



DEPARTMENT OF ORTHOPAEDIC SURGERY



ACTIVITY REPORT 2004-05

GANGA HOSPITAL
COIMBATORE, INDIA

FOUNDERS



Mrs Kanakavalli Shanmuganathan & Dr. J.G.Shanmuganathan

*Their vision,commitment and hard work laid foundation for this institution ...
...By example, they continue to inspire us.*

VISION

- To build a unit that would showcase to the world the best in patient care, surgical expertise, academics, medical ethics and state-of-the art technology.

MISSION

- To provide quality treatment at affordable cost so that the expertise will not be denied to any citizen of our country.
 - To be a unit which will be a pride of our country.

Highlights 2004 - 2005

CLINICAL WORK

- Total new out-patient registrations :20616;21622
- Total admissions : 4586; 4951
- Total surgeries : 4287; 4592

RESEARCH COLLABORATIONS

- FEM Study of Spine RUSH University, Chicago
- Diffusion across scoliotic intervertebral disc
 - Yves Cotrel Foundation, Paris
- Mechanical effects on disc cell biology
 - Micro-biological Laboratories, Coimbatore
 - Central Leather Research Insitute, Chennai
 - Christian Medical College, Vellore

EVENTS

- Launch of Computer Navigation Surgery
- International Training Centre for Navigation Surgery, BrainLAB

COURSES CONDUCTED

- Ganga Spine Course, May 2005
- Continuing Orthopaedic Education, Sep 2005

COMMUNITY SERVICE

- Project Helpline
- First Aid Programmes for Police and Public
- Public Awareness programme on Arthritis
- Arthritis update for General Practitioners
- Educational fellowships for the needy
- Free first aid centre with St John's Ambulance
- Accident Helpline Centers on National Highway

SALIENT AWARDS

2004

- ISSLS Spine Research Award, 2004
- BC Roy Silver Jubilee Research Award, Medical Council of India, 2004
- ASSI Depuy Best Research Award, 2004
- IGOF Mohandoss Weller Gold Medal, 2004
- IAA Best paper award at Mid term meet, 2004
- Best Paper of the Session Award (Trauma) at IOACON, 2004
- K.P. Srivatsava Gold Medal for the Best Poster at IOACON, 2004
- Prof. C. Vyageswarudu Gold Medal, TNOACON, 2004
- Best Poster Award, TNOACON, 2004
- Prof M Natarajan Gold Medal, TNOACON, 2004

2005

- Macnab La Rocca Travelling fellowship Award of ISSLS, 2005
- Clinical Excellence Award by BrainLAB, 2005
- Hari Om Ashram Alembic Research Award, Medical Council of India, 2005
- ASSI Depuy Best Research Award, 2005
- Dr Ingahalikar Gold Medal, ASSI, 2005
- EinHorn's Oration at Indian Pediatric Association, 2005
- Prof. Vyageswarudu Oration at APOACON, 2005
- Prof Shantharam Shetty Gold Medal at KOACON, 2005

Looking Ahead



It gives me great pleasure to share with you the activities of our department.

The years 2004 and 2005 witnessed significant achievements in clinical, academic and research activities that have placed the institution at the forefront in the national scene. This has boosted our commitment and confidence to build a unit that would showcase to the world the best of patient care, surgical expertise, ethical practice and state of art technology.

The motto 'Patient first' guides our decisions and we continue to strive to make the clinical services in line with the best practices available to match the benchmark of the leading institutions in the world. We also believe that every life deserves world-class care and are committed to provide quality service at affordable cost to all sections of our society.

The world is looking to India in many fields of information technology and industry. We look forward to shouldering the responsibility of holding our Indian flag high in the field of medical practice also. I am confident that we would achieve this with the blessings of the Almighty, the untiring efforts and enthusiasm of our team, the continued support of our referring physicians and the confidence and trust of our patients.

Very Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Rajasekaran'. The signature is stylized and fluid.

Dr. S. RAJASEKARAN

M.S. (Ortho)., Dip. NB (Ortho)., F.R.C.S.(Ed)., M.Ch (Liverpool)., Ph.D.
Director and Head, Department of Orthopaedics & Spine Surgery

The Team



Coming Together,

Sharing Together,

Working Together,

Succeeding Together.

Dr.S.Rajasekaran

M.S. (Ortho)., Dip. NB (Ortho)., F.R.C.S.(Ed)., M.Ch (Liverpool)., Ph.D.
Director and Head Department of Orthopaedics & Spine Surgery



PRESIDENT

- World Orthopaedic Concern, UK

CHAIRMAN - TRAUMA SECTION

- Asia Pacific Orthopaedic Association

NATIONAL COUNCIL MEMBER

- Asia Pacific Orthopaedic Association

EXECUTIVE COMMITTEE MEMBER

- International Society for Study on Lumbar Spine, Canada

SECRETARY

- Association of the Spine Surgeons of India

PRESIDENT

- Association of British Scholars, Coimbatore Chapter, British High Commission, India

PRESIDENT-ELECT

- Computer Assisted Orthopaedic Society, INDIA

REVIEWER

- Journal of Bone and Joint Surgery (B)
- INJURY
- Journal of Orthopaedic Surgery
- Journal of Orthopaedic Science

EXAMINER

- National Board of Examinations, New Delhi



Dr. S. Raja Sabapathy

M.S. (Gen)., M.Ch. (Plastic)., DNB (Platic)., F.R.C.S (Ed).
Director and Head Department of Plastic Surgery,
Hand Surgery and Reconstructive Microsurgery



Prof. Dr. M. V. Daniel

M.S. (Gen)., M.S. (Ortho)., FACS (Ortho)
Academic Director, Department of Orthopaedics

The hospital's work is supervised and guided by Dr. S. Rajasekaran, Head of the department of Orthopaedics and Spine surgery, Dr. S. Raja Sabapathy, Head of the department of Plastic, Hand and Micro surgery, and Prof. M. V. Daniel, Academic Director for Orthopaedic Surgery.

Orthopaedic Department

The department is well staffed with four senior consultants, two senior registrars, three registrars, four spine fellows, two trauma fellows, one arthroplasty fellow, four tutors in orthopaedic surgery and 10 post graduates.

Dr.S.Rajasekaran is the Clinical Director and Head of the Department of Orthopaedics and Spine Surgery. He was the best outgoing student of Coimbatore Medical College and stood first in the University of Madras in the orthopaedic post graduate examination. He completed FRCS, Edinburgh in 1989 and topped the University of Liverpool in the MCh orthopaedic examination, 1990 winning both the University Medals.

He has a PhD in Spinal Tuberculosis. His research work on spinal infections was also selected for the 'Tamil Nadu Scientists Award' by the Government of Tamil Nadu, the prestigious 'Dr. B.C. Roy Silver Jubilee Research Award' for original research work by the Medical Council of India for the year 2002 and the 'Sofamar Danek Award' of the International Society for the Study of Lumbar Spine, Canada. He headed the research on disc diffusion which was awarded the coveted 'ISSLS Lumbar Spine Research Award' from International Society for Study on Lumbar Spine - Canada, ASSI - Depuy Best Spine research award of the Association of Spine Surgeons of India and 'Best paper presentation award of 'Brit Spine' Nottingham, England.

He is currently the President of "World Orthopaedic Concern".

Special Interests:

Spine Surgery, Major Trauma and Arthroplasty

Consultants



Dr. J. Dheenadhayalan
M.S. (Ortho)

Dr. J. Dheenadhayalan joined the department in 1992 and became a Consultant in 1998. He had his basic orthopaedic training at Mysore, followed by advanced training at Nuffield Orthopaedic Centre, U.K. and a fellowship in Joint Replacement Surgery in Germany. He has been the Organising Secretary of International Conferences on Spine Surgery in 1994, 1996 and 2000, of the Indo German Orthopaedic Foundation Meeting, 1999 and of the International Knee Course, 2001.

Founder member of the trauma section of Asia Pacific Orthopaedic Association, Secretary General elect of the World Orthopaedic Concern International UK, Japanese Orthopaedic Association Travelling Fellow, Member of Girdlestone Association, UK.

Special Interests:
Trauma, Shoulder &
Upper Limb Surgery



Dr. Ajoy Prasad Shetty
M.S. (Ortho), D.NB (Ortho)

Dr. Ajoy Prasad Shetty joined the department in 1994 and became a Consultant in 2000. He had his basic orthopaedic training at Bangalore followed by advanced training in Spine Surgery at Adelaide, Australia. He was the Organising Secretary for many International Workshops on Spine Surgery and for the periodic Instructional Courses on Spine held on the subjects of low back pain and spinal deformities. He was a teaching faculty at the AO Spine Course at Mumbai 2005 and Ganga Spine Course 2005.

He was awarded the Prof T.K. Shanmugasundaram Gold Medal of Tamil Nadu Orthopaedic Association in 1995 and is also the co-Author of ISSLS Spine Research Award Winning Paper.

Special Interests:
Trauma and Spine Surgery



Dr. S.R. Sundararajan
M.S. (Ortho)

Dr. S.R. Sundararajan joined the department in 1997 and became a Senior Registrar in 2001.

He received Advanced Training in Arthroscopy and Arthroplasty at Flinders Medical Centre, Australia and became a Consultant in 2004.

He has presented many international papers in trauma including Asia Pacific Orthopaedic Association meeting and also has been a teaching faculty at the IOACON, 2005, Mumbai.

Special interests:
Trauma and Arthroscopy

Anaesthesia Team

The Department of Anaesthesia & Intensive care has 3 consultants and 3 registrars. The department provides comprehensive peri-operative care to the patients and forms the backbone of the Hospital. They are actively involved in resuscitation of trauma victims, conceptualised 'On arrival Nerve block' to trauma victims to make them pain free instantaneously. They provide post operative care including acute pain services and care of the critically ill patients in the intensive care unit. In association with B-Braun Aesculap Academy the department has started a Regional Anaesthetic Guidance & Training Centre, the first of its kind in the country.



Dr.Maheshwari S.Kumar, Dr. G. Venkateswaran, Dr.J.Balavenkatasubramanian, Dr.C.Sekar, Dr.V.Ravindra Bhat

Dr. V.Ravindra Bhat, M.D., DA, DNB, joined as a consultant in 1993. He was the co-chairman of the scientific committee of ISA National Conference 2002 held at Coimbatore. Dr.C.Sekar, MD joined as a consultant in July 1995. His area of interest is anaesthesia for major spine surgeries. Dr. J.Balavenkatasubramanian, MD, DA joined as a consultant in April 1995. He was the chairman of the scientific committee of ISA National Conference 2002 held at Coimbatore. Dr. Maheshwari S. Kumar had her training at Ramachandra Medical College, Chennai and is a senior registrar from 2005. Dr. G. Venkateswaran, DA, DNB has joined the unit as a registrar in 2002.

Spine Team

The Spine Team consists of two consultants - Dr. S Rajasekaran, Dr. Ajoy Prasad Shetty and four Spine Fellows. In 2001, the spine unit was recognized as the first unit in the country for super speciality training in spine surgery by the National Board of Examinations, New Delhi. The fellows have ample exposure to clinical problems and facilities for research with adequate funding from the Ganga orthopaedic Research and Education Fund.

Dr. J. Naresh Babu was one of the principal research member of the ISSLS award winning work on human lumbar disc diffusion and recipient of the ASSI-Depuy Best Spine Research Award for the year 2003. The study on the method of measurement of in-vivo disc diffusion using serial post-contrast MRI has been published in Spine Journal in Dec 2004.

Dr. Thomas Kishen was actively involved in two prospective trials on cervical discectomy and limited decompression for multi level lumbar spinal stenosis and recipient of the ASSI-Depuy Best Spine Research Award.

Dr. Vidyadhara S is conducting basic research work on the correlation of the disc diffusion with disc biology in Adolescent Idiopathic Scoliosis. This work got the ASSI-Depuy Best Research Award for 2005. His clinical research was on role of cervical laminectomy in spondylotic myelopathy and also on efficacy of Iso-C navigation which won Dr. Ingalthalika's Gold Medal for the Best Paper Presentation at ASSICON 2006.

Dr. Sree Harsha CK is working on the comparison of conservative management with biological fixation of thoracolumbar burst fractures. Both Dr. Naresh Babu and Dr. Thomas Kishen have completed their fellowship in Aug 2005. Dr. Ashish Jaiswal and Dr. Vijay Kamath are the new entries to the team in Aug 2005.



Spine Consultants
Dr. S. Rajasekaran and Dr. Ajoy Prasad Shetty

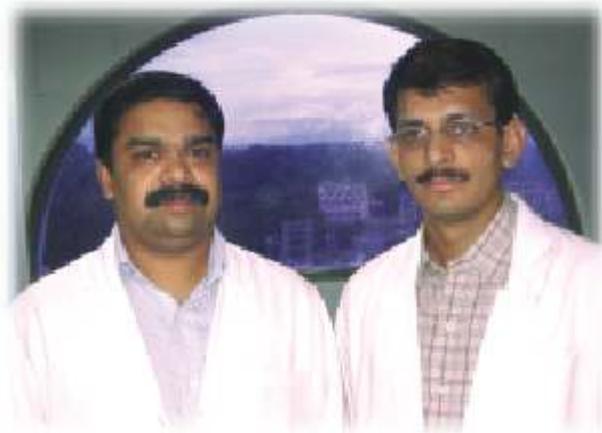


Spine Fellows
Dr YK Pithwa, Dr. Naresh Babu & Dr. Thomas Kishen



Spine Fellows
Dr. Vidyadhara S, Dr. Sree Harsha CK Dr Ashish Jaiswal and Dr. Vijay Kamath

Spine Fellows	
Year	Name
2001-03	Dr I Ramakanth Rao
2002-04	Dr Y K Pithwa
2003-05	Dr J Naresh Babu Dr Thomas Kishen
2004-06	Dr Vidyadhara Dr Sree Harsha
2005-07	Dr Ashish Jaiswal Dr Vijay Kamath



Trauma Fellows
Dr Pushpasekar and Dr Pushkar Chawla

Trauma

The trauma service of the hospital has 24 hour consultant cover and works closely with the department of plastic surgery to provide aggressive global reconstruction in patients with open injuries. The large case turnover provides a fertile ground for surgical training and the unit is recognised by the National Board of Examinations, New Delhi for a two-year super speciality training in trauma surgery.

The department has two trauma fellows one selected by the National Board and the other by the Unit. Dr Pushkar Chawla is the first fellow from the National Board for the years 2004 to 2006 and Dr Pushpasekar from the current Ganga Trauma fellow.

The trauma fellows actively participate in the management of all trauma patients and are provided good hands on surgical experience. They are also actively involved in the prospective trials in the management of open injuries and other research projects in trauma.

Arthroplasty

Dr S Rajasekaran heads the arthroplasty team and has the experience of performing more than 800 joint replacements. Dr P Dhanasekara Raja is the senior registrar in arthroplasty. After his basic training in Stanley Medical College and Ganga Hospital, he had advanced training at Flinder's Medical Centre, Adelaide and Fairfield Hospital, Sydney. Dr N Rajkumar is the Registrar in the unit. They are involved in the accurate pre, intra and post operative documentation and also counseling of the patients.

The unit currently performs 250-300 joint replacements a year. The addition of image guided surgery (BrainLAB, Germany) has increased the accuracy of surgery and has made documentation perfect. Many prospective trials are being done currently in the unit mainly investigating the applications of computer navigation in difficult joint replacement surgeries. The Unit has also become a Reference Centre for training of navigated joint replacement surgeries for a large number of trainees all over India.



Arthroplasty Team
Dr S. Rajasekaran with Dr N. Rajkumar and Dr P. Dhanasekara Raja

Clinical Work



Honorable past president Thiru R. Venkatraman during discharge after treatment for shoulder fracture

I am happy to find that the Ganga Hospital Coimbatore is functioning with efficiency and technical skills comparable to some of the best in developed countries.

