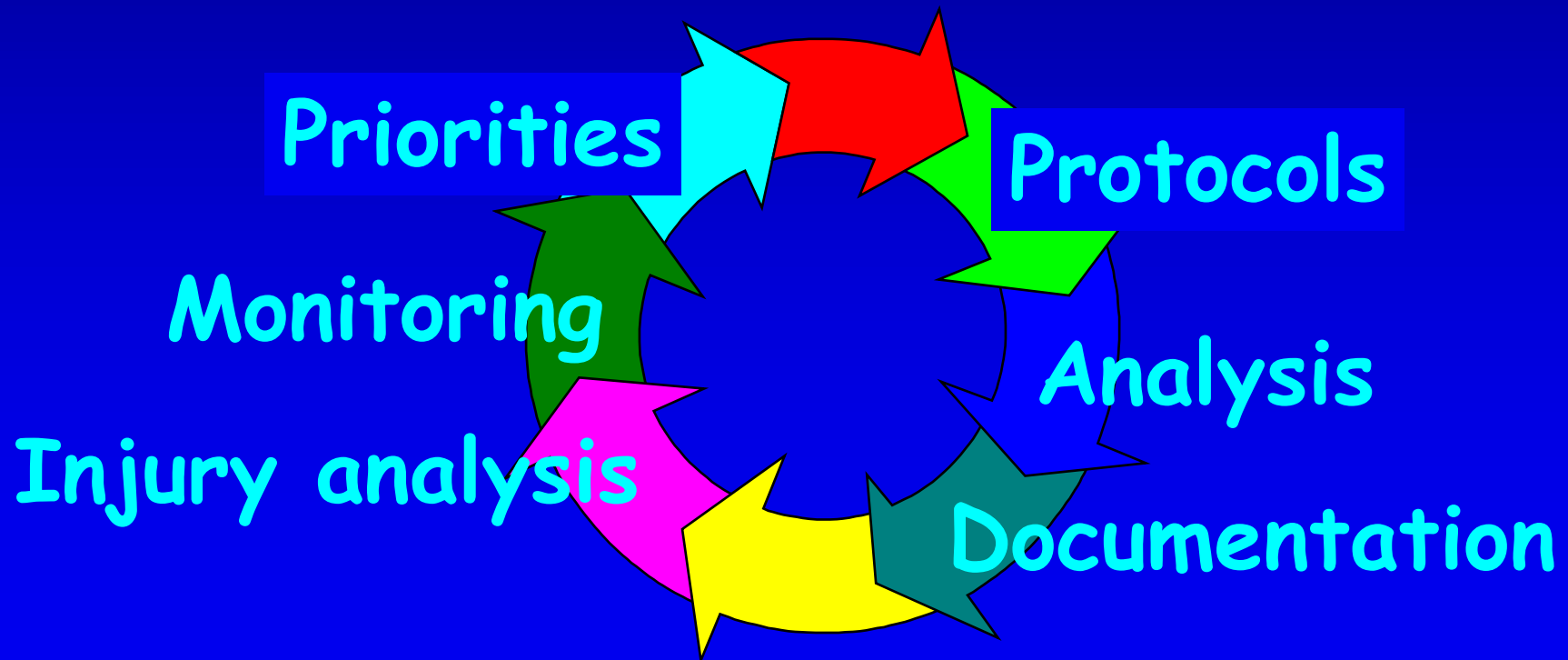
C

Continuous
Care



HOSPITAL CARE

BASED ON





LIFE THREATENING INJURIES

- Head Injury
- Chest Injury
- Haemorrhage:
Overt / Occult
- Skeletal Injury:
Pelvis
Spine
Open Injury.





CLINICAL CARE POST STABILIZATION

TO

ANTICIPATE

ACT

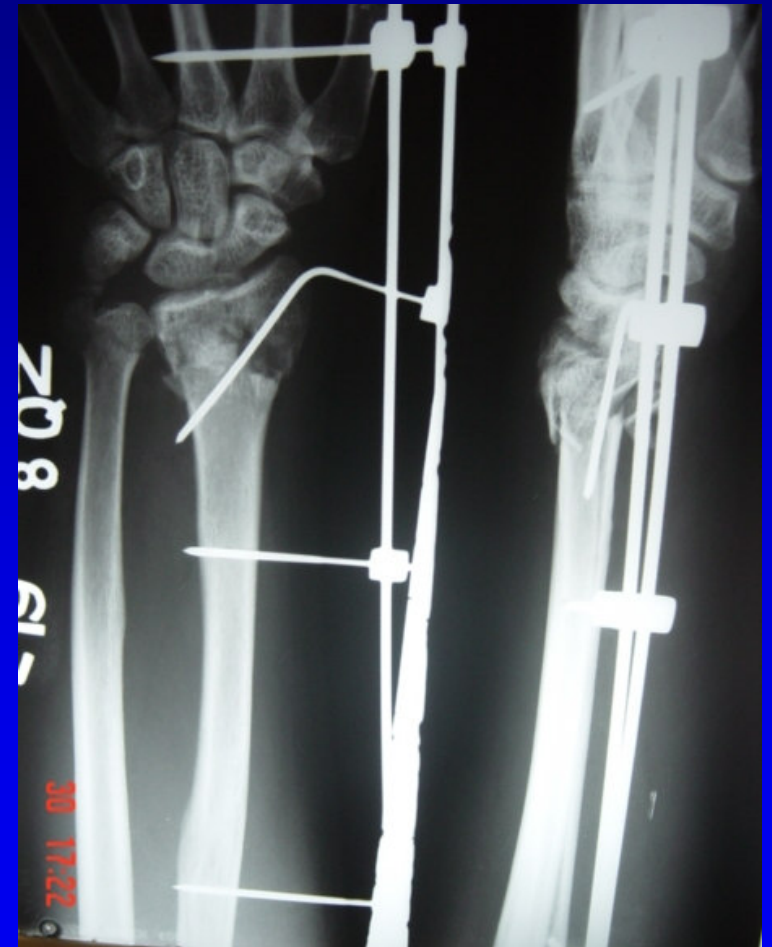
AVOID

MULTIPLE ORGAN FAILURE



EXTERNAL FIXATION

- Single most Modality help in Reduction of Mortality & Amputation.
- Ganz Pelvic Clamp for Fracture Pelvis
- External Fixation in Open Injuries & Complex Trauma





INTERNAL FIXATION

Closed Nailing with Interlocking or Plate Fixation offer Total Stabilization leading to Early Mobilization of Extremity & Body Function





REHABILITATION

- Restoration to pre injury status
- From Reception to Ambulation of patient
- Prevents Pressure Sores, Disuse Atrophy, Stiffness & Contractures.
- Helps to Augment Anabolic Status





TRAUMA CARE

AGE RELATED ISSUES

- Paediatric Trauma
- Adult Trauma
- Geriatric Trauma

REGIONAL ISSUES

- Peripheral Trauma
- Axial Trauma
- Proximal Trauma
- Poly Trauma



PAEDIATRIC TRAUMA

SPECIAL ISSUES:

- Epiphysial Growth Insult
- Limb Length Discrepancy
- Life long Disabilities

SUGGESTIONS:

- Epiphysial Distraction Devices
- Telescoping Implants
- Special Training



GERIATRIC TRAUMA

SPECIAL ISSUES:

- Porotic Bone
- More prone for trauma coz of Poor Vision, Generalized Weakness & Muscular Disbalance
- Chances of Severe Systemic Complications If Immobilized for Long Duration

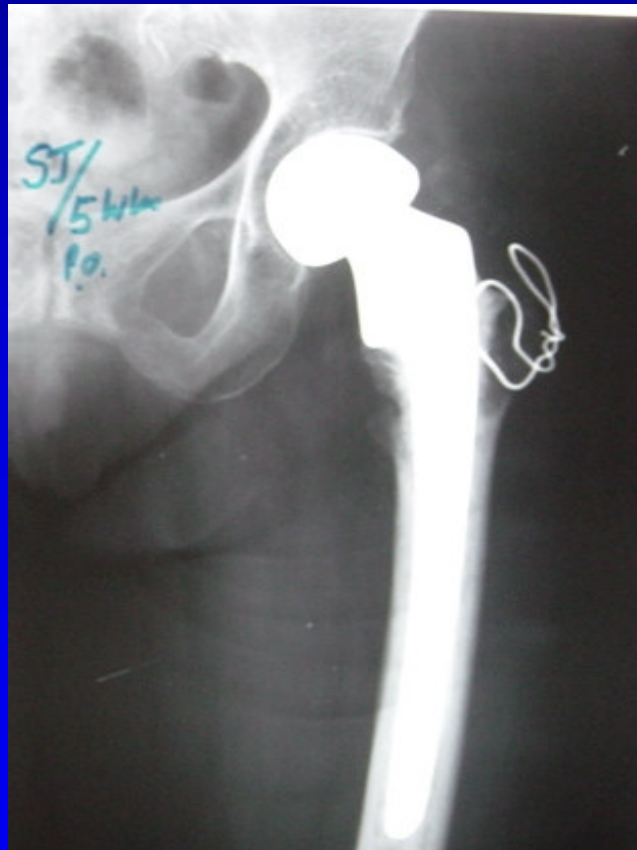
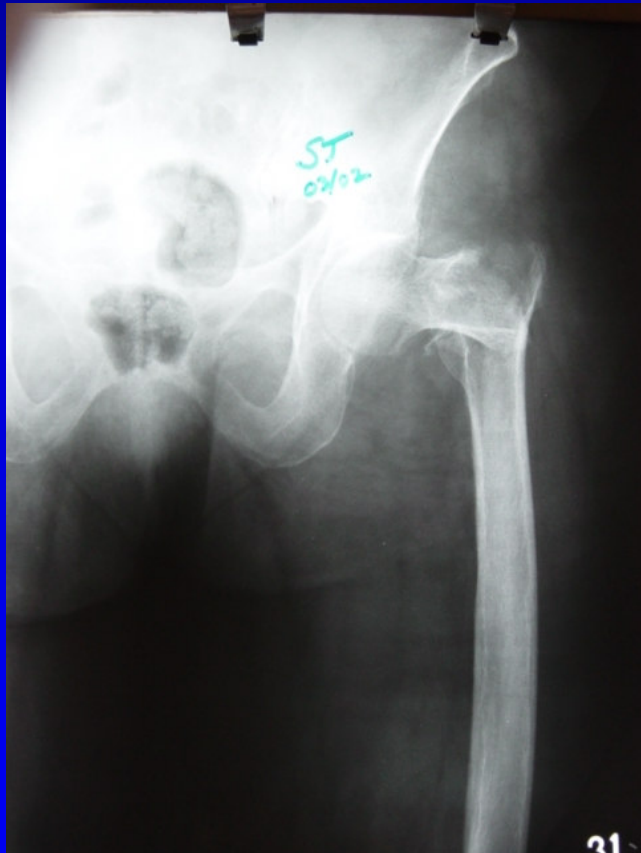
SUGGESTIONS:

- Early Mobilization
- Modification in Type of Implant & Nature of Surgery
- Walking Aids, Splints & Braces



GERIATRIC TRAUMA

Fracture IT Managed with
Primary Bipolar Hemi Replacement





OSTEOPOROSIS

SPECIAL ISSUES:

- Weak Bone
- Difficult to have Stable Purchase in the Bone
- Implant Cutout
- Immobilization further Increase the Problem

SUGGESTIONS:

- Medical Treatment for Osteoporosis
- Use of Intra - Medullary Devices
- Early Mobilization with Braces



OSTEOPOROSIS



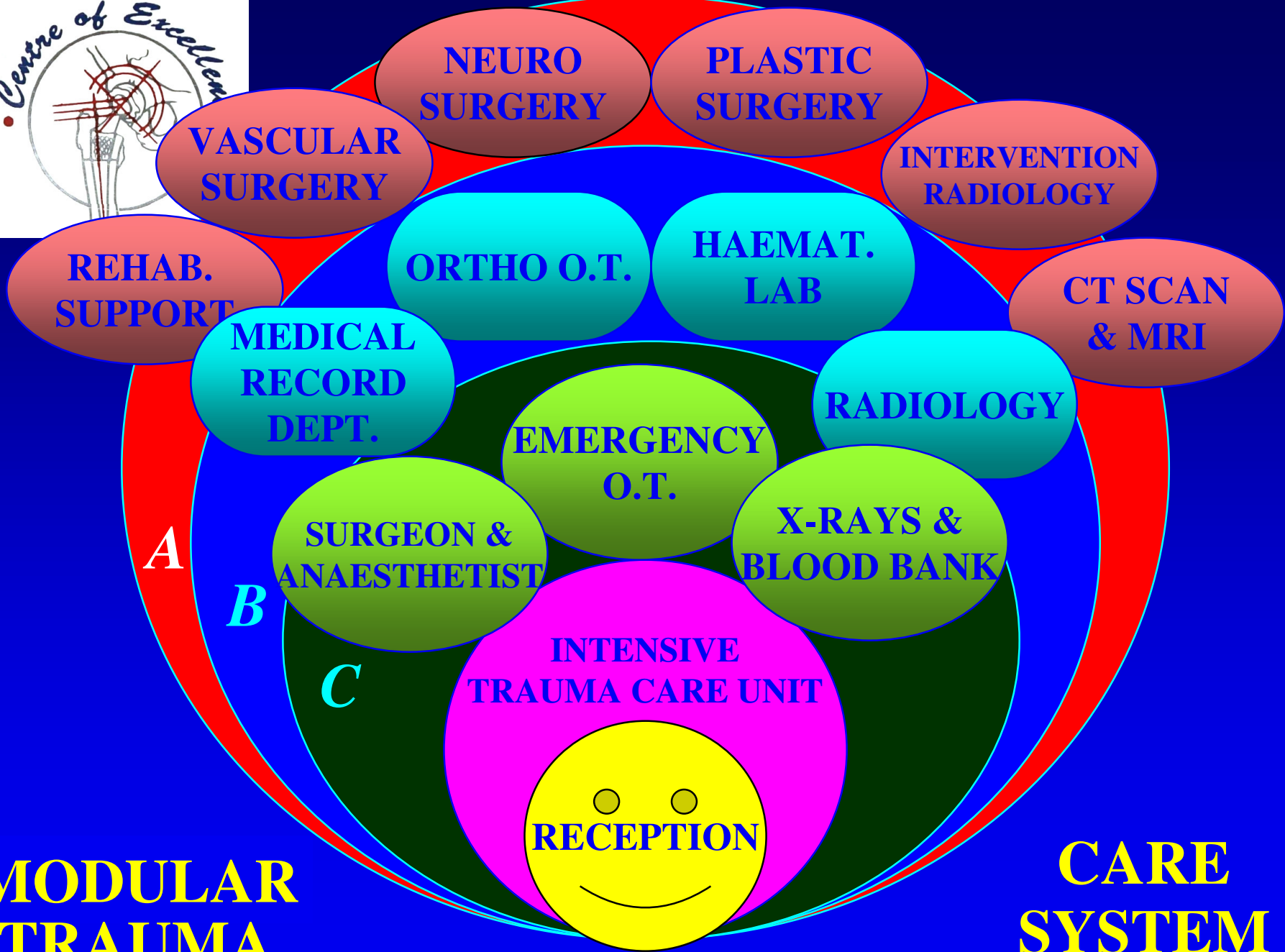
IM Fixation with SIRUS Nail





MEDICAL MANAGEMENT OF OSTEOPOROSIS

- Calcium Supplements
- Vitamin D / Calcitriol Supplements
- Raloxifene
- Bisphosphonates: More Patient compliance with Once a Week dose
- Physio Therapy: All Joint Mobilization
- Swimming



**MODULAR
TRAUMA**

**CARE
SYSTEM**



MODULAR TRAUMA CARE SYSTEM

- A** dvance : University,
: Large Hospitals
- B** asic : Medium District Hospitals
- C** ore : Peripheral Medical Aid
: Resuscitation / Airway
: Communication



THE SUCCESS

ABC

- Co-ordination
- Documentation
- Protocols
- Research



SPECIALITY UNIVERSITY TRAINING

- Intensivist
- Trauma Surgeons



MILLENNIUM TRAUMA CARE

- Minimally Invasive Techniques
- Computer Assisted Surgeries
- Navigation
- Robot Surgeons