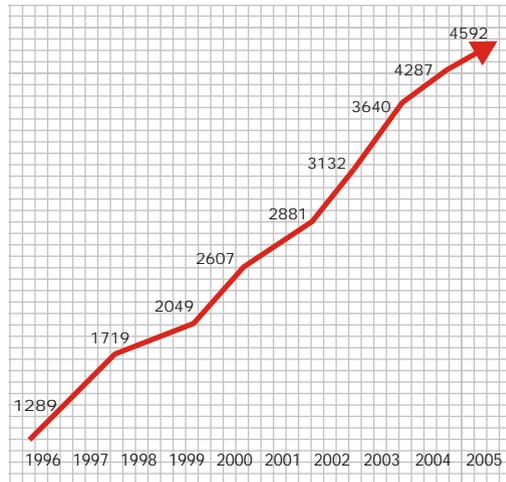
What makes an institution gain high reputation are the skills of the doctors and the hospital staff. Besides these are a number of activities like the school of nursing and also social welfare work.

I wish the Ganga Hospital combined success and prosperity.

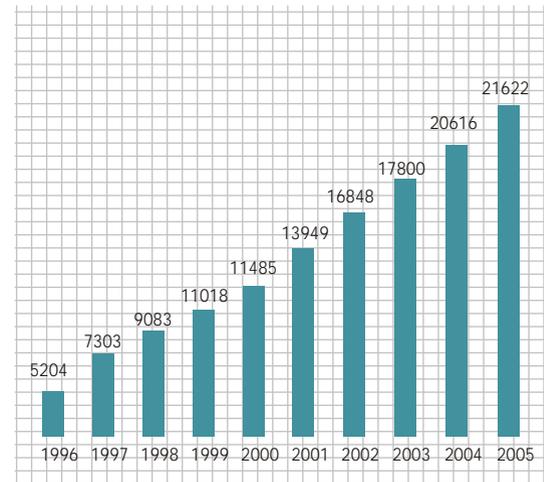
R. Venkataraman
Ex-President, India.

"A patient can offer us no higher tribute than to entrust us with his life and health, and by implication, with the happiness of his entire family. To be worthy of this trust, we must submit for a life time effort in the search of knowledge and of constant devotion to every detail in every operation that we perform"
- Sir Berkley Moynihan

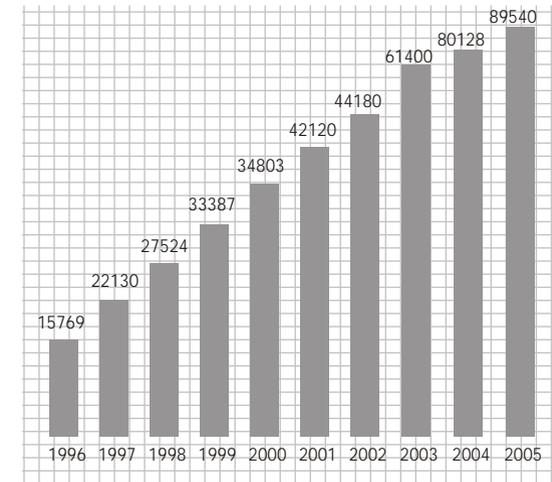
Out Patients



Number of Orthopaedic Surgeries



Out Patient Registration ■ New Patient



Out Patient Registration ■ Total Number of Out Patients

With 135 dedicated beds, 5 operation theatres, 21,622 new out patients, 89,940 total out patients and 6262 major surgeries, the unit stands as one of the premier institutes in the field of orthopaedic surgery in our country. The high clinical load is well managed by the staff who have strived to be the best in their fields through constant training and upgrading of skills. The operating theatres are functional 24-hours a day and are equipped with the state of the art equipments allowing skilled and demanding surgeries to be performed at any time of the day. The quality of clinical work is carefully documented and frequently monitored by a meticulous clinical audit. This has helped to a great extent to maintain the high standards of the work and improve the results of treatment for the patient.



Trauma



"To restore function after an accident, is to restore life"

Trauma - Clinical Work

A total of 3,563 trauma surgeries were performed in 2005 accounting for nearly 10 major trauma surgeries everyday. The large trauma load is managed round the clock by the availability of an orthopaedic and plastic surgical team members, three trauma theaters each fully equipped with Siemens image intensifier and state of the art instrumentation and implants. Five full time anesthesiologists provide continuous cover to the trauma theaters and to the trauma intensive care unit. Cardiothoracic, general and neurosurgeons are on call for patients with poly trauma.



Grade IIIb open fracture of both bones forearm treated by immediate debridement, plate osteosynthesis and groin flap cover. The unit has popularised the concept of "GLOBAL IMMEDIATE RECONSTRUCTION"

Grade IIIb open fracture both bones leg. Debridement, reamed interlocking nailing and primary closure done. The unit has vast experience of more than 750 open injuries treated by this revolutionary concept.

Trauma Surgery	1999	2000	2001	2002	2003	2004	2005
Interlocking Nailing	370	345	373	414	554	576	647
Plate Osteosynthesis	270	217	363	450	397	558	702
Hip Fractures	207	217	187	273	301	451	330
Major Open injuries	210	227	172	183	119	207	148
Major pelvic fracture	15	13	29	34	34	50	46
Knee injuries	200	186	178	268	298	381	427
Distal Forearm fractures	170	160	185	330	372	281	253
Shoulder injuries	62	77	68	67	66	80	39
Limb reconstruction for bone loss	14	20	64	53	56	61	67
Miscellaneous fractures	750	779	843	870	958	816	904
Total	2268	2241	2462	2759	3155	3461	3563

Trauma - Research

A Validated score for predicting salvage and outcome in Type IIIA & III B open tibial fractures (Accepted for publication in JBJS B)

Presently available lower limb injury severity scores are designed to assess combined orthopaedic and vascular injuries and have a poor sensitivity and specificity to predict salvage or outcome measures in type III A and B injuries. We designed a trauma score to grade the severity of injury to the three components of the injured limb: the covering tissues, the functional tissues and bones from one to five. Seven co-morbid conditions known to influence the management and prognosis were given a score of two each. The score was validated in 109 consecutive (Type IIIA -42; IIIB -67) open injuries of tibia. The total score was used to address the question of salvage and the outcome was measured by dividing the injuries into four groups (Group I - < 5; II - 6-10; III - 11-15 and IV - 16 and above of the total score)



Open grade IIIb fracture both bones leg . Debridement, reamed interlocking nailing and flap cover done.

An amputation threshold score of 14 had the highest sensitivity and specificity. The present score compared favourably to MESS with a specificity 100% and 17%; sensitivity 98% and 99%; positive predictive value of 1 and 0.975; negative predictive value of 0.7 and 0.5 respectively. A receiver operating characteristic curve constructed for 67 Type IIIB injuries to assess the efficiency of the scores to predict amputation, showed the area under the curve for this score was better (0.98, Std error 0.013) in comparison to MESS (0.93, Std error 0.039). All limbs in Group IV and one in Group III underwent amputation. Of the salvaged limbs, there was a significant difference amongst the three groups for the requirement of a flap for wound cover, time for union, number of surgical procedures required, total in-patient days and the incidence of deep infection ($p < 0.001$ for all). Individual scores for covering and functional tissues were also found to offer specific guidelines in the management of these complex injuries. The scoring system was found to be easy in application and reliable in prognostication for both limb salvage and outcome measures in Grade IIIA and Grade IIIB Open injuries of tibia.

Ganga Hospital Open Injury Severity Score (GHS)

Covering Structures:

Skin and Fascia	Score
Wounds with out skin loss. Not over the fracture	1
Exposing the fracture	2
Wounds with skin loss. Not over the fracture	3
Over the fracture	4
Circumferential wound with skin loss	5

Skeletal structures:

Bone and Joints	Score
Transverse / oblique fracture/ Butterfly fragment < 50% circumference	1
Large butterfly fragment > 50% circumference	2
Comminution / Segmental fractures without bone loss / Bone loss < 4 cm	3
Bone loss > 4 cm	4

Functional Tissues:

Musculotendinous (MT) & Nerve units	Score
Partial injury to MT unit	1
Complete but Repairable injury to MT units	2
Irreparable injury to MT units / partial loss of a compartment / Complete injury to posterior tibial nerve	3
Loss of one compartment of MT units	4
Loss of two or more compartments / Subtotal amputation	5

Co-morbid Conditions:

Add 2 points for each condition present

1. Injury débridement interval > 12 Hrs.
2. Sewage or organic contamination / farmyard injuries.
3. Age > 65 yrs.
4. Drug dependent Diabetes Mellitus/ Cardio respiratory diseases leading to increased anesthetic risk.
5. Polytrauma involving chest or abdomen with ISS > 25/Fat embolism.
6. Hypotension with systolic blood pressure < 90mm Hg at presentation.
7. Another major injury to the same limb/ Compartment syndrome.

Post Traumatic One Bone Forearm Reconstruction.

The reconstruction of massive defects in long bones of forearm in major crush injuries and avulsion amputations are difficult and challenging.

The results of our patients who had been treated between 1995 and 2004 by reconstruction of one bone forearm to address massive bone defects in major crush injuries and avulsion amputations were studied. Four of them had total traumatic avulsion amputations and one post traumatic infective non-union of forearm.

The patients were evaluated based on Ch'en criteria / Peterson et al ten point subjective scoring system. Three patients had excellent results and two patients had good results.



Post traumatic amputation with bone and soft tissue loss. Replantation with creation of a single bone forearm resulting in a useful functional limb.

All patients were satisfied with position, function and cosmetic appearance of forearm. The patients who underwent replantation had an average shortening of 5cm. Three patients returned to their original work and other two patients resumed suitable work.

Conclusions: When faced with choice of amputation versus salvage, one bone forearm reconstruction provides a stable forearm.

Simultaneous Flap And Bone Transport Vs Staged Reconstruction In Grade IIIb Open Fractures Of Tibia With Circumferential Bone Loss

In a prospective study of patients with circumferential bone loss more than 4cm upto 15.5cm were included in the study. Group-A patients had debridement and orthofix Limb Reconstruction System [LRS] stabilization on arrival followed by corticotomy and flap coverage. Group-B patients had debridement and temporary skeletal stabilization followed by flap coverage. After flap maturation skeletal reconstruction was done. In both groups soft tissue reconstruction was done with local, cross-leg, or free flaps in appropriate cases. Group-A patients had an average defect of 7.76cm and injury corticotomy interval was 4.6 days. The corresponding data for Group-B patients was 10.64cm and 76.7 days



Grade IIIb open fracture both bones leg with soft tissue and bone loss. Debridement, LRS fixation, cross leg flap cover and bone transport across the 18 cm bone defect done with final bone union

Conclusion: Simultaneous bone transport below flap shortens hospitalization time, external fixation time, union time and treatment time. It doesn't compromise the flap viability. It is a safe and effective method in experienced hands.

Trauma - Presentations

International

"A comprehensive trauma score to prognosticate outcome in Grade IIIB open tibial fractures"

Dr. S. Rajasekaran

AAOS Course, March 2004, U.S.A.

"Grade III B Open tibial fracture with circumferential bone loss prospective study comparing immediate flap and bone transport with staged reconstruction"

Dr. J. Dheenadhayalan

Japanese Orthopaedic Association May 2004, Kobe, Japan

"A comprehensive score to prognosticate salvage and outcome in Grade III B open injuries of tibia"

Dr. S. Rajasekaran

Japanese Orthopaedic Association May 2004, Kobe, Japan



Dr S Rajasekaran at the British Orthopaedic Association Meeting at Manchester



Dr S Rajasekaran with Mr K Tuson, Mr & Mrs. J N Wilson, and Dr K Pillay at the British Orthopaedic Association Meeting, Manchester.



Dr S Rajasekaran with Dr J Dheenadhayalan at the Japanese Orthopaedic Association, Kobe, Japan

International

"Prospective experimental study Analysis of compartment pressure changes in reamed interlocking nailing of closed tibial fracture"

Dr. S.R. Sundararajan

Asia Pacific Orthopaedic Association, September 2004, Malaysia

"Primary bone grafting in high energy open injuries of limbs"

Dr. Thomas J. Kishen

Asia Pacific Orthopaedic Association, September 2004, Malaysia

"Simultaneous flap and bone transport Vs staged reconstruction in Grade IIIB open fracture tibia with circumferential bone loss - A prospective study"

Dr. S.R. Sundararajan

Asia Pacific Orthopaedic Association, September 2004, Malaysia

"A comprehensive trauma score to prognosticate outcome in type III B open fracture"

Dr. S. Rajasekaran

Asia Pacific Orthopaedic Association, September 2004, Malaysia

"The indications and safety measures in the primary closure in open injuries of limb"

Dr. S. Rajasekaran

Asia Pacific Orthopaedic Association, September 2004, Malaysia

"Intra-articular osteochondral loose fragments as a cause for non congruent hip following reduction of hip joint"

Dr. S.R. Sundararajan

Asia Pacific Orthopaedic Association, September 2004, Malaysia

Turn graft arthrodesis of knee with long intramedullary nail

Dr. S.R. Sundararajan

Asia Pacific Orthopaedic Association, September 2004, Malaysia

Global reconstruction New frontier in open injuries

Dr. S. Rajasekaran

British Orthopaedic Association Meeting September 2004, Manchester, UK

"Global Reconstruction of Bone and Soft tissue Defects in Open injuries of Limbs"

Dr. S. Rajasekaran,

XXIII SICOT/SIROT Triennial World Congress, Sep'05, Istanbul

Trauma - Presentations

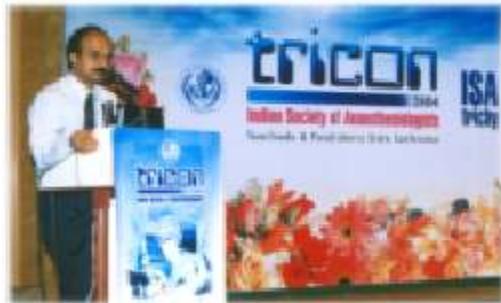
International

“New score to prognosticate salvage and outcome in open injuries”
Dr. S. Rajasekaran
British Orthopaedic Association Meeting , September 2004 Manchester, UK

“Fat Embolism syndrome”
Dr J Balavenkatasubramaniam,
6th South Asian Confederation of Anesthesiologist, Feb 2005, Srilanka

“Primary Bone Grafting in High Energy Open Injuries of Limbs”
Dr J Dheenadhayalan,
XXIII SICOT/SIROT Triennial World Congress, Sep'05, Istanbul

“The Indications and Safety of Primary Closure in Open Injuries of Limbs”
Dr J Dheenadhayalan,
XXIII SICOT/SIROT Triennial World Congress, Sep'05, Istanbul



Dr Balavenkat at the Indian Society of Anaesthesiologists meeting, Trichy



Dr S R Sundararajan with poster presentation at Kuala Lumpur



Dr S Rajasekaran with the Indian delegates at the BOA Meeting, Manchester

National

“Study of bacterial flora in open fractures... Are they value?”
Dr S R Sundararajan,
A A Mehta Gold Medal session, IOACON, Dec 2005, Mumbai

“Trauma care in the India scenario”
Dr J Balavenkatasubramaniam,
AVM Hospital, Aug 2004, Tuticorin

“Management of complication of diaphyseal fractures”
Dr. S. Rajasekaran,
IOACON, Dec 2004, Agra

“Trauma resuscitation”
Dr J Balavenkatasubramaniam,
National Conference of Indian Society of Anaesthesiologist, Dec 2004, Bhopal

National

White paper of IOA “Open fractures of tibia”
Dr. S. Rajasekaran,
IOACON, December 2004, Agra

“Management of bone defect in open injuries”
Dr S R Sundar Rajan,
Instructional Course Lecture on Open injuries, IOACON Dec 2005, Mumbai

“Pain management of trauma victims”
Dr J Balavenkatasubramaniam,
International Regional Analgesic and Pain Medicine Conference, Feb 2004, New Delhi

“Inovative procedures in Orthopaedics: Primary closure in open injuries-
safety and efficacy”
Dr. J. Dheenadhayalan,
TNOACON, Feb 2005, Cuddalore

“Trauma life support in India”
Dr J Balavenkatasubramaniam,
Critical Care Core Group, May 2004, Coimbatore

“Live Workshop on Nerve blocks”
Dr J Balavenkatasubramaniam,
Indian Society of Study of Pain (ISSP) National Conference, Jan 2005, Pune

Trauma - Presentations

National

"Avoiding pitfalls in interlocking nail"

Dr Dheenadhayalan,

Karnataka Orthopaedic Association Annual Meeting, Feb 05

"Current care of Diabetic patients in the perioperative period"

Dr J Balavenkatasubramanium

Indian Society of Anaesthesiologist, June 05, Erode

"Perioperative beta blockade- Is it good or bad?"