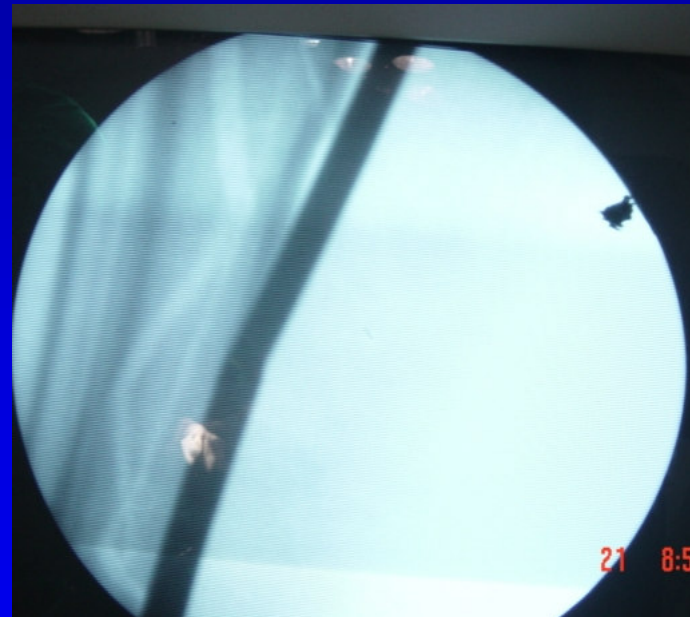
MINIMUM INVASIVE TECHNIQUES

- Biological Fixation
- Skin Complications almost Nullified
- Better Scar
- Less Surgery Time
- Simple Learning Curve



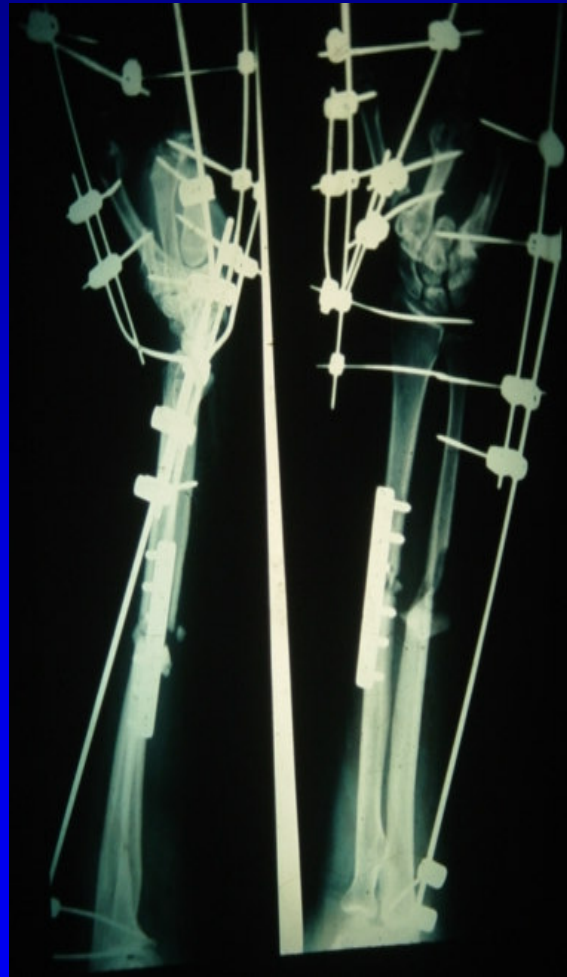


MINIMUM INVASIVE TECHNIQUES





COST EFFECTIVE INDIGENOUS SYSTEM





MILLENNIUM TRAUMA CARE

NO MATTER HOW MUCH THE
WORLD MAY BELIEVE IN
HIGH - TECHNOLOGY

IT'S THE

INNOVATIVE TECHNIQUES

THAT'LL HELP THE HUMANITY



IT'S A TEAM-WORK



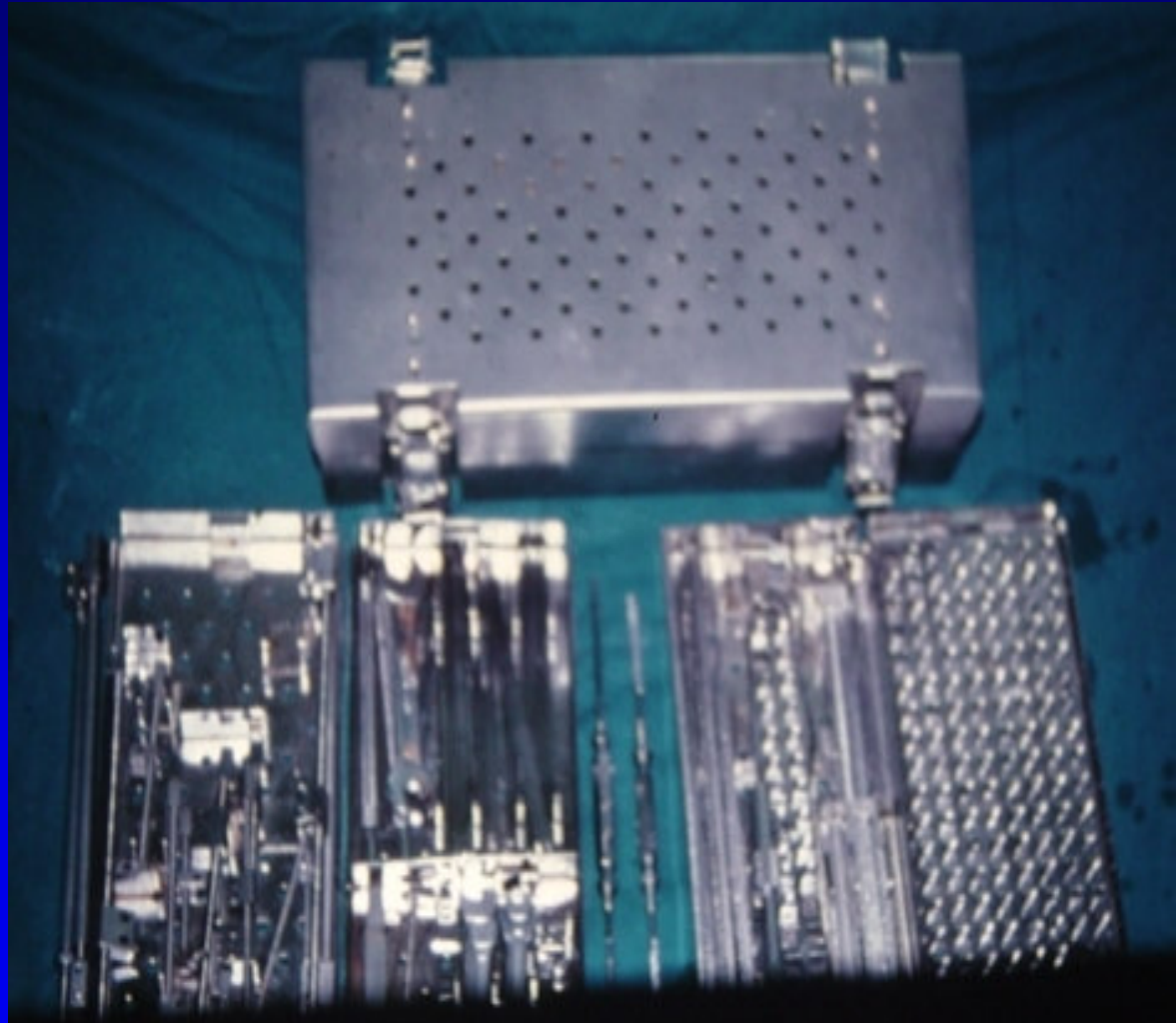
INDIGENOUS
TOTAL KNEE
SYSTEM





UMEX

- Simple
- Indigenous
- Light weight
- Easy application
- Modularity
 - Static
 - Dynamic
- Low complication rate



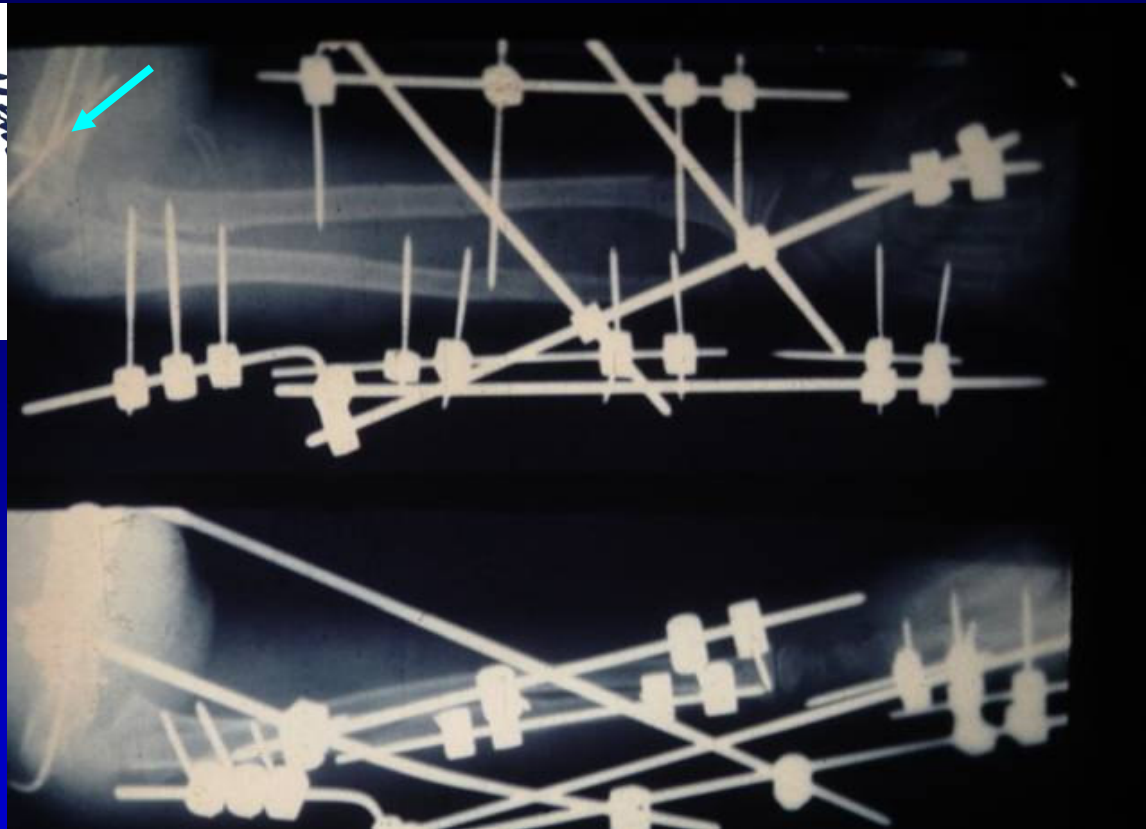
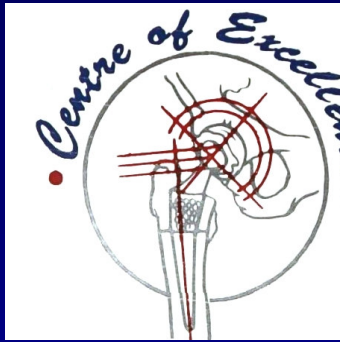
COST EFFECTIVE INDIGENUS SYSTEM



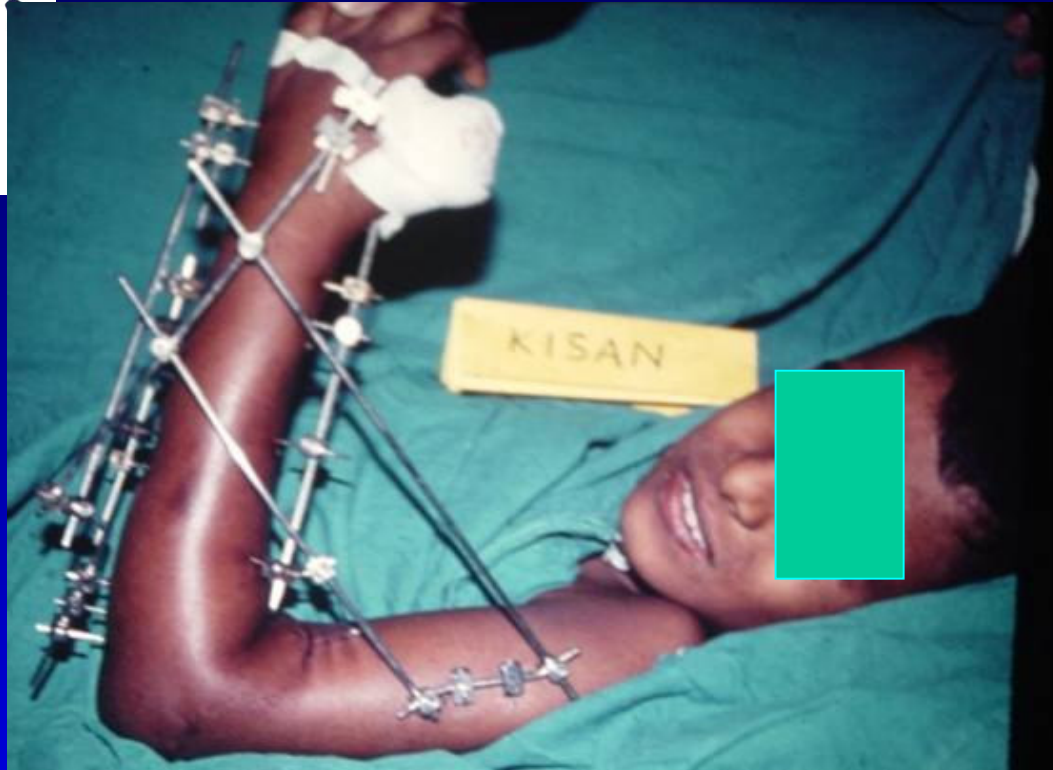
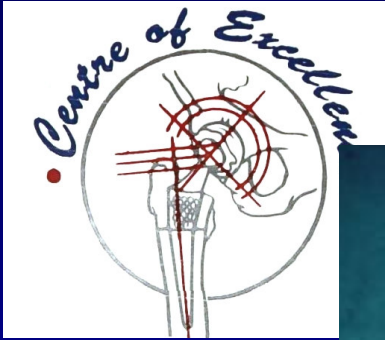
**8 Yr / M, H/o vehicular accident, Gr.III
Fracture Supracondylar humerus with bone
fragment extrusion and Vascular compromise.
Amputation thumb.**



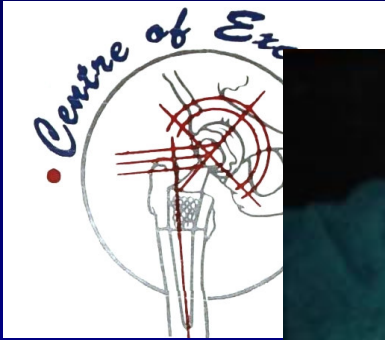
**X-ray : Segmental fracture radius & ulna with
Angulation and displacement**



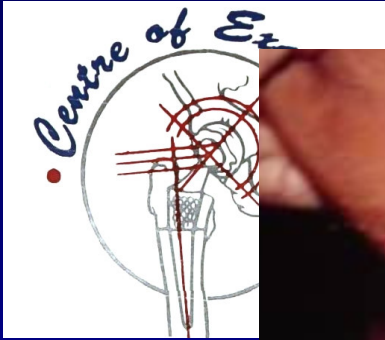
Cross 'K' wire fixation of supracondylar fracture
With stabilization of forearm with UMEX maintaining
Wrist in neutral position and 90° flexion of elbow



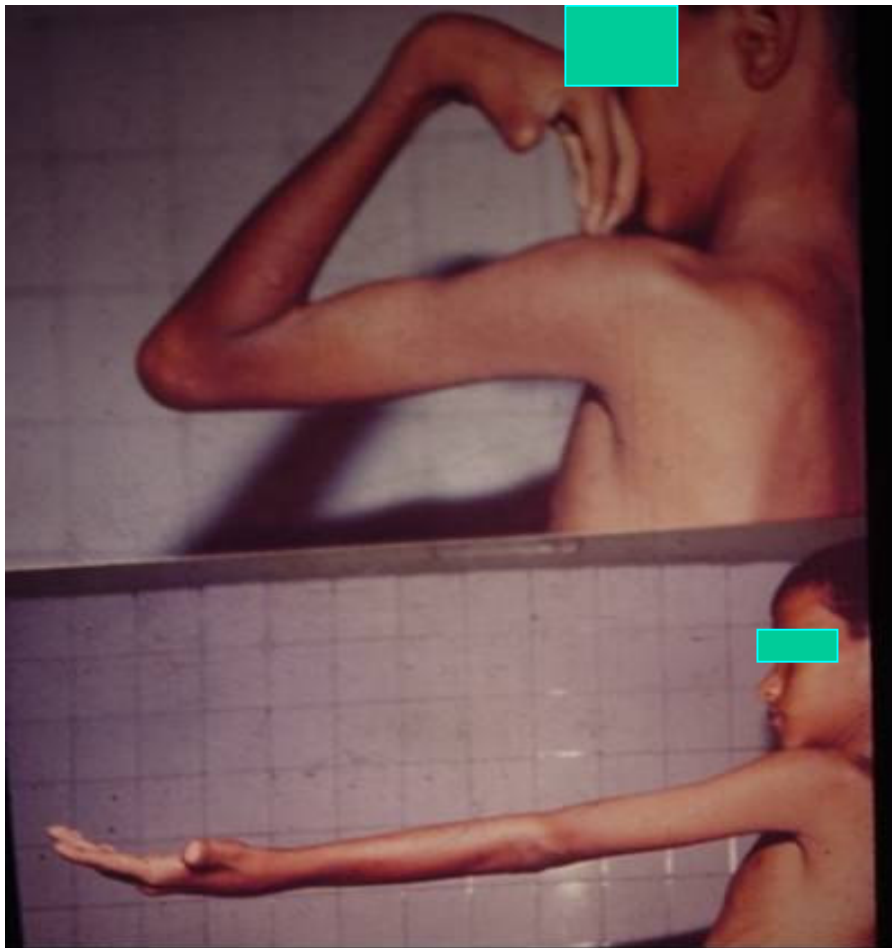
POST OPERATIVE CLINICAL PICTURE
Splinting devices incorporated with the fixator