Dr J Balavenkatasubramanium,

Tamil Nadu State Anaesthesiologist Conference, Jul 05, Yercaud



Dr S Rajasabapathy at ITACS, Chennai



Dr SR Sundararajan at IOACON, Mumbai

"Fat Embolism Syndrome"

Dr J Bala Venkatasubramanium,

23rd Continuing Orthopaedic Education, Sep 05, Coimbatore

"Current concepts in perioperative beta blockade"

Dr J Balavenkatasubramanium,

Regional Conference of Indian Society of Anaesthesiologists Aug 05 Trivandrum

"Primary Closure in Open Fractures - There is a role"

Dr S Rajasekaran,

Continuing Orthopaedic Education, Sep 2005, Coimbatore

"Resuscitation Principles in Trauma"

Dr. V. Ravindra Bhat,

Continuing Orthopaedic Education, Sep 2005, Coimbatore

National

"Beyond the Golden Hour ..."The Silver Day"

Dr S Rajasekaran,

23rd Continuing Orthopaedic Education Sep 05, Coimbatore

"Non Union Following Interlocking Nail"

Dr J Dheenadhayalan,

23rd Continuing Orthopaedic Education, Sep 05, Coimbatore

"Assessment of Open Injuries"

Dr S Rajasekaran,

23rd Continuing Orthopaedic Education, Sep 05, Coimbatore

"Newer Trends in treatment of Open Injuries"

Dr S Rajasekaran,

23rd Continuing Orthopaedic Education, Sep 05, Coimbatore

"Role of Navigation in Trauma"

Dr S Rajasekaran,

23rd Continuing Orthopaedic Education, Sep 05, Coimbatore

"Panel Discussion on Polytrauma Victim- Emergency room management"

Dr J Balavenkatasubramanium,

APGAP Postgraduate CME Lecture, Kasthuriba Medical College, Oct 05, Manipal

"Management strategies of pain relief in trauma"

Dr J Balavenkatasubramanium,

Indian Society of Anaesthesiologists Conference, Jul 04, Trichy

"Anaesthetic considerations in Geriatric patients for Orthopaedic procedures" Dr J

Balavenkatasubramanium

APGAP Postgraduate CME Lecture, Kasthuriba Medical College, Oct 05, Manipal

"Frontiers in the management of severely injured limb"

Dr S Rajasekaran,

National Conference of International Trauma Anaesthesia & Critical Care Society, Oct 05, ITACCS Chennai

"Trauma team A Surgeons perspective"

Dr S Rajasabapathy,

National Conference of International Trauma Anaesthesia & Critical Care Society, Oct 05, ITACCS Chennai

Arthroscopy

Arthroscopic surgery has been routinely performed since 1994 but had a major fillip after Dr S R Sundararajan joining as a specialist consultant in arthroscopy in 2004. In 2005, 161 arthroscopic procedures were done, of which more than 100 were cruciate reconstruction surgeries. The procedures have been a boon to improve the outcome in knee surgeries for problems like meniscal injuries, discoid meniscus, anterior cruciate, ligament tears and cysts. Patients have all benefits of keyhole surgery with decreased pain, improved function and early rehabilitation.



Dr S R Sundararajan performing arthroscopic surgery



Harvesting of bone tunnel on bone graft.



Fixation with interference screw

Year	2004	2005
Arthroscopic ACL Reconstruction	82	111
Arthroscopic fixation of ACL avulsion	5	7
Arthroscopic fixation PCL and posterolateral reconstruction	0	2
Arthroscopic PCL and ACL reconstruction	0	1
Meniscectomy	24	28
Discoid lateral meniscus	4	3
Discoid medial meniscus	0	1
Medial meniscus cyst	0	1
Lateral meniscus cyst	2	2
Synovectomy	4	5
Total	125	161



Post operative x-ray following ACL reconstruction

Spine Surgery



You are only as strong as your back is.....

Spine - Clinical Work

The department functions as a 'tertiary reference centre' for all spine problems and is an academic teaching centre for higher training in spine surgery. The clinical work has steadily improved over the years with more than 7500 new spine patients registered and 527 major spinal surgeries performed in 2005. All clinical problems from craniovertebral junction to the sacrum are addressed both conservatively and surgically by a team trained in the best centres of the world. The team is supported by the state-of-the-art equipments including ISO-C-3D C-arm (Siemens, Germany) and a VectorVision operating platform (BrainLAB, Germany) for intra-operative navigation.

The spine unit is one of the very few in the world routinely performing intra-operative ISO-C-3D spine navigation surgeries. More than 150 surgeries have been performed and the unit has been recognized as an international training centre for navigation assisted spine surgery by BrainLAB, Germany.

In 2001, the spine unit became the first unit in the country to be recognized by the National Board of Examinations, New Delhi, for super specialty training in spine surgery. Two candidates are selected every year and the fellowship offers ample opportunity for clinical and surgical training with good scope for research.

The unit also concentrates on both clinical and basic science research. The basic science research performed on the pattern of diffusion of lumbar discs was awarded the prestigious ISSLS Spine Research award in 2004. Currently, the effect of mechanical stress on the morphology and function of disc cells is being investigated in collaboration with the Microbiological laboratories, Coimbatore, Central Leather Research Institute, Chennai and Christian Medical College, Vellore.



Microdiscectomy in progress

Spine surgeries	1998	1999	2000	2001	2002	2003	2004	2005
Microdiscectomy	61	66	59	73	103	105	171	149
Scoliosis & Kyphosis	20	19	23	24	27	41	43	50
Spinal infections	2	3	17	23	18	15	6	11
Spondylolisthesis	32	25	37	50	60	67	56	60
Tumour Surgery	10	16	8	12	20	28	25	14
Cervical spine surgery	25	27	36	38	40	61	71	72
Spine fractures	-	18	34	25	39	48	38	50
Degenerative lumbar stenosis	20	27	32	28	39	30	46	54
Miscellaneous	8	17	7	10	12	21	39	67
Total	178	218	253	283	358	416	495	527

Spine - Awards



ISSLS Spine Research Award 2004

Awarded to Dr S Rajasekran, Dr Naresh Babu and the team during Spine week from 29th May to 6th June 2004 at Porto, Portugal.



Hari Om Ashram Alembic Award

Dr. S Rajasekaran received this award for the best original medical research done in India from Hon'ble President of India, Dr. A.P.J. Abdul Kalam on 1st Jul 2005 at Rashtrapati Bhavan, New Delhi



Dr. B. C. Roy Silver Jubilee Research Award

Received by Dr. S. Rajasekaran for the research work on "spinal tuberculosis" from Hon'ble President of India, Dr. A.P.J. Abdul Kalam on 3rd Aug 2004 at Rashtrapati Bhavan, New Delhi

Spine - Awards

- 1) ISSLS Spine Research Award 2004
"A study of diffusion in human lumbar discs: A serial MRI study documenting the influence of the endplate on diffusion in normal and degenerate discs."
Dr. S. Rajasekaran, Dr. J. Naresh Babu, Dr. B.R.W. Armstrong, Dr. Ajoy Prasad Shetty T. and Dr. K.S. Murugan.
Spine week, Jun 04, Porto, Portugal.
- 2) Dr. B. C. Roy Silver Jubilee Research Award
Received by Dr. S. Rajasekaran for the research work on "spinal tuberculosis"
from Hon'ble President of India, Dr. A.P.J. Abdul Kalam
Aug 2004 at Rashtrapati Bhavan, New Delhi
- 3) Hari Om Ashram Alembic Award
Dr. S Rajasekaran received this award for the best original medical research done in India from
Hon'ble President of India, Dr. A.P.J. Abdul Kalam
Jul 2005 at Rashtrapati Bhavan, New Delhi



The team of spine surgeons of Ganga Hospital who won ISSLS Spine Research Award 2004.



Dr. Vidyadhara S and Dr. Sree Harsha CK with co-travelling fellows and Prof Moon, President, APOA.

APOA Depuy Traveling spine fellowship Award 2005

Dr. Vidyadhara S and Dr. Sree Harsha CK of Ganga Hospital, Coimbatore.

They visited various hospitals at Bangkok (Thailand), Singapore, Kwangju (Korea), Daejeon (Korea), Hongkong, Sendai (Japan), and Taipei (Taiwan) from 5th to 28th Nov 2005.

Presentations

Dr. Vidyadhara S: "A randomised control study to compare the accuracy of non navigated and Iso-C navigated thoracic pedicle screw insertion in deformity correction surgeries".

Dr. SreeHarsha CK: "Single stage posterior closing-opening wedge osteotomy in correction of post-tubercular kyphotic deformities".

Spine - Awards

- 4) Prof. C. Vyageswarudu Gold Medal for Clinical Orthopaedics
"Congenital scoliosis - A treatment perspective"
Dr. Yogesh K. Pithwa, Dr. Ajoy Prasad Shetty T. and Dr. S. Rajasekaran
TNOACON 2004, Kanyakumari, Tamil Nadu.
- 5) Dr Shantharam Shetty Gold Medal 2005
"Pre-emptive analgesia using caudal epidural injection for post-operative pain relief in lumbosacral spine surgeries"
Dr. Vidyadhara S, Dr C Sekar, Dr. Ajoy Prasad Shetty T. and Dr. S. Rajasekaran
Annual Meeting of Karnataka Orthopaedic Association at Bangalore Feb 2005.
- 6) Best poster Award (Life Sciences):
"Collagen studies in Scoliotic intervertebral discs"
Ms. Vidya Meenakshi, Dr J.Meenakshi, Dr Mary Babu (CLRI, Chennai), and Dr. S Rajasekaran, Dr. Vidyadhara S (Ganga Hospital, Coimbatore)
CSIR Foundation day celebrations at Central Leather Research Institute, Chennai, Sep 05
- 7) ASSI -Depuy Spine Research Award : 2003
"A study of diffusion pattern on human lumbar discs"
Dr. S. Rajasekaran, Dr. J. Naresh Babu, Dr. B.R.W. Armstrong and Dr. Ajoy Prasad Shetty T, Dr.K.S. Murugan.
ASSICON, Jan 04, Pune.
- 8) ASSI -Depuy Spine Research Award : 2004
"Is single stage posterior column shortening a safe and reliable procedure in active spinal tuberculosis"
Dr. Thomas Kishen and Dr. S. Rajasekaran
ASSICON, Jan 05, Bangalore
- 9) ASSI -Depuy Best Spine Research Award : 2005
"A study of effect of mechanical forces on endplates of lumbar vertebrae - Scoliotic disc as a biological model".
Dr. S. Rajasekaran, Dr. Vidyadhara S and Dr. J. Naresh Babu
ASSICON 2006, Feb 06, Chandigarh



Dr. Naresh Babu receiving the ASSI -Depuy Best Research Award 2003 from Mr. Sharad Pawar at ASSICON 2004, Pune.



Dr. Thomas Kishen receiving the ASSI -Depuy Best Research Award 2004 from H'ble Governor of Karnataka Sri Chaturvedi at ASSICON 2005, Bangalore.



Dr. Vidyadhara S receiving the Prof. V.T.Inghalikar Gold Medal from Prof PS Ramani at ASSICON 2006, Chandigarh.

Spine - Publications



Chapter on "Childhood Spinal Tuberculosis"
by Dr S Rajasekaran In "Inflammatory Disorders of Spine"
Edited by S Govender, JCY Leong, (1st Ed) TTG Asia Media Pte Ltd Singapore.

Chapter on "Tuberculosis of Spine "
by Dr S Rajasekaran In "Text Book The Lumbar Spine"
Edited by N. Herkowitz, Jiri Dvorak, G Bell, M Nordin and Dieter Grob (3rd ed),
Lippincott Williams & Wilkins.



"ISSLS Prize Winner: A Study of Diffusion in Human Lumbar Discs:
A Serial Magnetic Resonance Imaging Study Documenting the Influence of the Endplate on Diffusion
in Normal and Degenerate Discs" Dr S Rajasekaran, Dr J Naresh Babu, Dr R Arun, Dr B R W Armstrong,
Dr Ajoy Prasad Shetty, Dr KS Murugan SPINE 2004; 29(23): 2654-2667.

"Phantom-Limb Pain due to Cervical Spinal Tuberculosis-Case Report".
Dr S Rajasekaran, Dr Yogesh K Pithwa, J Bone Joint Surg (A)
2004 Jun; 86-A(6): 1289-91.



"Preemptive Analgesia for Postoperative Pain Relief in Lumbosacral Spine Surgeries:
A Randomized Controlled Trial".
Dr S Rajasekaran, Dr C Sekar, Dr Rajeshkannan, Dr Shashidhar Reddy, Dr T Ajoy Prasad Shetty, Dr Yogesh K Pithwa.
The Spine Journal 2004; 4(3): 261-64.

"Spontaneous complete recovery of paraplegia caused by epidural hematoma
complicating epidural anesthesia: a case report and review of literature"
CK SreeHarsha, S Rajasekaran, P Dhanasekara Raja. Spinal Cord (2005), 1-4



Spine - Research

MacNab Larocca Award, ISSLS, 2005

A Finite Element Analysis of the alterations in load pathways following destructive lesions of the growing spine.

A validated 3-D Finite Element Model (FEM) of the paediatric spine was built with the expertise available at the Rush-Presbyterian-St. Lukes Medical center, Chicago, Illinois, USA. The data obtained from the FEM study will be correlated with the data available from the 15-year longitudinal clinico-radiological study that has been completed in Ganga Hospital, Coimbatore. Finite element model allows investigations on the relationship between the extent of vertebral destruction, the location and level of lesion and the resulting deformity of the spine. The mechanical basis of deformity initiation and progression will be ascertained. The data obtained from this study will be used to propose treatment guidelines and define surgical indications to prevent progressive deformity.



Finite element model of the spine demonstrating the "buckling collapse" of the spine due to the vertebral body loss from tuberculous disease process.



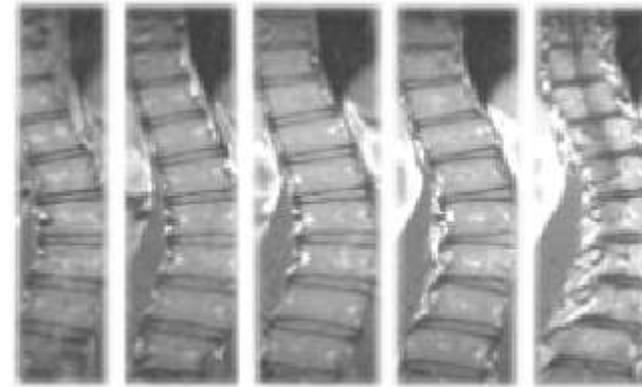
Dr. Gunnar Anderson and Dr. Raghu Natarajan of Rush University, Illinois, Chicago with Dr. S. Rajasekaran. The research team consists of Dr. J. Naresh Babu, Dr. S. Rajasekaran, Dr. Raghu Natarajan, Dr. Gunnar Anderson

Yves Cotrel Research Foundation (Paris) Award 2004

A study of effect of mechanical forces on endplates of lumbar vertebrae "Scoliotic disc as a biological model"

The effect of mechanical stress on the integrity and function of endplate is of great interest to spine surgeons. Scoliosis represents an ideal clinical situation where this phenomenon can be studied as the endplate on the concave side are under severe stress and those on the convex side are devoid of such severe stress. We conducted an in vivo study of the endplates diffusion studies by contrast MRI.

Serial coronal section MRI of adolescent idiopathic scoliosis patients from anterior to posterior demonstrating various grades of endplate breaks and disc degeneration at all levels. The flow of the contrast medium across these endplates is studied by injecting Inj Gadodiamide and taking serial MRI at 0hrs, 10mins, 2hrs, 6hrs and 12hrs.

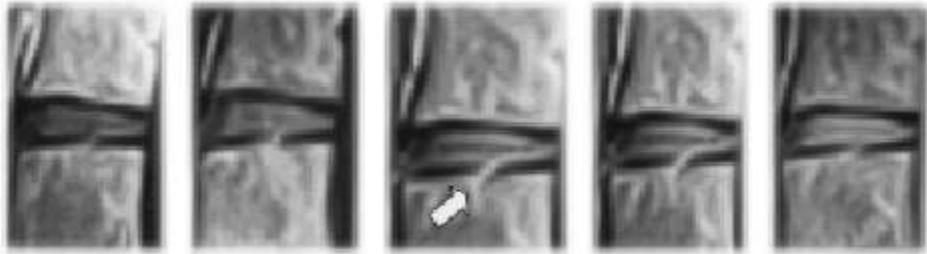


50 intervertebral discs (45 scoliotic and 5 normal) from subjects (one control and ten adolescent idiopathic scoliosis) during Oct 2004 to Oct 2005 were studied. The patients underwent radiographic study, plain MRI study and serial post-contrast MRI study to analyse the effect of the abnormal mechanical stresses on the disc degeneration.

Endplate Damage In Lumbar Discs Can Be Identified In-vivo By Post-Contrast MRI Studies

Site-specific endplate damages have been documented to occur from early age in cadaveric studies. Although postulated as an important mechanism for disc degeneration, no method has been described so far to identify such breaks in vivo.

T1-weighted images were obtained pre and post-contrast with Gadodiamide at 5, 10mts, 2, 4, 6, 12 & 24hours. Diffusion was calculated by measuring signal intensity values in vertebral body (VB), subchondral bone (SCB), endplate, center (CNP) and periphery (PNP) of nucleus pulposus (NP). Enhancement percentage (EP) for each time period, Peak enhancement percentage (PEP) and time taken to achieve PEP (Tmax) were used to study diffusion characteristics of each region.



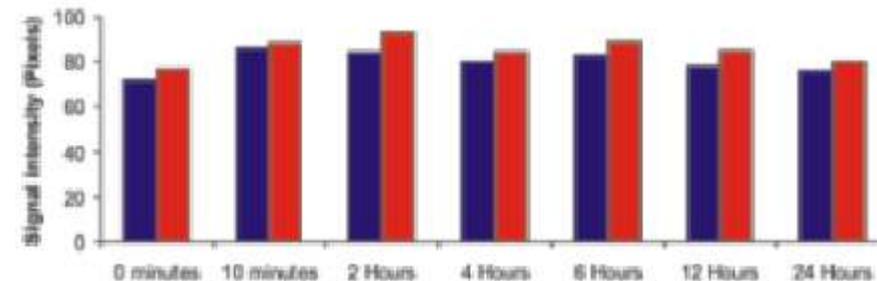
Serial post-contrast MRI study depicting an endplate break by virtue of the absence of endplate delay and diffusion march. The dye directly enters the nucleus pulposus within 10mins of injection.

Intact endplate was identified in pre-contrast images as a distinct zone hypo-intense to SCB and NP by at least 75 units. Post-contrast, the normal pattern was that there was a sequential achievement of PEP from VB to CNP (Diffusion march) with a delay (endplate delay) at the endplate (Tmax for VB & SCB was 10min, Endplate was 2hrs and NP was 6hrs). Endplate breaks were identified as patchy areas, where there was simultaneous enhancement of SCB, endplate and PNP at 10 min (absence of endplate delay and Diffusion march).

Pharmacological modulation of disc diffusion by Nimodipine -A prospective in-vivo human study

Histological studies have documented that Calcium channel antagonist Nimodipine increases vascularity of end plates in rats. However, there is no corresponding data for humans and whether endplate hypervascularity leads to increase in diffusion. This prospective study in human volunteers reports for the first time in literature an increase in diffusion following Nimodipine by serial post contrast MRI study.

Forty lumbar end plates of four young healthy male volunteers formed the study material. The pre-drug diffusion levels were studied by pre and post contrast MRI (0.3 mmol/kg of gadodiamide) at 10 minutes, two, four, six, 12 and 24 hours. After a gadodiamide wash out period of 10 days, a plain MR examination was performed to ensure return of signal intensity values to the base line.



Bar diagrams depicting the enhancement of signal intensity at all the stages of disc diffusion namely the subchondral bone, endplate and nucleus pulposus. (Blue - precontrast, Red - Postcontrast)

Oral Nimodipine was administered (30 mgs QID) for five days following which diffusion studies were performed by a similar MRI sequence. Paired sample t-test and area under curve (AUC) measurements were performed to compare the pre and post-drug signal intensities. This is the first study to document an increase in diffusion of human lumbar discs by oral nimodipine and poses interesting possibility of pharmacological enhancement of lumbar disc diffusion.

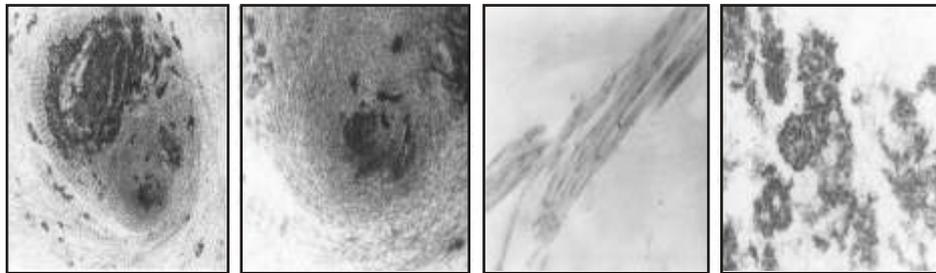
Spine - Research

Histological, Biochemical, Immunohistological, and Electron Microscopic analysis of the Disc cells in Adolescent Idiopathic Scoliosis - A comparison between concave and convex sides at various regions.

Collaborators:

Ganga Hospital, Coimbatore,
Microbiological Laboratories, Coimbatore.
Christian Medical College, Vellore ,
Central Leather Research Institute, Chennai

The biology of the cells of the annulus fibrosus and nucleus pulposus are heavily influenced by the mechanical forces they are subjected to.

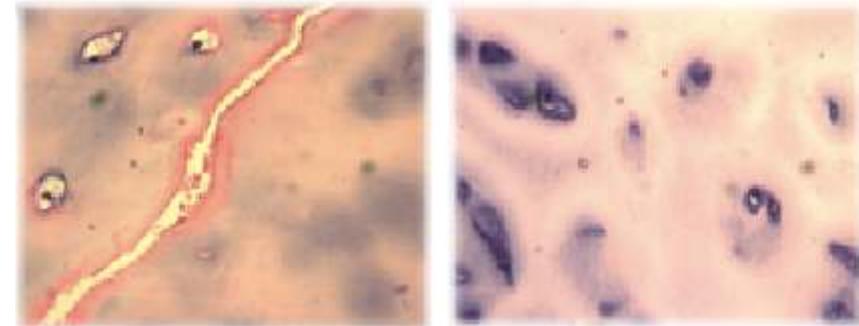


Electron Microscopic examination of the intervertebral discs of adolescent idiopathic scoliosis showing increased cell death and debris surrounded by reactive matrix formation on the concave side and normal cell and fibrous long structural collagen on the convex side.

Scoliosis is a perfect human biological model where the effects of the mechanical forces can be studied. Most of the studies on scoliosis so far have concentrated on the annulus fibrosus and nucleus pulposus but not on the endplate. But the endplate influences the diffusion which is the only source of nutrition of the disc. But no firm data is available on the pattern of diffusion and disc composition in the scoliotic discs. An in-depth study of MR imaging of endplate, nucleus pulposus, and annulus fibrosus on concave and convex sides of varying severity of scoliotic curve at different levels is being done and correlated to the cell and matrix characteristics of the disc.



Nonviable and viable disc cells stained for cell counting using Aqueous Haematoxylin stain exclusion.



Haematoxylin and Eosin staining showing cartilage cracks and clustering of disc cells on concave side.

Spine - Presentations

International

"Childhood spinal tuberculosis"

Dr. S. Rajasekaran
14th Triennial Congress of APOA held at Kuala Lumpur, Sep 04, Malaysia

"Surgical correction in severe kyphosis by spinal shortening"

Dr. S. Rajasekaran
14th Triennial Congress of APOA held at Kuala Lumpur, Sep 04, Malaysia

"Pre-emptive analgesia in lumbosacral spine surgery – A randomized controlled trial"

Dr. Thomas J. Kishen
14th Triennial Congress of APOA held at Kuala Lumpur, Sep 04, Malaysia



Dr. S. Rajasekaran
at ISSLS 2004 Porto Portugal.

"Spine at Risk" – Radiological signs for late deformity in spinal tuberculosis

Dr. S. Rajasekaran
BOA Meeting Manchester, Sep 04, UK

Endplate damage in lumbar discs can be identified invivo by post-contrast MRI studies

Dr. S. Rajasekaran
14th Triennial Congress of APOA held at Kuala Lumpur, Sep 04, Malaysia

"Single stage correction of post-tubercular kyphosis by posterior column shortening"

Dr. S. Rajasekaran
14th Triennial Congress of APOA held at Kuala Lumpur, Sep 04, Malaysia

International

"Clinical and radiological outcome of cervical discectomy without fusion"

Dr. Thomas J. Kishen
14th Triennial Congress of APOA held at Kuala Lumpur, Sep 04, Malaysia

"Role of Anesthetist in acute cervical spine injury"

Dr Balavenkat
6th Meeting of South Asian Confederation of Anesthesiologist, Feb 05,
Colombo, Srilanka

"Resection and reconstruction of primary vertebral tumors of cervical spine"

Dr. S. Rajasekaran
Spine Week 2004 Portugal, Porto



Dr. Nareesh Babu



Dr. Thomas Kishen

"Pre-emptive analgesia for post operative pain relief in lumbosacral spine surgeries - A randomized controlled trial"

Dr. S. Rajasekaran
Spine Week, May & Jun 04, Portugal, Porto

"Clinical outcome does not depend on radiological fusion in bone-only anterior cervical fusion following discectomy"

Dr. S. Rajasekaran
Spine Week, May & Jun 04, Portugal, Porto

"Natural history of childhood spinal tuberculosis"

Dr S Rajasekaran
AO Advanced Spine Course, Apr 04, Hong Kong

Spine - Presentations

International

"Percutaneous stabilization with pedicle screw rod system for unstable fractures"

Dr S Rajasekaran

AO Advanced Spine Course, Apr 2004, Hong Kong

"Correction of severe kyphotic deformity in spinal tuberculosis"

Dr S Rajasekaran

AO Advanced Spine Course, Apr 2004, Hong Kong

"Endplate damage in lumbar discs can be identified in-vivo by post-contrast MRI studies"

Dr. S. Rajasekaran

Spine Week, May & Jun 04, Portugal, Porto



Dr. S Rajasekaran

"Single stage correction of post-tubercular kyphosis by posterior column shortening"

Dr. S. Rajasekaran

Spine Week May & Jun 04 Portugal, Porto.

"Childhood spinal tuberculosis as a clinical model of Euler's theory of buckling collapse of a structural column"

Dr. S. Rajasekaran

Spine Week May & Jun 04 Portugal, Porto.

"A Longitudinal Study of the Progress of Deformity in Children with Spinal Tuberculosis"

Dr S Rajasekaran

XXIII SICOT/SIROT Triennial World Congress, Sep 05, Istanbul

International

"Childhood spinal tuberculosis as a clinical model of Euler's theory of 'buckling collapse' of a structural column"

Dr S Rajasekaran

XXIII SICOT/SIROT Triennial World Congress, Sep 05, Istanbul

"Is Single Stage Posterior Column Shortening a Safe and Reliable Procedure in correction of deformity in Active Spinal Tuberculosis?"

Dr S Rajasekaran

XXIII SICOT/SIROT Triennial World Congress, Sep 05, Istanbul

"Transpedicular Thoracic Screws: General Concepts and Insertion Technique using fluoroscopic guidance"

Dr S Rajasekaran

St Luke's International Symposium, Sep 05, Philippines



Dr. MK Pithwa



Dr. Ajay Prasad Shetty at ASSICON Meeting

"Pre-Emptive Analgesia In Lumbosacral Spine Surgery: A Randomized Controlled Trial"

Dr S Rajasekaran

XXIII SICOT/SIROT Triennial World Congress, Sep 05, Istanbul

"The Normal Diffusion Pattern of Human Lumbar Intervertebral Discs"

Dr S Rajasekaran

XXIII SICOT/SIROT Triennial World Congress, Sep 05, Istanbul

"Radiological investigations in recurrent disc protrusion"

Dr S Rajasekaran

AO Spine Course, Mar 05, Davos, Switzerland

Spine - Presentations

International

"Spinal Cord anatomy and Cord Syndromes"
Dr S Rajasekaran
AO Basic Spine Course, Apr 05, Singapore

"Role on Non-operative treatment in thoracolumbar burst fractures"
Dr S Rajasekaran
AO Basic Spine Course, Apr 05, Singapore

"Cervical Radiculopathy and Myelopathy"
Dr S Rajasekaran
AO Basic Spine Course, Apr 05, Singapore

"Lumbar disc herniation - Natural History and treatment"
Dr S Rajasekaran at AO Basic Spine Course in Singapore on 26th Apr 2005.

"Role on Non-operative treatment"
Dr S Rajasekaran at AO Basic Spine Course 2005 in Malaysia, On 28th Apr 2005.

"Patho anatomy and physiology of cervical radiculopathy"
Dr S Rajasekaran at AO Basic Spine Course, Apr 05, Singapore & Malaysia

"Burst fractures – Is there a role for conservative treatment?"
Dr S Rajasekaran
10th Spine Seminar and Training Course combined with ISSLS Lecture Course,
Dec 05, Vietnam

"An in-vivo Analysis of Status of the Endplate and Its Influence On Diffusion In Scoliotic Discs"
Dr S Rajasekaran
Spine Research Meeting, Nov 05, Paris

"Surgical solutions to deformity in spinal tuberculosis"
Dr S Rajasekaran
10th Spine Seminar and Training Course combined with ISSLS Lecture Course,
Dec 05, Vietnam

"Anterior Vs Posterior Surgery in Cervical Spondylotic Myelopathy"
Dr S Rajasekaran
AO Basic Spine Course, Apr 05, Malaysia

National

"Magrel screw insertion - indications and technique"
Dr S Rajasekaran
Ganga Spine Course, May 05, Coimbatore

"Buck's technique of pars repair - indications and technique"
Dr S Rajasekaran
Ganga Spine Course, May 05, Coimbatore

"Degenerative Spondylolisthesis - An Overview"
Dr Ajoy Prasad Shetty
Ganga Spine Course, May 05, Coimbatore



Dr. Vidyadhara S at Taipei



Dr. S Rajasekaran at Japanese Orthopaedic Association Meeting

"Idiopathic Scoliosis - Basics"
Dr S Rajasekaran
Bangalore Orthopaedic Society Meeting, Jul 05, Bangalore

"Spinal Tuberculosis"
Dr S Rajasekaran
Bangalore Orthopaedic Society Meeting, Jul 05, Bangalore

"Role of halo in correction of complex spinal deformity"
Dr S Rajasekaran
Combined Instructional Course in Spine of ASSI and SSE, Aug 05, Mumbai

"One level cervical disc prolapse with myelopathy"
Dr S Rajasekaran
Debate at Combined Instructional Course in Spine of ASSI and SSE, Aug 05, Mumbai

Spine - Presentations

National

"Made in India"
Dr S Rajasekaran
Combined Instructional Course in Spine of ASSI and SSE, Aug 05, Mumbai

"Approach to a patient with failed disc surgery"
Dr S Rajasekaran
Ganga Spine Course, May 05, Coimbatore

"Pedicule Screw fixation"
Dr Ajoy Prasad Shetty
Ganga Spine Course May 05, Coimbatore

"Surgical Anatomy and Natural History of lumbar canal stenosis"
Dr Thomas Kishen
Ganga Spine Course May 05, Coimbatore



Dr. S Rajasekaran with Prof. J.C. Leong, Prof. David Choon & Dr. Vovan Thanh

"Post Operative neurological deficit"
Dr Ajoy Prasad Shetty
Ganga Spine Course, May 05, Coimbatore

"Blood loss in Spinal Surgery"
Dr Naresh Babu
Ganga Spine Course, May 05, Coimbatore

"Future of Treatment of Low Back Pain"
Dr S Rajasekaran
Ganga Spine Course, May 05, Coimbatore

National

"Understanding spinal instability"
Dr S Rajasekaran
Ganga Spine Course May 05, Coimbatore

"Salvaging an infected interbody implant"
Dr S Rajasekaran
AO Spine Masters Course, Nov 05, Agra

"Unstable burst thoracolumbar fracture – conservative versus operative management?"
Dr S Rajasekaran
Debate at Combined Instructional Course in Spine of ASSI and SSE, Aug 05, Mumbai

"Surgical strategy for primary vertebral tumours"
Dr Ajoy Prasad Shetty
Debate at Combined Instructional Course in Spine of ASSI and SSE, Aug 05, Mumbai



Dr. S Rajasekaran at ASSICON 2004, Pune



Dr. Balavenkat at Colombo

"Single or two-level cervical discectomy - Is fusion necessary?"
Dr. Thomas J. Kishen
OASISCON, Aug 04, Thrissur

"Spinal cord regeneration"
Dr. S. Rajasekaran at Combined Instructional Spine Course of ASSI and SSE, New Delhi from 8th – 10th Oct 2004.