Clinical picture – 3 weeks post operative
Humeral external fixator disassembly for
Elbow mobilization

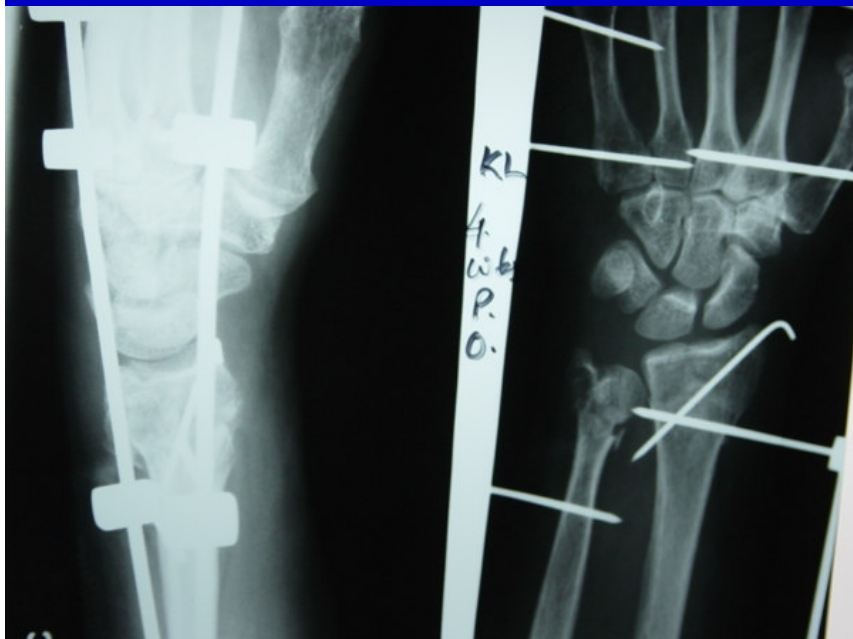
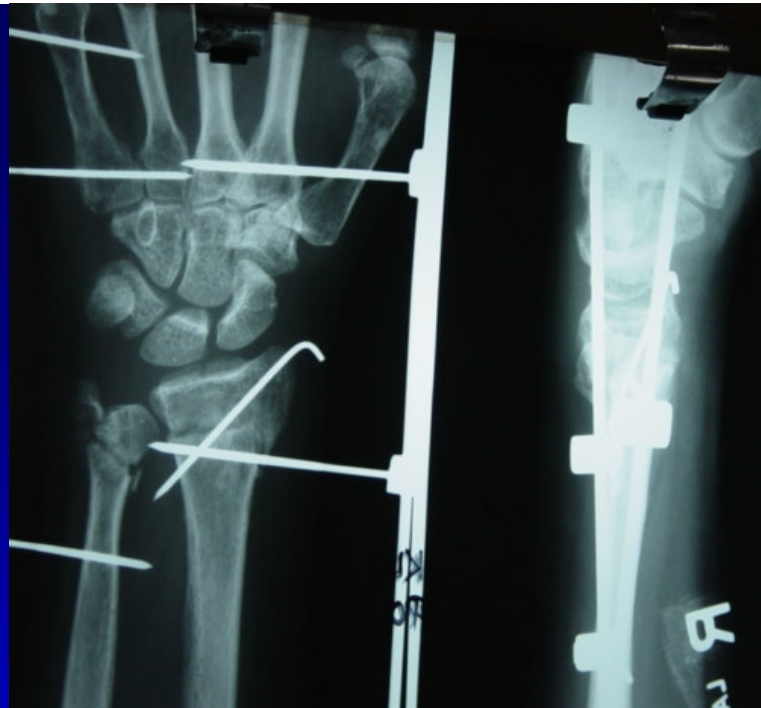