"Anatomy of lumbar motion segment and its relevance to degeneration"
Dr S Rajasekaran
13 Feb 2004 at CME of TNOACON 2004, Kanyakumari.

Spine - Presentations

National

"A study of diffusion in human lumbar discs: A serial MRI study documenting the influence of the endplate on diffusion in normal and degenerate discs"

Dr. J. Naresh Babu
OASISCON, Aug 04, Thrissur

"Spinal cord regeneration - Is it a dream?" - Guest Lecture

Dr. S. Rajasekaran
Combined Instructional Spine Course, ASSI and SSE, Oct 04, New Delhi

"Radiological and functional outcome of cervical fusion without instrumentation"

Dr Ajoy Prasad Shetty
ASSICON, Jan 04, Pune.



Dr. Arun receiving the Britt Spine award



Dr. Vidyadhara S



Dr. S Rajasekaran at JOA Meeting

"Anterior cervical decompression and fusion – Technique and Pitfalls"

Dr S Rajasekaran at CME of TNOACON 2004 Kanyakumari on 13th Feb 2004.

"Posterior surgery - Laminectomy or Laminoplasty?"

Dr S Rajasekaran on 13th Feb 2004 at CME of TNOACON 2004 Kanyakumari.

"A study of diffusion characteristics of normal and abnormal endplates by post-contrast MRI"

Dr J Naresh Babu on 15th Feb 2004 at TNOACON 2004, Kanyakumari.

"Far lateral disc - often missed"

Dr Ajoy Praad Shetty, Ganga Spine Course, May 05, Coimbatore

National

"Lumbar Spine Anatomy in Health and disease"

Dr S Rajasekaran
Ganga Spine Course, May 05, Coimbatore

"Spinal Radiology"

Dr Ajoy Prasad Shetty
Ganga Spine Course, May 05, Coimbatore

"Spinal Navigation"

Dr. Vidyadhara S
IOACON, Dec 05, Mumbai

"Lumbar Micro Discectomy"

Dr S Rajasekaran, Ganga Spine Course, May 05, Coimbatore

"Preemptive analgesia with caudal epidural injection for post-operative pain relief in lumbosacral spine surgeries"

Dr. Vidyadhara S, IOACON Dec 05, Mumbai

"Surgical Strategy in Spondylolisthesis"

Dr Rajasekaran, Karnataka Orthopaedic Association Annual Meeting, Feb 05

"Childhood spinal infections"

Dr. S Rajasekaran, Prof Einhorn's Oration 2005, Tamil Nadu State Association of Paediatricians, Feb 05, Coimbatore

Arthroplasty



" Life is mobility, Mobility is life"

Arthroplasty - Clinical Work

The number of joint replacements performed has steadily increased from 41 in the year 2000 to 258 in the year 2005. The replacements include hip, knee shoulder, elbow and reconstruction following tumour resections. The need for joint replacements being very high and the awareness and willingness of patients steadily increasing, the numbers of joint replacements done every year will surely increase considerably.

The arthroplasty team consists of Dr S Rajasekaran, Dr P Dhanasekara Raja, Senior Registrar and Dr N Rajkumar, Joint replacement fellow. All patients undergoing joint replacements have meticulous assessment and documentation. From July 2004, all knee replacement surgeries are performed under navigation control and this has helped to improve the accuracy and precision in joint replacements.

The surgeries are performed by navigation assistance with VectorVision open platform (BrainLAB, Germany) and this has provided ample scope for clinical research to improve patient outcomes. Prospective randomized trials are being performed to compare the advantages of computer navigation surgery and also to document its accuracy in severely deformed knees. This work has been presented in many international conferences and has also been awarded the Indo-German Orthopaedic Foundation Gold Medal for 2005.

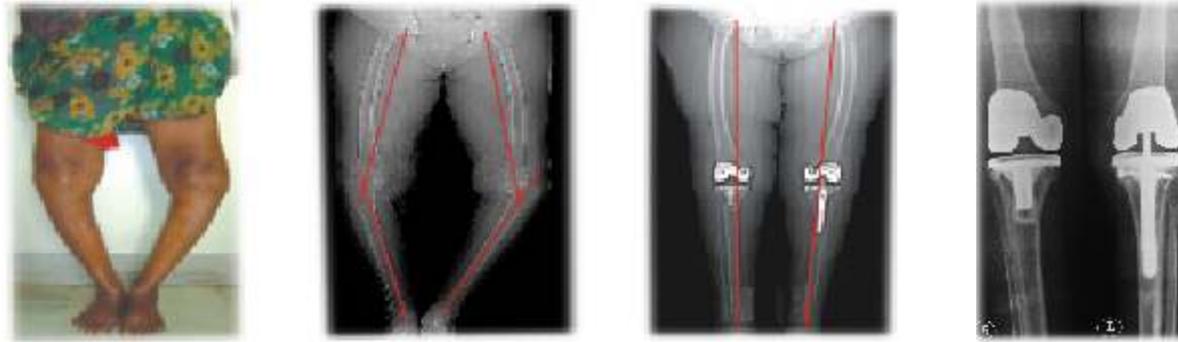


Year	2000	2001	2002	2003	2004	2005
Surgeries	41	73	86	113	152	258

Total Number of Joint Replacements

Knee Replacement

Painful knees are a common problem in the middle-aged and elderly populations presenting in the "Arthritis clinic". There are quite a few treatments for early knee arthritis that can help alleviate pain, and return people to their daily activities. When treatments such as anti-inflammatory medications, cortisone injections, and physical therapy fail to improve the situation, total knee replacement becomes 'the option'. The most common reason for needing total knee replacement surgery is knee osteoarthritis. The challenges at present include gross deformities and instability, relatively early presentation of degenerative arthritis (50 years of age) and replacement in young patients. The armamentarium includes a "graduated system concept" of varying constraint, augmentation and fixation in different clinical situations combined with computer navigation. The introduction of high flex rotating platform knees will help retain the range of movement in patients with good preoperative flexion. Preoperative screening, patient education, regional anesthesia with postoperative continuous epidural analgesia and early postoperative ambulation has all helped to maintain a very low complication rate.



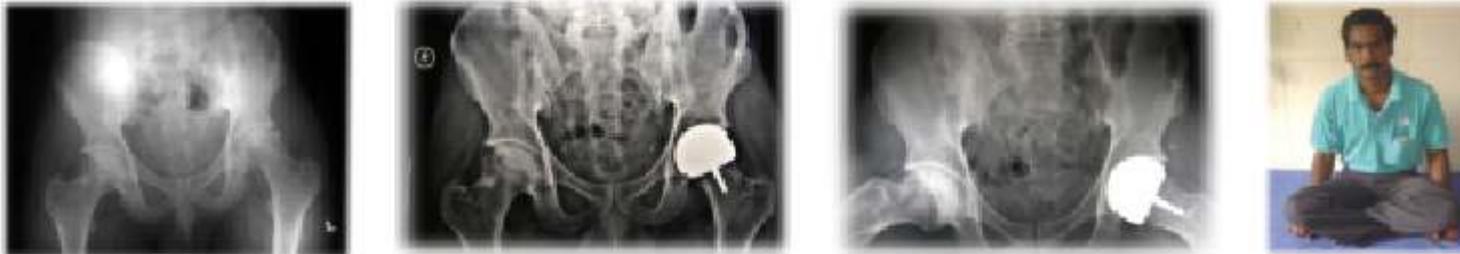
Arthritis causes degeneration of joints and results in painful, deformed and unstable joints. Navigation assisted joint replacement restores the joint alignment and results in painless stable range of movements.



In severe arthritis with ligamentous instability, bone loss and poor bone stock is not uncommon. Meticulous soft tissue balancing, reconstruction of bone defect and use of stem extension and constrained prosthesis often gives these patients a new lease of life.

Surface Replacement

Hip resurfacing is a remarkable development in the field of joint replacement. Contemporary surface replacement implants have undergone various research alterations to become the present generation surface replacement implants. It is a conservative hip arthroplasty with excellent functional outcome. The degenerated surface of head of femur and acetabular wall is removed and resurfaced with a hollow metal hemisphere leaving the healthy bone largely intact. It is specifically indicated in young patients with crippling arthritis and also in older patients with good bone stock. It allows unrestricted activities. The recovery postoperatively is also rapid compared to other replacement surgeries.



Painful arthritis of the left hip in a 28 year old patient. Surface replacement has restored normal function.



Avascular necrosis of left hip in a 48 year old patient treated with surface replacement

Revision Surgery

The unit has sufficient expertise to perform revision replacements and complex replacements such as in tumor resections where custom-megaprosthesis is used to salvage the limbs. The indications for revisions include aseptic loosening, periprosthetic fracture, infection and reconstruction of bone defect after tumour resection. Single stage revision for aseptic loosening and two staged revisions for infected joint replacements are performed.



Bilateral periprosthetic fracture in a patient with Ankylosing Spondylitis following a road traffic accident. Revision with long stem Charnley's prosthesis on the left side and plate osteosynthesis with titanium cables on the right side.

Total hip replacement with loosening and osteolysis in the acetabulum with protrusion in a 48 year old male. Revision THR done with bone grafting and acetabular reconstruction ring.



Aseptic loosening of total knee prosthesis right side treated by revision with a long stemmed tibial prosthesis.



Solitary myeloma of upper end of femur treated by curettage of the tumour and total hip replacement with uncemented prosthesis and radiotherapy.

Arthroplasty - Awards



Prof C. Vyageswarudu Oration on "Role of Computer Navigation in Arthroplasty" delivered by Dr S Rajasekaran on 22-23 October 2005, at 35th Andhra Pradesh Orthopaedic Association Conference, Guntur



IGOF - Mohandas Weller Gold medal:
"Total knee replacement in varus knees with and without navigation" -
Dr P. Dhanasekara raja, Dr S. Rajasekaran,
Indo German Orthopaedic Foundation Seminar November 2005



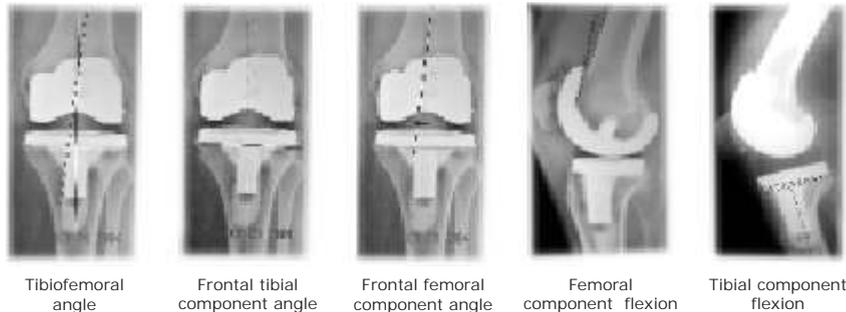
"An analysis outcome of total knee replacement in varus knees" was given the Best Scientific Paper Award
Dr. P. Dhanasekara Raja, Dr S. Rajasekaran,
August 2004, Indian Arthroplasty Association Mid Term Meet 2004

Arthroplasty - Research

Critical Radiological Analysis of Prosthetic Component Placement in Total Knee Arthroplasty Done With Navigation Assistance Compared With Conventional Jig Based Technique

39 knees replaced with navigation assistance were compared with 35 knees done with conventional jig based technique.

VectorVision image guided system (CT free knee version 1.5.1) was used with Depuy PFC knees in the navigation group. The preoperative deformity ranged from 26 varus to 26 valgus . The conventional jig based knees were also Depuy PFC knees. The preoperative deformity ranged from 14 varus to 30 valgus . The following component placement angles were studied in the postoperative Xrays.



Results:

The distribution of tibiofemoral angle within 4 to 8 valgus and frontal tibial component angle were 94.8% and 82.85%; 100% and 86.66% respectively in Navigation assisted and conventional group. The lateral femoral component angle between 0-4deg flexion and lateral tibial component angle between 2 to 6 were 92% and 50% and 92% and 63% respectively.

Conclusion:

The prosthetic component placement was better in the navigation-assisted group compared to the conventional group. The outliers were considerably less in the navigated group.

Range of movement after total knee replacement with high flex knees compared to standard posterior stabilised prosthesis done with navigation

Ability to squat is important for most activities of daily living in many Asian countries. Total knee replacement gives a range of movement of about 125 degrees on an average. The newer high flex knee designs are aimed at a postoperative flexion of 150 degrees and also ability to squat. But there is no conclusive evidence in literature that high flex knees give full flexion in all patients.

This study aims to analyze the range of movement with high flex knees and the ability to squat compared to standard posterior stabilized knee prosthesis.



Knee flexion 4 weeks after bilateral high flex TKA

Patients and methods:

Patients receiving a high flex rotating platform knee (PFC RPF) will be compared to those who receive PFC sigma posterior stabilized prosthesis. The exclusion criteria included preoperative range of movement less than 90°, varus > 15°, gross ligamentous laxity and obesity with body mass index > 30. Surgery is being done with navigation assistance using BrainLAB vector vision. Both group of patients have same physiotherapy program with CPM, active knee bending and ambulation with walker support and pain relief with continuous epidural analgesia and narcotics. Patients will be reviewed periodically at 6 weeks, 3 months, 6 months, one year and two years postoperatively.

Arthroplasty - Presentations

INTERNATIONAL:

"Navigation in difficult knee Replacement Surgeries"

Dr S Rajasekaran

2nd Asian Computer-Aided Orthopaedic Surgery Annual Meeting, Apr, 05, Singapore

"Computer Aided Surgery in Deformed Knees"

Dr S Rajasekaran

4th Asia Pacific Arthroplasty Society, Aug 05, Goa



Dr S Rajasekaran at 2nd ASIAN CAOS Meeting, Singapore

"Navigation in Severly Deformed Knees"

Dr S Rajasekaran

Hong Kong Orthopaedic Association Annual Congress, Nov 05, Hong Kong

"Analysis of the outcome of total knee replacement in severe arthritic knees with varus deformity"

Dr. S.R. Sundararajan,

APOA 2004 (14th Triennial Congress), Sep 04, Kuala Lumpur, Malaysia

NATIONAL:

" Analysis of outcome of total knee replacement in arthritic knees with varus deformity"

Dr. P. Dhanasekara Raja

TNOACON, Feb 04, Kanyakumari

"Critical analysis of prosthetic component placement in total knee replacement done with navigation assistance compared to conventional jig based technique"

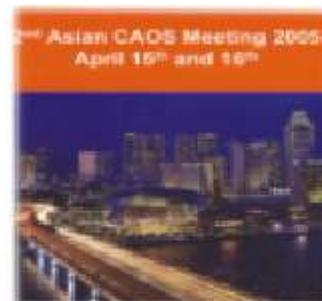
Dr J Dheenadhayalan

IOACON, Dec 04, Agra

"Critical analysis of prosthetic component placement in total knee replacement done with navigation assistance compared to conventional jig based technique"

Dr P Dhanasekara raja

TNOACON, Feb 05, Cuddalore



Shangri-La Serbitasi Singapore



Dr P Dhanasekara Raja at IGOF Seminar, Bangalore

"An analysis of outcome of total knee replacement in varus knees"

Dr. P. Dhanasekara Raja,

Indian Arthroplasty Association Mid Term Meet, Best Paper Award, Aug 04, Madurai.

"Total knee replacement in varus knees with and without navigation"

Dr P.Dhanasekara raja

Indo German Orthopaedic Foundation, Seminar, Nov 05, Bangalore

"Computer Assisted Total knee Replacement"

Dr S Rajasekaran,

OASISCON, Aug 2005, Bangalore

Computer Assisted Orthopaedic Surgery



"..... Precision, Consistency and Safety"

Computer Assisted Orthopaedic Surgery

Computer Navigation is the latest advancement in Orthopaedic Surgery. Ganga Hospital is one of the pioneers in the country to adopt this technology to improve the precision and safety of patients. Navigation surgery was inaugurated in July 2004 by Professor Dr. Venkat Rangan, Vice Chancellor, Amrita Vishwa Vidyapeetham. The hospital has open platform VectorVision of BrainLAB, Germany who are the leading innovators in the field of image guided surgery and stereo-tactic radiosurgery. The system allows a multitude of orthopaedic procedures like joint replacements, complex spinal fixations and trauma surgery. Improved outcome is achieved by being more accurate, less invasive and less expensive than routine surgeries. To date, more than 250 joint replacements and 100 complex spinal fixations have been performed under Navigation.



Navigated joint replacement surgery enables the surgeon to preplan and accurately execute the bone cuts. Bone resection and surgical steps are continuously verified and optimized intra-operatively so that perfect alignment of the limb is achieved. To the patient, this will translate into better function and longer life of the prosthesis avoiding the need for revision surgeries.

In spine surgery, computer navigation allows the surgeon to place pedicle screws with greater precision, higher levels of safety and less radiation. This is of particularly great benefit in performing deformity corrections and upper cervical spine fixations.

The hospital was recognized as an international reference centre for training and research by BrainLAB in 2005. The unit would train surgeons from all over the world in Navigation Surgery. Many prospective trials are also being conducted to document the efficacy and advantages of computer navigation surgery in complex surgical situations.

Dr S Rajasekaran is currently the President-elect of Computer Assisted Orthopaedic Society of India.

Computer Assisted Orthopaedic surgery

Inaugural Function Vector Vision (BrainLAB)
21st July 2004, Hotel Residency, Coimbatore



Prof. Dr. P.Venkat Rangan, Vice Chancellor,
Amrita Vishwa Vidyapeetham, Coimbatore lighting the lamp.
Prof. A. Rajasekaran, President,National Board of Exams and
Mrs. Kanakavalli Shanmuganathan, Managing Director of
Ganga Hospital are also seen.



Mr Claus Schaffrath,
BrainLab, Germany handing over the Certificate to
Dr S Rajasekaran of Ganga Hospital recognising the Hospital as
'Reference Centre for Asia Pacific Region for
Computer Navigated Surgery'
for training in computer assisted orthopaedic surgery.

Dr. Mario Ver, Director,
St. Luke's Medical Center, Philippines



Dr. Mario Ver with Don Bronoso
"Really an honour to be in this excellent, probably one of the
best orthopaedic hospitals in the world..... I am very certain that
this will be the most sought after orthopaedic training institution.
Looking forward to come back very soon to learn more".

Spine Navigation - Presentations

International

"Navigation Guided Pedicle Screw fixation"

Dr S Rajasekaran

St Luke's International Symposium on Spine Navigation, Sep 05, Philippines

"Spinal Deformity Correction using Spine Navigation"

Dr S Rajasekaran

St Luke's International Symposium on Spine Navigation, Sep 05, Philippines



Workshop on "Spinal Navigation"

Dr. S Rajasekaran

St. Luke's International Symposium on Spine Navigation,
Sep 05, Philippines.

Spine Navigation using ISO C 3D C Arm

Dr S Rajasekaran

Hong Kong Orthopaedic Association Annual Congress,
Nov 05, Hong Kong.

"Navigation in Spine surgery"

Dr. S Rajasekaran

2nd Asian CAOS Meeting, Apr 04, Singapore

International

"Iso-C based Spinal navigation in correction of spinal deformities"

Dr. S Rajasekaran at the 2nd Asian CAOS Meeting at Singapore from 13th Apr 2004

Clinical application of difficult spine surgery with navigation system

Dr S Rajasekaran at AO Spine course, Switzerland, in 2005

National

Navigation in trauma spine

Dr S Rajasekaran at Continuing Orthopaedic Education, Coimbatore,
15-18 September 2005



Dr S Rajasekaran demonstrating during workshop at Davos



Dr. S Rajasekaran with the key members of the BrainLAB during the AO Spine Course 2005 at Davos, Switzerland.

"Role of Navigation in Difficult Spine Surgeries"

Dr. S Rajasekaran at the ASSI subspecialty meet in IOACON 2005 at Mumbai
from 25-30th Dec 2005.

Spine Navigation - Research

Randomized clinical study to determine accuracy of navigated thoracic pedicle screws in deformity surgeries.

Study Design: Randomized clinical trial (Level I evidence).

Summary of the background data

Iso-C based navigation has improved the accuracy of spine navigation and has relevance to deformity correction surgery as data acquisition can be performed after positioning and exposure. But its efficacy in thoracic deformity correction surgeries has not been reported in the literature. Thirty three patients (27 scoliosis and 6 kyphosis) were randomly allocated to navigation group (17 patients and 242 screws) and non-navigation group (16 patients and 236 screws) by computer generated random number table. Cobb's angle was $58.4^{\circ} \pm 8^{\circ}$ (range 50° - 80°) and kyphotic angle was $54.6^{\circ} \pm 4^{\circ}$ (range 51° - 76°).



Intraoperative CT guided navigation is compatible with the VectorVision Computer Navigation Platform.

The fluoroscopic group was analysed by documenting the number of exposures, number of times the image intensifier moved into and out of surgical field and screw insertion time. In the navigation group, screw insertion time was calculated by adding the actual screw insertion time to the average set-up and screening time per each screening.

The accuracy was analysed on post-operative CT scans by two independent observers blinded to the study. The pedicle breach was graded as grade 0 if no breach, grade 1 if less than 2mm, grade 2 if 2-4mm pedicle breach and grade 3 if pedicle breach more than 4mm.

Prospective trial to analyse the accuracy of cervical spine pedicle screws in the presence of altered anatomy.

Pedicle screws offer the best biomechanical advantage in spinal fixations. However, it is not routinely performed in cervical spine due to the peculiar anatomy of this region which increases the risk for neuro vascular injuries. In the presence of altered anatomy, in conditions such as congenital deformities, instabilities following trauma, placement of screws can indeed be both challenging and risky. The role of navigation in these special situations has never been studied.



A young adult male with Ankylosing Spondylitis suffered a whiplash injury following which he developed progressive flexion and rotation deformity of the neck. Deformity correction with highly satisfactory result was performed under Iso-C based Navigation.

We have prospectively studied the accuracy of the pedicle screw placements in patients with cervical spine trauma, instabilities due to Down's syndrome, trauma and congenital anomalies. It is of immense use in deformity correction in ankylosed spines with no identifiable landmarks.

Computer Assisted Joint Replacements

Presentations

Navigation in severely deformed knees

Dr S Rajasekaran

Hong Kong Orthopaedic Association Annual Congress Nov 05,

Steps of navigation guided total knee replacement

Workshop on Computer assisted orthopaedic surgery,

Dr S Rajasekaran, IOACON 2004, Agra

Navigation in difficult knee & spine surgeries

Dr S Rajasekaran, IOACON 2004, Agra



Total knee replacement with navigation in knees with severe bone loss and ligamentous instability

Navigation in difficult knee surgery

Dr S Rajasekaran,

Computer-aided Orthopaedic Surgery Annual Meeting, Apr 04, Singapore

Debate on computer assisted joint replacements- Affirmative

Dr S Rajasekaran,

OASISCON 2004, Chennai

Computer Aided Surgery in Deformity Knees

Dr S Rajasekaran

Asia Pacific Arthroplasty Society, Aug 05, Goa

Computer Assisted TKR

Dr S Rajasekaran

OASISCON, Aug 05, Bangalore

Research

Total knee Replacement in Varus knees with and without navigation.

We report here a randomized controlled clinical trial in the effectiveness of navigation in total knee replacement with $>15^\circ$ varus deformity.

Methods: 36 knees with $>15^\circ$ deformity were randomly allocated to navigation group ($n=18$; average tibiofemoral angle 19.6° varus; 15 to 33°) and conventional jig based technique ($n=18$, tibiofemoral angle 19.2° varus; 15 to 30°). PFC sigma knees and Vector vision compact system with CT free module 1.5.1 version was used. Tibiofemoral angle was calculated from standing x-ray and limb alignment from CT scannogram.

Navigation was helpful in doing a stepwise soft tissue release with real time display of alignment after each step. This helps restore accurate limb alignment. Post operative scannograms were used to assess the limb alignment and component placement. Navigation assisted knees had better limb alignment

Results: 15 knees in the navigated group and only 9 knees in the conventional group had an alignment within $180 \pm 3^\circ$ ($p=0.0097$). Similarly the tibiofemoral angle was between $5-7^\circ$ valgus in 16 knees in computer assisted and 8 knees in the conventional group ($p=0.0097$). The tibiofemoral angle was 4.72° valgus ($2-7^\circ$ valgus) and 3.2° valgus (2° varus - 7° valgus) respectively. The component placement was better in navigation group.

Conclusion: Navigation was superior in achieving accurate postoperative limb alignment in severely varus knees.

Shoulder Surgery

Shoulder surgery is an upcoming speciality all over the world. The orthopaedic department of Ganga Hospital has recently popularized all major surgeries in this field. The shoulder clinic is run by Dr. J Dheenadhayalan who had his formal training in management of shoulder problems under the guidance of Prof Andrew Carr at Nuffield Orthopaedic Centre, Oxford, UK. In 2005, 1540 new patients with a variety of shoulder problems and 615 patients with shoulder trauma were managed. Surgery for shoulder instabilities, rotator cuff tear, impingement related problems and open reduction and internal fixation of fractures are routinely performed. In the years to come, thrust would be given for arthroscopic management.

Stiff Shoulder

Stiff Shoulder is a common problem seen in diabetics and post trauma in adults beyond 40 years of age. In patients who do not respond to analgesics and physical therapy, manipulation under anaesthesia yields good results.

Year	2004	2005
Clavicle fixation	18	17
Rotator Cuff	11	13
Inferior Capsular Shift	10	18
Proximal humeral fractures	42	57
Stiff shoulders	112	92
AC Dislocation	4	8
Arthroplasty	1	0
Total	198	205



Proximal humerus fracture



Results after Weaver Dunn procedure

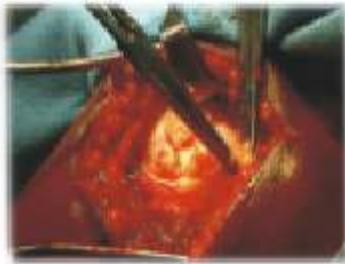
Shoulder Surgery

Rotator cuff tears

Rotator cuff tears occur either post injury or as a result of attrition rupture in elderly and also due to pathology in continuum in impingement syndrome, wherein the cuff muscles are continuously pinched between acromion and humeral head. The problem is more if there is increased curvature of acromial bone. This could be easily treated with cuff repair either arthroscopic or open method.



Before surgery



Rotator cuff tear repair



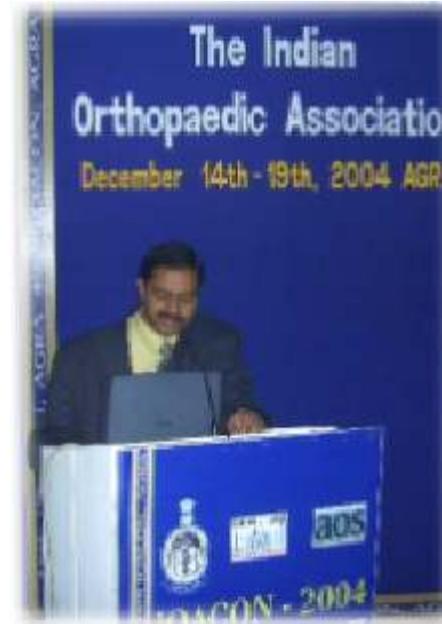
Movements after surgery



Full Range Of Movements In A Patient With Post Traumatic Instability

Shoulder Instability

Shoulder is the most mobile and tremendously versatile joint that comes at the cost of relative instability. Function and stability depend on maintenance of a delicate balance between the supporting structures and muscles. This could be unidirectional, multidirectional or habitual type of dislocations. The unidirectional forms need surgery. The others are treated with physiotherapy and rehabilitation. Surgery involves arthroscopic methods and open repair. Though arthroscopy is evolving, open repair is the gold standard.



Presentations

Conservative Management of Proximal humerus fractures in elderly
Dr J Dheenadhayalan
Coimbatore Orthopaedic Society (COS), June 04.

Open subacromial Decompression and Rotator Cuff Repair
Dr J Dheenadhayalan,
Poster Presentation at IOACON, Dec 04 Agra,

Debate on conservative Vs operative methods of treatment in fractures of elderly
Dr J Dheenadhayalan
Continuing Orthopaedic Education, Sep 05, Coimbatore .

Academics



“The practice of medicine is an Art.....based on Science”

Sir William Osler

Academics

The Orthopaedic Department is well reputed for its academic programmes. The academic activities are supervised and guided by Prof Dr. M.V. Daniel, Academic Director and Dr. S. Rajasekaran. Prof. M. V. Daniel was formerly the Head of the Department of the illustrious Orthopaedic unit of Christian Medical College, Vellore and his vast academic and clinical experience of many decades has helped to change this busy clinical department into a mature academic unit. Prof Daniel's passion for proper records and data maintenance has helped to improve research in the department.



DNB students 2005 batch



Prof TK Shanmugasundaram Orthopaedic library

Diplomate of National Board (Dip.NB) Post Graduate Course in Orthopaedic Surgery

The unit was recognized for post graduate training in Orthopaedic Surgery by National Board of Examinations, New Delhi in 1997. Every year 4 candidates are selected according to the merit of the common entrance test conducted by the National Board and an interview. Students have an exposure to all the clinical material of the hospital and they are coached with lecture classes, clinical demonstration, ward rounds and active participation in the operation theatres. The primary candidates spend 3 years in training. Students have 24 hour access to library which is well stocked with the standard books and relevant journals. They are also expected to complete and submit thesis of research work performed during the tenure. The hospital became an examination center for Orthopaedic Surgery and has conducted the National clinical examinations twice so far.