Patient mobilizing elbow with forearm Ex. Fix. In situ

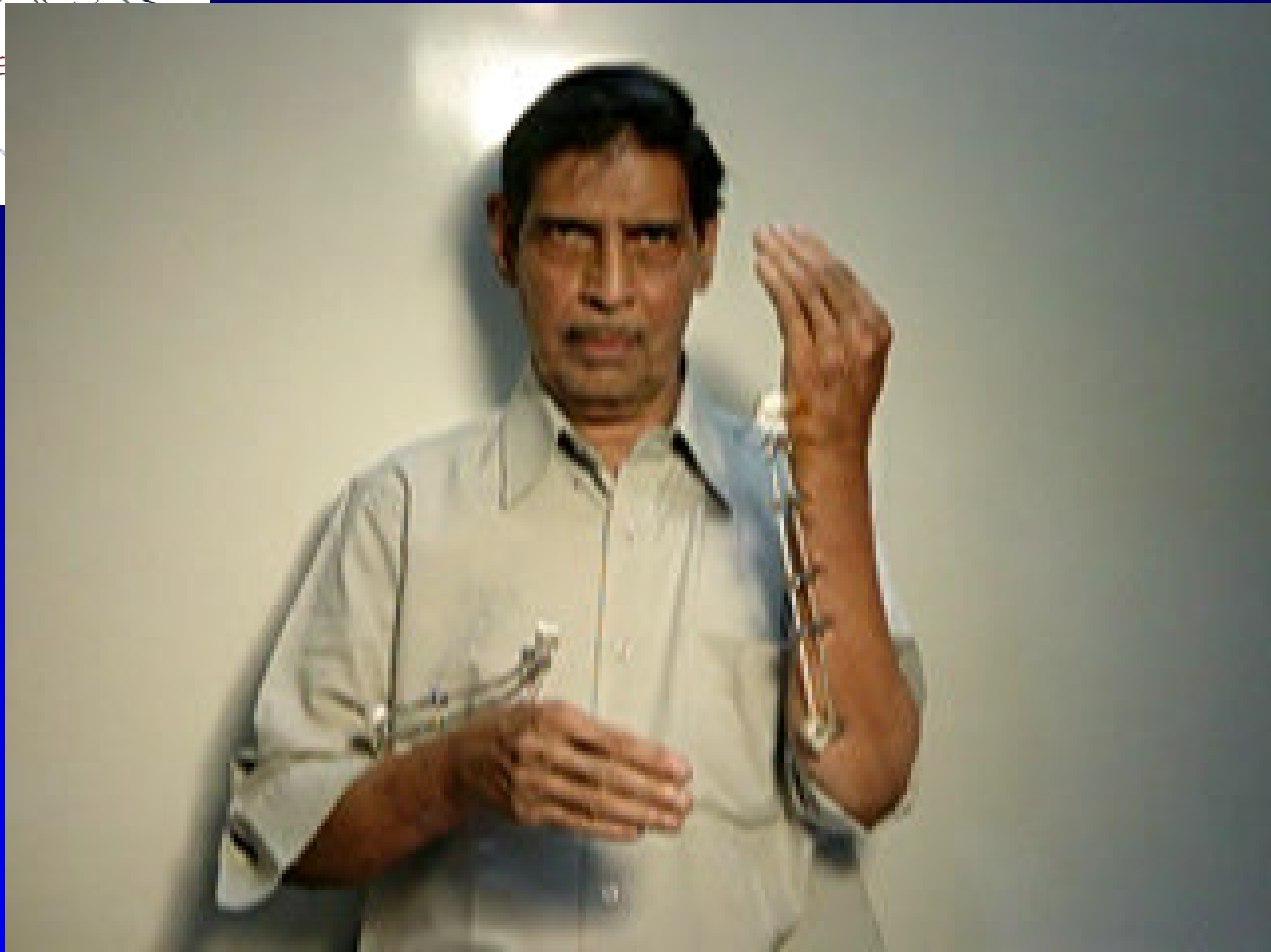


Final function Of elbow
clinically united fractures

Radiological bony union
of fractures with
remodelling
3 Months post- injury









45/m

Rotational cleavage
injury



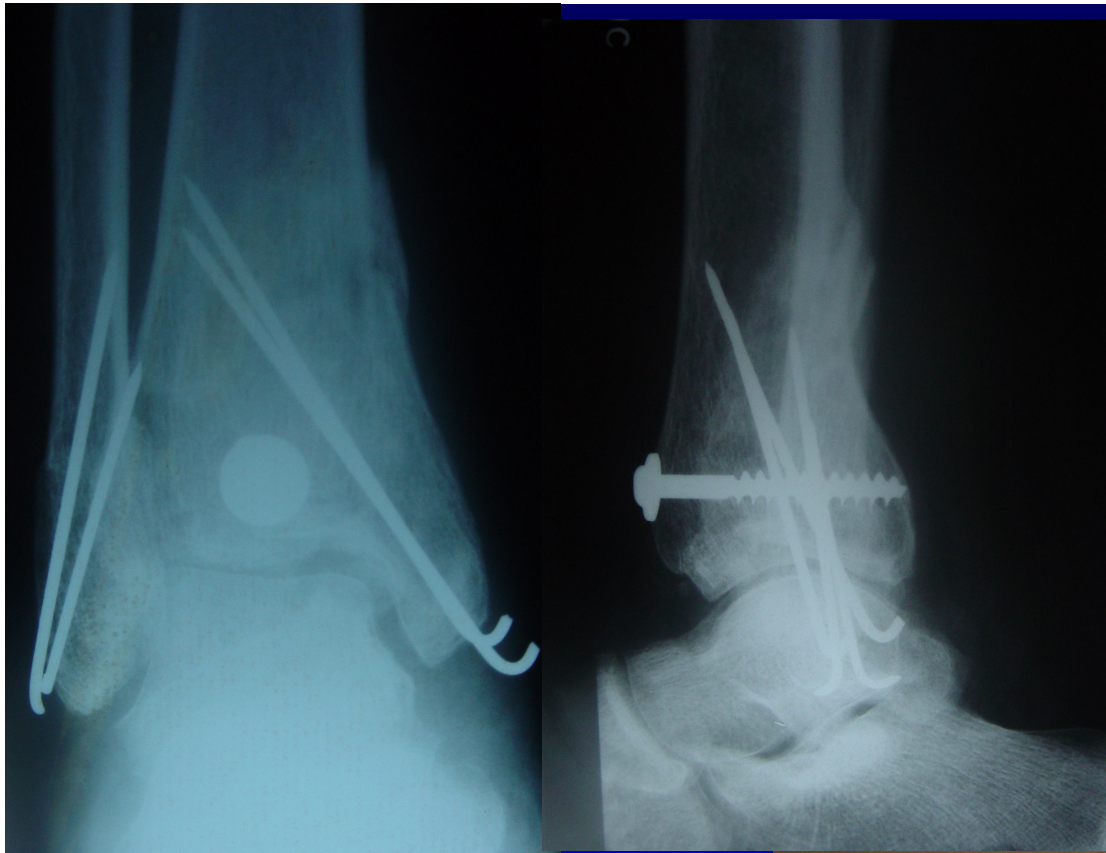
M. I. S.

Percut. Fixation

Neutralization by
Elastic exfix.

Revascularization

Through tendocapsular
cuff



M. I. S.
Final result





35/M, Policeman
Road traffic accident
Compound grade III A injury
Schatzker VI
Tibial plateau fracture

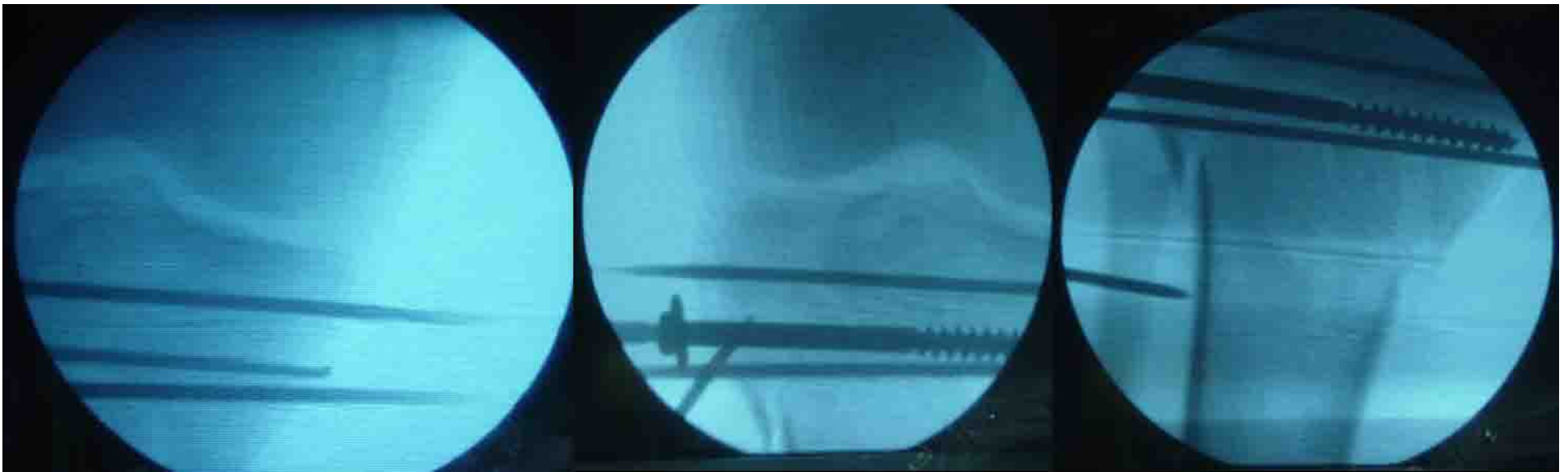
?????? ATLS



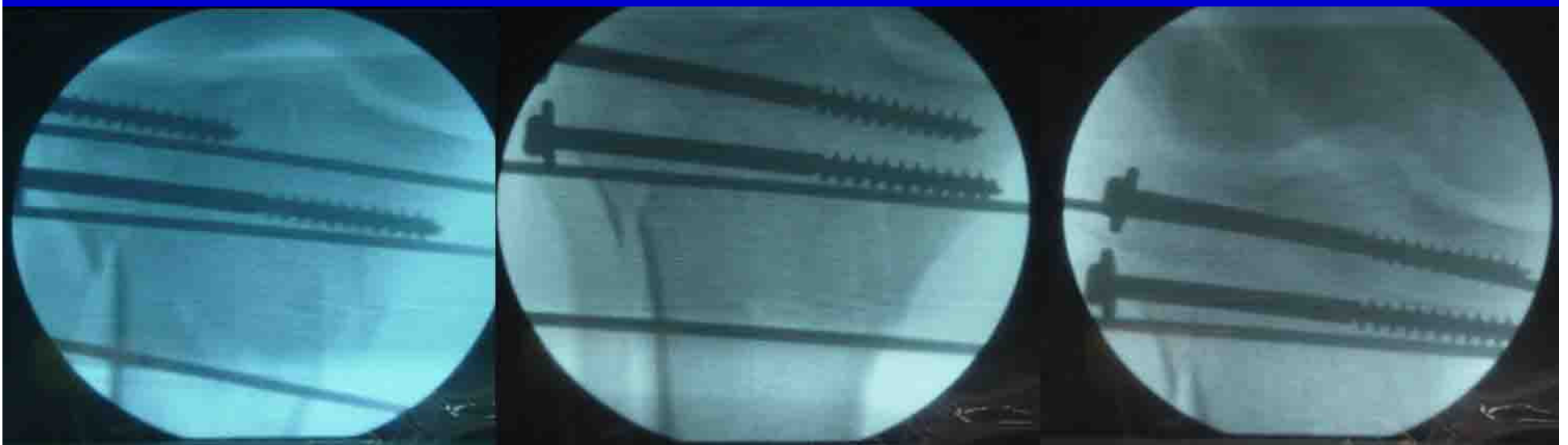
PRE-OP. and
INTRA-OP. pictures

Distraction alignment
Use of joy-stick to
Realign condyle

Subchondral K wire



Stagewise intraoperative correction and fixation
Percutaneous 6.5mm cancellous screws to achieve reduction





Final assembly
Interfragmental reduction by percutaneous screws
Neutralization by UMEX
Composite skeletal and vascular augmentation



Function after one week post-op.

Reduction in lymphovenous stasis
Improved perfusion

Stable healing wound

No infection

Composition of delta frame



Consolidation
6 week

Post-op

Good knee
bending
& quadriceps
function





Functional outcome

Early

Late



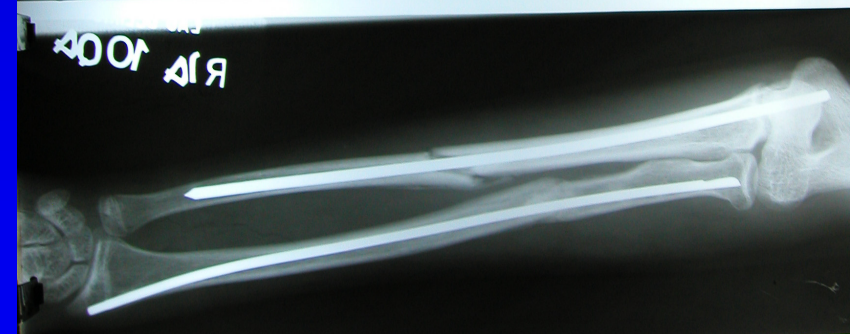
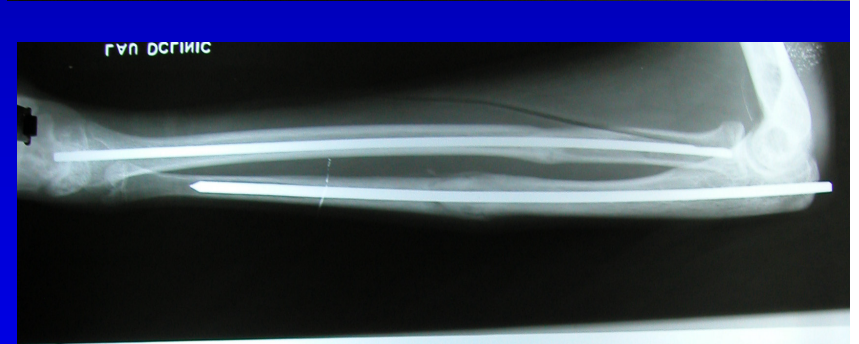
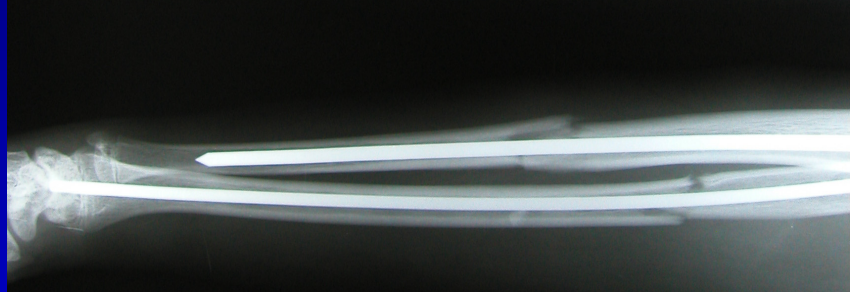
Function after 2wks. Post-op.



Patient FWB ambulating without Support
4 mths.post-op.

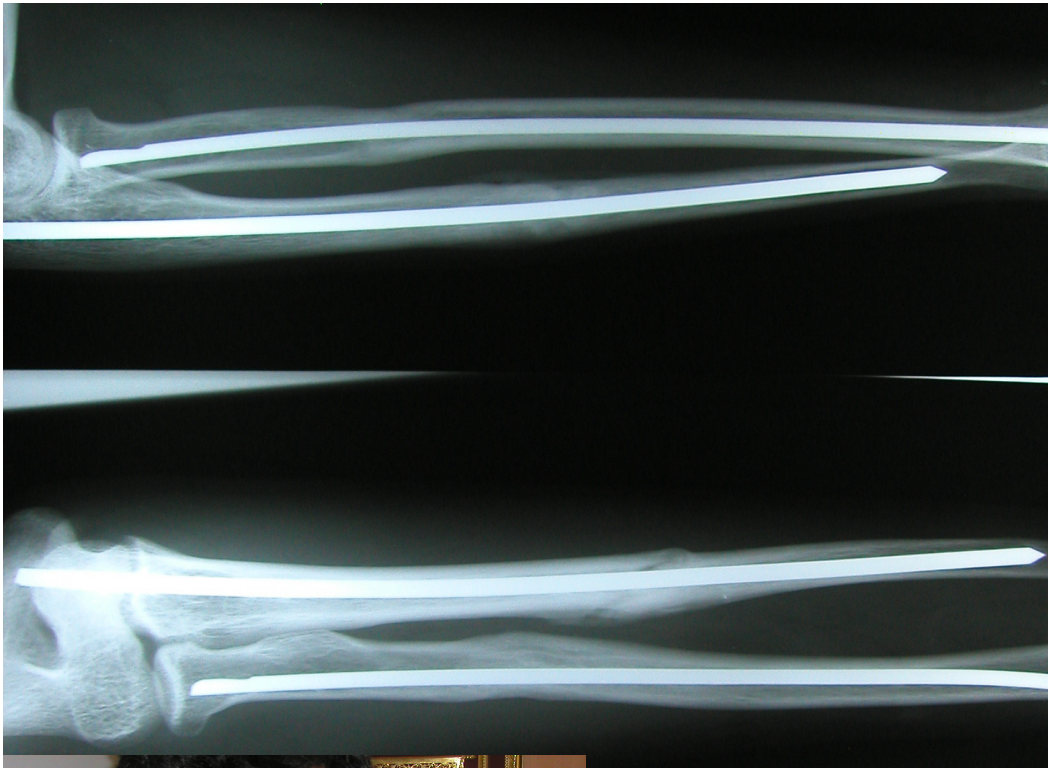


1 year post op



Forearm fracture with displacement

Treated by closed square nailing



Final result



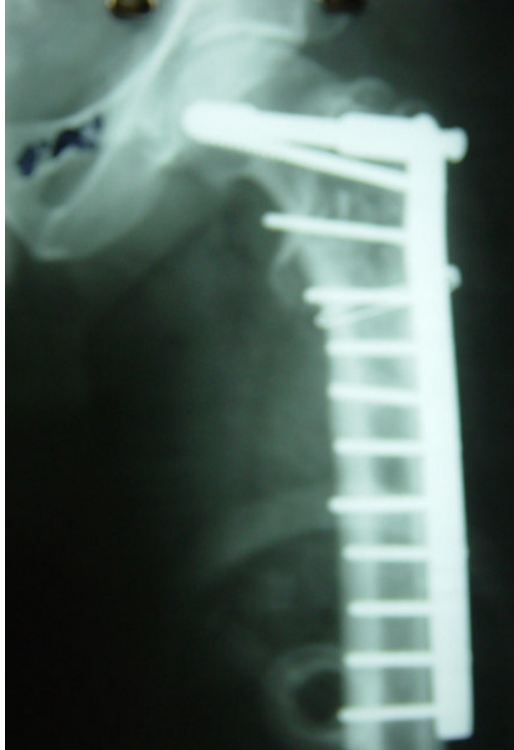
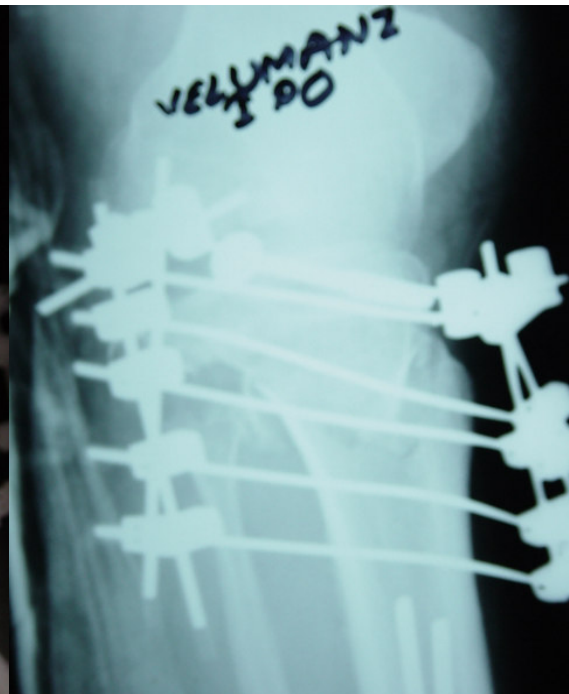
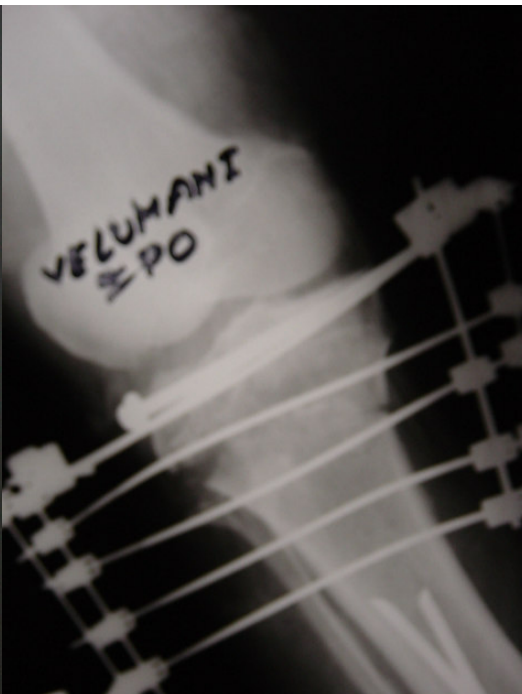
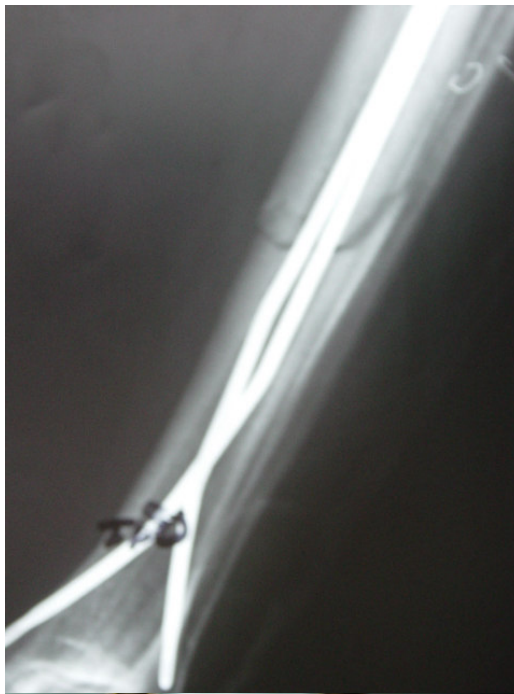