Prof Dr MV Daniel and Dr. S Rajasekaran

D.N.B Postgraduates 2003

Dr. Armstrong B R W
Dr. Ramaligam K
Dr Chandrasekar
Dr Mubarak

D.N.B Postgraduates 2004

Dr. Balasubrahmanyam. Y
Dr. Ebenezar E
Dr. Santhosh B C
Dr. Nallam Ramesh

D.N.B Postgraduates 2005

Dr. Devendra
Dr. Virupaksha
Dr. Ramesh P
Dr. Kalamagam

D.N.B Postgraduates 2006

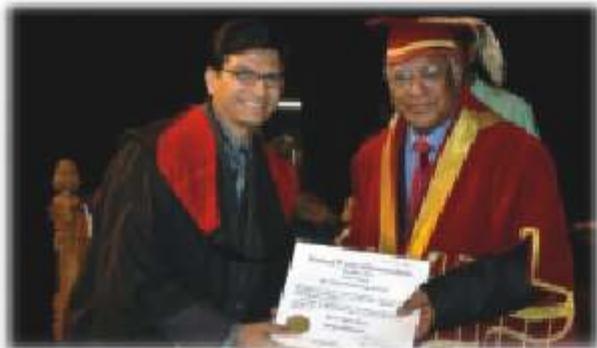
Dr. Jayesh Yadav
Dr. Sarthy V
Dr. Nagakiran
Dr. Sukasekar

Academics

Super Speciality Fellowship in Spine Surgery - National Board of Examinations, New Delhi

In 2000 the department became the first unit in the country to be recognized by the National Board of Examinations, New Delhi, for super-speciality training in Spine Surgery. The fellows are selected by an All India Entrance Examination conducted by the National Board and the two year course is open to both Orthopaedic and Neurosurgeons. The selected candidate has both clinical and research activities along with the responsibility of maintaining accurate and systematic documentation of clinical cases. In the second year, hands-on surgical training is offered under supervision and guidance. Dr. Yogesh K Pithwa (2002-2004) became the first fellow of the National Board of Examinations to be awarded the degree at the convocation at Hyderabad in 2005. Dr.J.Naresh Babu, Dr.Thomas Kishen, were the fellows in 2003-2005, Dr Vidyadhara S and Dr Sree Harsha during 2004-2006, and Dr Ashish Jaiswal and Dr Vijay Kamath are the current Spine Fellows.

The curriculum of the spine fellows include supervising and independent handling of spine clinics, preoperative evaluation and post operative care of spine surgery patients, active involvement of surgical sessions and quality research. Funds for research are available upto Rs. 5 lakhs per year from Ganga Orthopaedic Research and Education Foundation. In the years of 2004 and 2005 additional funds were available from the ISSLS award (10000 USD), Cotrel Foundation (15000 USD) and MacNab Larocca Traveling Research Fund (15000 USD).



Dr Yogesh K Pithwa receiving the first fellowship certificate award in Spine Surgery from Dr. A Rajasekaran, President, National Board of Examinations, at the convocation function of Hyderabad in 2005.



Dr. S Rajasekaran with examiners of National Board of Examinations at Ganga Hospital - Prof. A. Devadoss, Col.Dr. S.K.Biswas & Prof. Vijayaraghavan. May 2005



Radiology session being conducted by Dr S Rajasekaran for DNB students and Fellows

Thesis topics

- Dr. Yogesh K Pithwa: Correlation of clinical features with intraoperative findings in lumbar disc prolapse.
- Dr. Naresh Babu: Post-contrast serial MRI study to measure the in-vivo lumbar intervertebral disc diffusion.
- Dr. Thomas Kishen: Randomised controlled study to compare the results of cervical microdiscectomy with and without fusion.
- Dr. Vidyadhara S: Treatment of cervical spondylotic myelopathy - Laminectomy revisited.
- Dr. Sree Harsha CK: Comparison of outcome in operative and nonoperatively treated thoracolumbar burst fractures.

Super Speciality Fellowship in Trauma Surgery of National Board of Examinations, New Delhi

The vast clinical load in trauma led to the establishment of trauma fellowships which are one of the most sought after fellowships in the country. In 2003, the unit was also accredited for Post-Doctoral fellowship in Trauma Care by National Board of Examinations New Delhi. The first candidate to join in 2004 was Dr Pushkar Chawla. The Trauma fellowship enables the fellow to pursue research activities in trauma and also gain valuable clinical experience in trauma management. The fellow is primarily responsible for documentation and record maintenance of the large number of trauma victims. The trauma fellow actively participates in documentation of all trauma patients and specifically patients with open injuries. The data has been used to evolve the Ganga Hospital Open Injury Severity Score and new protocols in the management of open injuries.



Dr. Dheenadhayalan with Trauma Fellows
Dr. Pushpasekar, Dr. Sanjay Nair and Dr. Pushkar Chawla

Institutional Review Board

In keeping with the international norms, the orthopaedic unit has set an Institutional Review Board to function as an ethics committee. All research projects of the hospital are presented in detail to the committee for approval before being started. The committee comprises some of the most illustrious and academic members of the society.

Prof M.V. Daniel (Chairman)
Academic Director
Ganga Hospital, Coimbatore

Dr J Balavenkat (Secretary)
Ganga Hospital, Coimbatore

Dr (Mrs) M. Chandramani (Member)
Former Vice Chancellor
Avinashilingam Deemed University
Coimbatore

Dr J.G. Shanmuganathan (Member)
Chairman, Ganga Hospital
Coimbatore

Dr Ramkumar Ragupathy (Member)
Dean, GKNM Hospital,
Coimbatore

Mrs. Sreejaya Nambiyar (Member)
Advocate, India.
Solicitor, England & Wales.

Prof M.T. Thiagarajan (Member)
Dean, Institute of Management Studies,
Bharathiar University, Coimbatore



IRB members discussing a proposed protocol

Academics - Paramedical Courses

Trauma Nursing Course

Ganga Hospital started a unique course on 'Trauma Nursing' in 2001 to train 20 candidates every year. The course was started recognising the fact that nursing patients with major injuries requires special skills and techniques. Students are taught the theoretical aspects of acute trauma care by surgeons and the anaesthesiologists and undergo practical training in casualty, wards, intensive care unit and operation theatre. The three-year course lays emphasis on resuscitation of polytrauma patients, immediate care of the injured and basics of surgical procedures. Emphasis is also given to preoperative and postoperative management of injured patients.



Class for Trauma Nursing Course students in progress



Physiotherapy trainees with the staff



Orthopaedic Theatre Technician Trainees
2004 and 2005 with the staff

Physiotherapy Training

The Physiotherapy Department of Ganga Hospital plays an essential and integral part in improving the results of surgery and providing good functional outcome. The department is well-staffed with 6 full-time physiotherapists and two physiotherapy assistants. The unit is well equipped with modern facilities like continuous passive motion machines for the knee, ankle and elbow and equipments like short wave diathermy, ultrasound, TENS for conservative therapy for patients with low back pain and other joint disorders.

The department of physiotherapy offers training to candidates from R V S College of Physiotherapy & Cheran College of physiotherapy. Seventeen students underwent part of their training and 44 did their internship in the department in the last two years.

Orthopaedic Theatre Technician Course

The Orthopaedic Theatre Technician Course trains four candidates every year. The curriculum involves lectures and demonstration classes in Anatomy, Physiology, basic sciences and relevant aspects of orthopaedic diseases. Practical training is provided on the techniques of plaster application, immediate management of the injured patient in the casualty, basics of preoperative assessment, operating theatre procedures, autoclaving and operating the image intensifier for orthopaedic and spinal procedures. They get additional training in the acute care of the polytraumatised patient as resuscitation is done at the ante-room of the trauma operating theatres.

Academics - Guest Lectures

- Prof. M B Pranesh MD DM, Neurologist, Coimbatore
- Neurological localisation of cervical spine in Oct 2004
 - Neurological localisation of lumbar spine in Nov 2004
 - Cervical Myelopathy case discussion in Feb 2005
 - Lumbar canal stenosis case discussion in May 2005



Prof. Dr. M.B. Pranesh delivering an invited lecture at Ganga Hospital

- Mr. William Fairbank, UK
- Life after Head Injury, 2004

- Prof. Keith Luk, Chairman, Department of Orthopaedics, University of Hong Kong, Hongkong
- Total in-vivo disc replacement, Nov 2004

- Dr. Dinesh Nayak, Neurologist, Coimbatore
- Neurological signs - illustration, in Dec 2004

- Dr. Senthil K, Urologist, Coimbatore
- Traumatic urethral and bladder injuries, Feb 2005

- Dr. Louis Briard, Consultant Orthopaedic Surgeon, France
- Soft tissue balancing in TKA and
 - Role of CAOS in Knee replacement in Mar 2005

- Dr. Murali, Neurosurgeon, Coimbatore
- Craniovertebral anomalies - case discussion, Mar 2005

- Dr. Susan Bibby, New Zealand
- Disc cell biology, in Apr 2005

- Dr. Mary Babu, CLRI, Chennai
- Cell culture techniques in Apr 2005



Dr. Mary Babu being felicitated by Prof. Dr. MV Daniel

- Prof. Dr. V.R. Ravikumar, Paediatric Surgeon, Coimbatore
- Nosocomial Infections, in May 2005

- Prof. Jegan Krishnan, Head of Department of Orthopaedic Surgery, Flinders Medical Centre, Adelaide
- Shoulder Instability and
 - Roentgenostereometric analysis, in July 2005

- Dr. G. Bhakthavatsalam, Chairman, KG Hospital, Coimbatore
- Pathway to success in July 2005

- Dr. Samuel Abraham, Consultant Neurologist, Japan
- Techniques in Disc cell culture, Aug 2005

- Prof. Ramesh Babu, Chennai
- Perthes disease of Hip, 2005

- Mr. J.N. Arun Kumar, Statistician, Chennai
- Basics of Biostatistics, 2005



Dr. Parag Sancheti delivering a lecture on Acetabular fractures

- Dr. Maheshwar Conjeevaram, Orthopaedic Surgeon, USA
- Complications of THR
 - Tibial shaft fractures

- Mr. Shreerang, Mumbai
- Six Sigma - Way to improvement, Nov 2005

- Dr. Vijay Bose, Orthopaedic Surgeon, Chennai
- Birmingham Hip Replacement arthroplasty, in Nov 2005

- Dr. Parag Sancheti, Orthopaedic Surgeon, Pune
- Acetabular fractures in Dec 2005

Academics - International fellows

APOA-Depuy and trauma traveling fellows 2004



Dr. S Rajasekaran with the APOA-Depuy traveling spine fellows Tomoaki Koakutsu (Japan), SK Abbas Uddin Ahmed (Dhaka) and Gabriel Liu (Singapore) along with APOA trauma fellow Aung Swe (Myanmar)

"It has been an eye opening experience in Ganga Hospital. Not only to discover the state of art technology in the hospital, but with the joy of learning from one of the most dedicated professional spine unit under the leadership of Dr. S Rajasekaran is a blessing. Looking forward to many future liasons with the department for many years to come".

Gabriel Liu, National University of Singapore.

Govt of Bangladesh Fellowship



Dr Qavi with Dr Balavenkat

"This is an excellent place to see and learn. It covers a wide spectrum of orthopaedic problems, seen both in underdeveloped and developed countries. The doctors have a very progressive mind. The staffs are very cooperative. Ganga Hospital will be at the top of my recommendations for training fellow orthopaedic surgeons and plastic surgeons from Bangladesh".

Mohammed Iqbal Quavi, Dhaka

APOA Trauma traveling fellow 2004

"A very good learning experience and good exposure in operative orthopaedics and traumatology. I would most gladly recommend this hospital for a fellowship in the future".

Suguna Venkataraman, Malaysia



Govt of Srilanka Fellowship



Dr. Jayamanohara with Dr S Rajasekaran and Dr Raja Sabapathy on completion of 1 year of training fellowship

"God takes over personally, the files of those who take over the files of others to do good"..... In the Ganga team, I found a family (Ganga Family) trait of Concern, Kindness and Affection for fellow human beings which keeps them stand well above the common herd. Here is a class of men who add meaningful substance to their rich external academic qualifications and internal qualifications of integrity, character, heart in right place and above all hard work as a form of worship. May God bless them with all health, wealth, happiness and success in all their endeavors".

Sivaguru Jayamanohara, Srilanka

Academics - National Fellows

World Orthopaedic Concern - SICOT Fellowships in Orthopaedics, Trauma & Spine Surgery

The hospital is a Training Centre recognised for the WOC-SICOT Fellowship. The programme is part of the regional training fellowship scheme which is funded by the SICOT Educational Foundation. Selected candidates are awarded a travel grant and subsidised accommodation.

During the fellowship period, the fellows take active part in the outpatient department, ward rounds, clinical teaching and surgical sessions.

Fellows in 2004 & 2005

Dr Vimal M Kothari, Rajkot,
Dr Dhananjay Jha, Bhilai,
Dr Sanjay Panda, Jamshedpur,
Dr Chiniwal Chandrashekar, Bangalore
Dr Ravinarayan, Coimbatore
Dr Shyam Sundar, Kakinada
Dr Madan Mohan Sahoo, Cuttak
Dr Dinesh Thawrani, Mumbai
Dr Chandrasekar Kurup, Chatisgad
Dr MS Rajesh, Chitradurga



Gowrishankar Borgohain
Dibrugarh



"Before I came to Ganga Hospital, I had heard so much that I thought I would be disappointed when I actually see it. It was not to be. Like the Taj Mahal, Ganga Hospital also surprised me. It was beyond my imagination, Ganga will continue to maintain its highest standard of work and inspire others like me in the future. Ganga will remain another Taj Mahal for me".

Roop Singh
Rohtak



"I am highly thankful to the team of doctors and other personnel with Ganga Hospital for updating my knowledge not only in orthopaedics but also in other spheres of life. I could watch "quality work" and at the same time the need to put this in papers".

Nirmal Kumar Jajodia
Bhubaneswar



"Must thank everybody from Ganga Family. My stay here shall be the most memorable period of my life. Shall come back again in future to upgrade my skills".



Arul Durai Arasu
Dindugal

"I am impressed by the quality of work carried out at Ganga Hospital. I feel that a fruitful fortnight has been spent from which I have learnt a lot personally. I wish the whole team hearty congratulations and hope many more patients will get benefitted as well as bring out many more top quality doctors clinically as well as research oriented".



Rehan-ul-Haq
JabalPur

"My visit has been most fruitful. Not only have I been exposed to the best of orthopaedic practice but also the best ethical and clean medical practice. I am thankful to the "Ganga Family" for giving me this opportunity".



Mallana Gowda
Koppal, Karnataka

"It was a dream come true for me to visit this place and pick up valuable tips in orthopaedic practice".

Academics - National Fellows

Kerala Orthopaedic Association Traveling fellow



Bhupin Singh Bakshi



Tajan PJ

"It was a hounour to have visited here and be updated on the work going on in Orthopaedics. I am greatly indebt to you for the generosity shown by you in making me wishes in the subject which is my life".

Dr. Bhupin Singh Bakshi

Karnataka Orthopaedic Association Traveling fellow



CV Mudgal, Hubli

"My stay in Ganga Hospital as a Karnataka Orthopaedic Association Fellow is very memorable one. Ganga Hospital is the centre of excellence for management of complicated fractures, spine and joint replacement. During my stay, I have learnt lot of new techniques and redefined my skills. I look forward to visit this great institution again".

Ganga B Braun Regional Anaesthesia Training fellowship.



The Chairman, Dr J G Shanmuganathan handing over the certificate to Dr Mrs Nayana Kulkarni

Dr Mrs Nayana Kulkarni, Nashik
Dr H Perera, Srilanka

Dr D Kannan, Madurai
Dr Shyam N Patil, Nasik

"The visit to this 'service to man, service to god' principle based hospital is an eyeopener to me to assist me to see life beyond the constraints of worldly engagements. It has given me the vision to see beyond 'profits', the simple smile on the bright face of a pain free patient giving a sea of happiness - no money can buy.

Carrying forward the touch of Karma are all the team of doctors of Ganga Hospital, which is putting in all efforts to make the work a big success in every aspect of life. The ongoing cases, volume of work without being tired, all are working to optimum capacity - I got the message, ceaseless efforts can make impossible happen. I thank everybody who made my stay worthwhile, beyond imagination. I think I learnt ' NOT TO EXPECT BUT TO CONTINUE KARMA WITHOUT THINKING ABOUT FRUIT' Ultimate goal is serenity and happiness".

Dr Mrs Nayana Kulkarni, Nashik



AESCULAP
ACADEMY

Academics - International Visitors



Keith DK Luk
Hongkong

"I am impressed with the excellent clinical and research work in spine surgery. This institution will be a star not only in India but also worldwide".