High velocity trauma

Road traffic accident

Floating knee

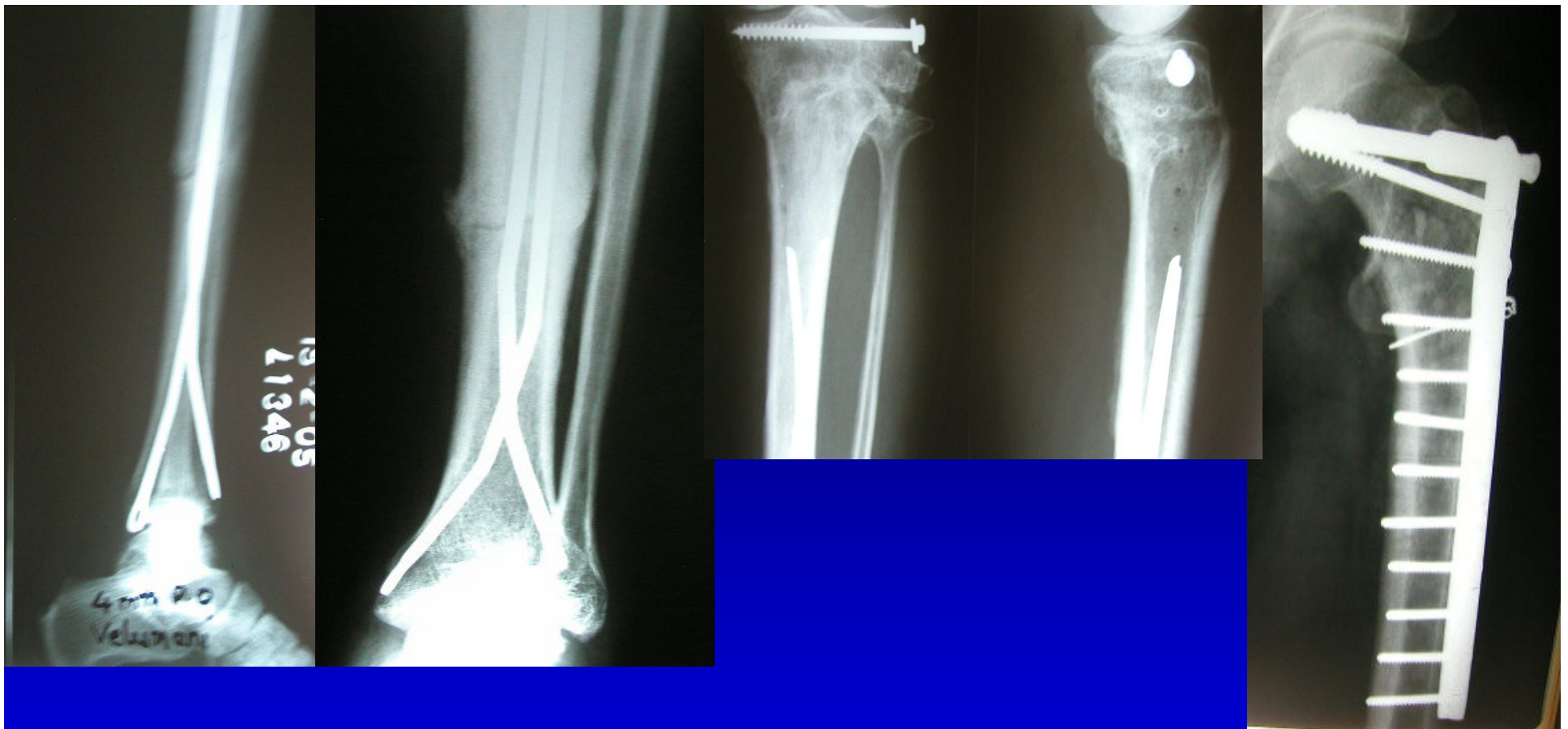
**Fracture subtrochanteric femur,
Fracture comminuted tibial plateau
Fracture shaft tibia**



ORIF #
SUBTROCH.

CLOSED
PERCUT.
SCREW
WITH UMEX
TIB. PLATEAU

CLOSED
ENDER
NAILING TIBIA



BONY UNION

4 MTHS. POST-OPERATIVE

UMEX REMOVED AFTER 6 WKS POST-OP.



**DEVELOPING INDIGENOUS
IMPLANTS**

**SAME QUALITY
COST-EFFECTIVE**





THE ECONOMICS OF TRAUMA CARE

- National Policy
- Insurance
- Cost Effective Care
- N.G.O. / Industry Participation





TRAUMA MANAGEMENT

Multidisciplinary - Multipersonal
Team Work.

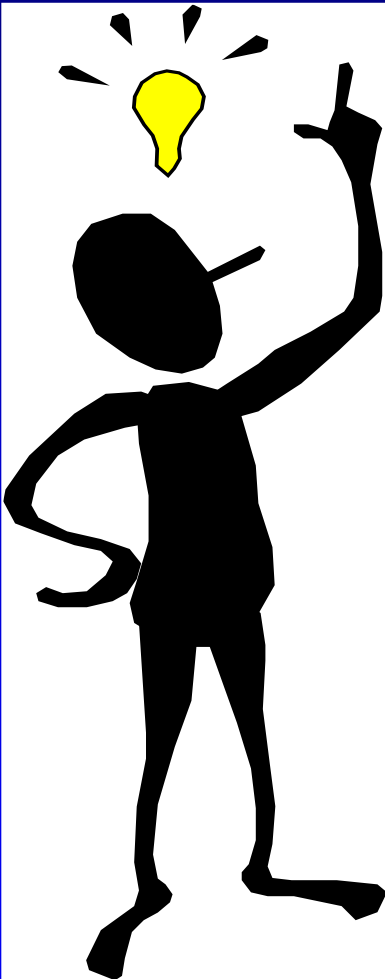
Based on Specified Responsibilities,
Coordinated Action
With Commitment to

Once Responsibility & Accountability.

To offer

Care, Comfort, Compassion & Commitment

For Total Recovery.



MESSAGE

TRAUMA MANAGEMENT

Its not only important to

Save A Life / Limb

But to ensure that

THE EFFORTS

Help the victim to end up with

Good Quality of Life

with no or minimal

Functional Disability.



THANK YOU