Jean-Louis Briard,
Bois Guillaume



"Very impressive centre with lot of interest in core teaching and research. I enjoyed very much sharing our experiences with CAS navigation with respect to soft tissue balancing. Looking forward to work on some projects together. Congratulations for the set up and efficiency of your staff in the Hospital".



Daryl C Teague
Adelaide

"I am astonished with the complexity and variety of the severe pathology and the competent and compassionate care given by Ganga Hospital to its patients".



Mario Ver
Philippines

"Really an honour to be invited in this excellent, probably one of the best orthopaedic hospitals in the world! It was a fulfilling visit meeting the objectives and more of seeing how a navigational assisted surgery for the spine and TKR are and must be done. I am very certain especially with the opening of the new Ganga Hospital that this will be 'the' most sought after orthopaedic training institution. Looking forward to come back very soon to learn more. I will be ever grateful".



Susan Bibby
Wellington, New Zealand

"I'm amazed by the work done here by both ortho and plastic teams. If it weren't for Ganga these people could not get this standard of care! I'm also amazed you find time to do such brilliant research and look forward to reading your papers in the future! Of course the legendary Indian hospitality has made the trip even better too. Best of luck and see you again".

Luca Mareca, Italy
"A very interesting experience"



Academics - International Visitors



Prof. Dr. Simon Frostik
Liverpool, UK



Dr. Andreas Platz,
Switzerland



Christopher Josten
Germany



Dr. Badrinarayanan
Liverpool, UK



Dr. Dilip Paul
California, USA



Dr. Durainayagam
Liverpool, UK

Students



Erik Anderson,
Wellington, New Zealand



David Lowe,
Dundee, Scotland

"A hugely rewarding and informative week. The dedication and expertise of the team at Ganga is extraordinary".



Thomas John
New York

"A great learning experience. I am happy to have had a chance to be here and would love to be back again"

Cathryn Meachin,
United Kingdom

"A wonderful experience and a stimulating introduction into the world of orthopaedics. Thanking you".

Amresh Singh
Birmingham

"Many thanks for making my elective a wonderful experience. Thank you for all the numerous opportunities to take part in such a wide range of orthopaedics".

Global Accolades ----

In the last few years, Ganga Hospital has become a preferred centre for treatment for patients from other countries also. The Unit attracts patients from the neighbouring countries like Sri Lanka, Bangladesh, Pakistan, Maldives for specialised treatment at affordable cost. Patients from other countries like USA have also been treated for arthritis of the Hip with surface replacement which is still not yet available in the USA.



"The almighty, the creator of all human beings endows some with special attributes meant to serve some of his or her fellowmen in addition to serving themselves and their immediate families and friends. But it is a few that realize that they have such talents, develop them and put them to the services of human suffering with zeal and fortitude.

I have discovered such a team across during my treatment of Ganga Hospital and its team while struggling for life. It has been an emotional occasion that I will leave to broadcast and propagate. I am a fully recruited member to advance all your efforts".

AM Kirunda Kivejinja, Deputy National Political Commissar and Director Foreign Affairs, Uganda got operated for Lumbar Canal stenosis during Apr 2005

"I came to India seeking good treatment. I am foing back now not only fully cured, but also with a sense of happiness of being united with my brothers in India. I came as a Pakistani, but am returning as a Fan of India"



Mr. Saif Uddinhyder from Karachi, Pakistan after his surgery for lumbar disc disease.

Global Accolades ---



Mr Mark Biggers from USA underwent surface replacement for arthritis of hip joint .

Mark Biggers, USA

"I am very thankful for your hospitality and professionalism. Your staff treated me very well. I have many new friends here. I will be very happy with my hip resurfacing. God bless you all. Hope to see you again under different circumstances".



Fathima Naufa, Maldives

She was operated in Apr 2006 for Osteoid osteoma of the lumbar spine. She underwent Iso-C navigated deroofting and curettage of the tumour. The surgical technique is a recent advance with preservation of the normal bone and soft tissues.



Dr. S Rajasekaran with Mr and Mrs Chowdhury.

Mrs Chowdhury, Bangladesh was operated for severe cervical and lumbar canal stenosis in a single staged procedure

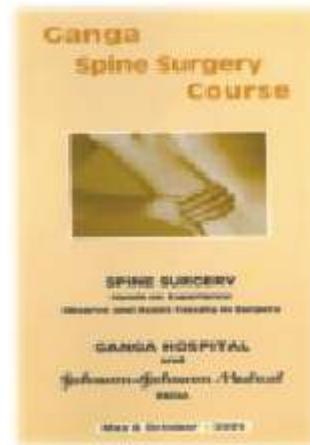
Mrs Razia Chowdhury
Bangladesh

"On recommendation by Dr Tushhar Patel, a neurosurgeon in Virginia, USA, we got admitted to Ganga Hospital, Coimbatore. We are now convinced that Ganga Hospital is the ideal place to undergo any surgery. We were thoroughly impressed by the doctors, staff and nurses at Ganga Hospital. We had consulted several specialists around the world and we could easily see that the team at Ganga Hospital impressed us most pre and post surgery. Our mother is doing great and we would like to recommend Ganga Hospital to anyone with orthopaedic problems as world-class professionals handling patients with severe orthopaedic problems with great success. Thank you for making a difference in so many patients life".

Conferences & Meetings

Ganga Spine Course Faculty

Shekar Bhojraj, Mumbai
 Arvind Jayaswal, New Delhi
 Abhay Nene, Mumbai
 VT Ingalhalikar, Pune
 S Rajasekaran, Coimbatore
 Ajoy P Shetty, Coimbatore
 Naresh Babu, Coimbatore
 Thomas Kishen, Coimbatore
 Murugan KS, Coimbatore
 Dinesh Nayak, Coimbatore
 Yogesh K Pithwa, Bangalore



Department Secretariat



Mr Mohana Krishnan V, Secretary and Mr Prabhu G, Manager, Orthopaedic EDP form the core supporting team for documentation of medical records and also in the conducting of meetings and conferences.



COE Faculty

International
 Dr Simon Frostick, UK
 Dr Christoph Josten, Germany
 Dr Dilip Pal, USA
 Dr Badrinarayan, UK
 Dr Durai Nayagam, UK
 Dr Andreas Platz, Switzerland

COE Faculty

National
 HKT Raza, Jabalpur
 AK Jain
 K Sriram, Chennai
 John Mukhopadhaya, Patna
 S Bhattacharya
 GS Kulkarni, Miraj
 DK Taneja
 NS Laud, Bombay
 Ashok Vaishnavi
 S Rajasekaran, Coimbatore
 S Rajasabapathy, Coimbatore
 Dheenadhayalan, Coimbatore
 Balavenkat, Coimbatore
 Ravindra Bhat, Coimbatore



Community Service



Dr S Rajasekar on the update of arthritis
25th November 2005



Prof TK Shanmugasundaram, co ordinator,
Bone and Joint Decade, India



General practitioners attending
the conference

Update on Arthritis for General practitioners



The United Nations and the World Health Organization have proclaimed the year 2000-2010 as the Bone and Joint Decade. This global initiative is intended to improve the lives of people with musculoskeletal disorders, such as arthritis, and to advance understanding and treatment of musculoskeletal disorders through prevention, education and research.

This program is based on an inclusivist approach of making the family physicians an integral part of management of Orthopaedic and Trauma patients: to be able to accurately diagnose and counsel the patients with regard to the latest advances for the maximum benefit of the patients.

Accident and Emergency First Aid Care Projects

Ganga Hospital in association with Rotary District 3200, launched the Accident & Emergency First Aid Care Project on 9th November 2001. District Governor Rtn MPHF K.A. Kuriachen & Sri Narinder Pal Singh, IPS, Commissioner of Police, Coimbatore City inaugurated the project. Dr S Rajasekaran is the District Chairman and Dr J Balavenkat is the Project Co-ordinator. The aim of this Project is to teach first aid measures to public from all walks of life like school children, police, college students, bank officials, drivers etc. In 2004-05, we have conducted 19 projects training 4,825 persons involving 1025 police personnel, 1500 school students and 1600 college students. It is our earnest desire to educate more people in and around Coimbatore and make Coimbatore a model city in Trauma Care.

	Meetings	Persons
2004		
Police	3	375
GRD College	2	500
Sri Ramakrishna College for women	2	500
PSGR Krishnammal College	2	400
Bishop Appasamy College	1	100
2005		
Police	3	400
Special Police	2	250
Coimbatore Home guard	1	200
Youth Red Cross	1	400
PSGR Krishnammal School	1	1500
Karpagam Arts College	1	200



First aid for policemen, 10 Dec 2005



First Aid For Home Guards, 30th dec 2005



First aid programme at Ganga Hospital auditorium
14th OCT 2005

Project Helpline-“ Help for the helpless”

Physical deformity in a growing child is more than just a physical deformity. Unfortunately more than 90% of these deformities affect children from the lower socioeconomic group, whose families can hardly afford the treatment of these complex problems. In 1998, Ganga Hospital started the Project Helpline in association with Coimbatore City Round Table 31 to provide free surgeries for these children in need. The donations of about 2 lakhs were utilized by the department to perform surgeries worth Rs.20,97,091. This was possible by the medical staff treating entirely free of charge and the hospital subsidizing the cost heavily.

Deformities due to any etiology: Congenital, Post traumatic, Post polio or infective are treated free of cost. To date more than 500 deformity correction surgeries have been performed.

“Visiting your hospital and seeing your helpline project made me believe in God (for a person who is a non-believer). God resides not in our imaginations, but in the good intentions of people like you”.

Suhasini Maniratnam
Film Director and Social Worker



Before surgery



Child on JESS fixator during treatment



After surgery

A case with neglected club foot deformity has been operated with JESS fixator free of cost

Project Helpline 2004		
Month	No of cases	Cost of Surgeries done free
January	5	149375
February	4	45985
March	7	244610
April	10	129370
May	8	108205
June	12	158880
July	6	65265
August	8	57310
September	2	9290
October	8	77400
November	2	16995
December	4	34346
Total	76	1097031

Project Helpline 2005		
Month	No of cases	Cost of Surgeries done free
January	2	12360
February	6	68830
March	8	98940
April	7	64585
May	5	49180
June	8	121610
July	14	171170
August	9	145915
September	6	110755
October	8	77915
November	8	105120
December	3	33260
Total	84	1059640

Community Service

Blood donation Camps at Ganga Blood bank

The blood bank of Ganga hospital is involved in the organisation of numerous blood donation camps in association with other voluntary service organisations. Thirty percent of blood collected is given free of cost to the blood bank of Government General hospital for the use of the poor and needy.

The following associations participated in the blood donation camps.

- God Father Ajith Blood Donors Association
- LIMRA Blood Donors and Social Welfare Association
- Jadayampalayam Panchayath
- C. M. S College of Arts and Management
- S. N. R and Sons Arts and Science College
- Singanallur Bharathiya Janatha Party



Blood Donation Week - In Oct-05



Blood Donation in progress.

Mr Saravanan, Administrative Officer
Dr. Gopinath, Medical officer and Mr Parameshwaran,
Technician are seen with the donor.

Ganga Free First Aid Centre with St John's Ambulance, Tirupur



Ganga Hospital with St John's Ambulance Services started a Centre for free first aid care at Tirupur on 27th May 2001. The center aims at providing emergency first aid care and ambulance service to transport the traumatized patient at the earliest to the parent centre.

Since its inception 41,593 patients had been attended. In 2004-05 alone, 20,804 patients were treated.

His Excellency, the Governor, Mr Surjit Singh Barnala presented an award in appreciation to Ganga Hospital for offering Free Service to accident victims at St Johns ambulance centre, Tirupur in a function organised by the St Johns Ambulance Association at Chennai. Chairman Dr.J.G.Shanmuganathan is receiving the award.

Ganga Hospital Accident Helpline Centres:



Ganga Hospital in association with Rotary District 3200 has started accident help line centres at Mavuthampathy, Kanjikode, Madhukarai by-pass, Periyayakenpalayam, Perumanallur, Palghat. The aim of these centres is to provide immediate aid to accident victims and transport them in the ambulance to an appropriate hospital.

Ambulances are stationed at all these centres, which are manned round the clock by the paramedical staff of Ganga Hospital. Till date, 650 patients have been resuscitated via these centres and appropriate, timely treatment offered to them.

Hospital Day Celebrations 2005

In Ganga Hospital, it is not all work and no play. The creativity and talents of the staff members are on full show during the annual Hospital day celebrations when teams compete with each other for the best team award.



Dr. Shanmuganathan with Mr. Santhosh enacting the scene from Veerapandia Kattabomannan



Dr. Ravindra Bhat dancing to glory



Dr. Sundar being brought into the audience in a palanquin



Dr. Dheenadhayalan and Dr. Vidyadhara S rocking with music



Dr. S Rajasekaran and Dr. Balavenkat with the winning team



Skit depicting Indian freedom fight



Badaga dance



Fashion show with the theme of 'Indian Weddings'



Western dance cheered by the crowd



Dr S Rajasekaran took over as President of World Orthopaedic Concern from Mr Kenneth Tuson, UK at the SICOT 2005 Meeting, Istanbul, Turkey, 8-9-2005 . He will be holding the post till 2008 and will hand over to Dr Ger Olyhoek, Netherlands.

Mile stones.....

1978 THE JOURNEY BEGAN

1978	Ganga Hospital started as a 17 bed Polyclinic
August 1991	Establishment of Shanmuganathan Kanakavalli Super Speciality Centre for Trauma, Orthopaedics & Plastic Surgery. Expanded to 45 beds with 2 new Operating theatres
January 1992	First major spinal deformity correction
February 1992	First free flap of major open injury
March 1992	First total joint replacement done
January 1993	Establishment of micro surgical facilities for spine surgery
June 1995	Basic Nursing Course Approved by the Department of Human Resource Development, Government of Tamil Nadu
January 1997	Recognised for DNB in Orthopaedic Surgery, National Board of Examinations
June 1997	"Helpline Project" in association with Coimbatore City Round Table 31
August 1997	Expansion with construction of New Block to include four new Operating Theatres, Spacious Outpatient Department, Trauma ICU, Library and Physiotherapy Department, Total bed strength increases to 110
January 1999	Recognised by World Orthopaedic Concern (WOC) for Inland Training Fellowships
June 2000	Recognised for Super Speciality Fellowship in Spine Surgery by the National Board
January 2001	Ganga Trauma Fellowships
June 2001	Diploma in Trauma Nursing
July 2001	Accident Helpline Centre established at Tirupur
June 2002	Ganga Johnson & Johnson Fellowships instituted for Spine and Hand Surgery
August 2002	Establishment of Ganga Hospital Blood Bank
December 2002	Ganga Charitable Trust for Orthopaedic Research and Education
March 2003	7 th floor expansion. Total bed strength: 130
April 2003	Inauguration of Prof T.K. Shanmugasundaram Orthopaedic Library Inauguration of Ganga Orthopaedic Alumni Association
January 2004	ASSI-Depuy Publication award and ASSI-Depuy Best Spine Research award by Association of Spine Surgeons of India

2004

June 2004	ISSLS Lumbar Spine Research Award 2004 by ISSLS, Canada
July 2004	Launch of Vector Vision Virtual 3D Computer Navigated surgery First time in India. Launch of ISO C 3D C-arm
November 2004	Inauguration of Digital X Ray Unit
December 2004	Establishment of Institutional Review Board

2005 THE JOURNEY CONTINUES.....

Jan 2005	Yves Cotrel Foundation Award, Paris
May 2005	MacNab LaRoca Fellowship Award, ISSLS
May 2005	Recognition as A Examination Centre for DNB Clinical Examination
June 2005	Recognition as Reference Centre for Navigation
July 2005	Hari Om Ashram Alembic Research Award from the President of India
September 2005	Dr S Rajasekaran took over as President, WOC-International. Dr J Dheenadhayalan took over as Secretary General - elect of WOC-international.
October 2005	Inception of B Braun Regional Anaesthesia Training Fellowship



1978- 17 beds,
the beginning...



1996 - 135 beds,
the growth...

GANGA HOSPITAL

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www.gangahospital.com



In 2007, the New Block with 400 beds,
the Journey Continues...